



IPB University
— Bogor Indonesia —

Department of Aquatic
Resources Management **ARM**
Faculty of Fisheries and Marine Sciences

MODULE HANDBOOK

Aquatic Resources Management Study Program
- Program Studi Manajemen Sumberdaya Perairan (MSP) -

Department of Aquatic Resources Management
Faculty of Fisheries and Marine Sciences
IPB University

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1. IPB100-104-110 Religion Education

Module Name	Religion Education
Module level, if applicable	Beginner
Code, if applicable	IPB100
Subtitle, if applicable	-
Courses, if applicable	IPB100 Islamic Education
Semester(s) in which the module is taught	1 st Semester
Person responsible for the module	Dr. Hamzah, M.Si.
Lecturer	Dr. Neneng Hasanah, MA Dr. Asep Nurhalim, Lc., M.Pdi Dr. Furqon Syarief H, S.Ag, M.Pd.I Musthofa, S.Ag, M.Pd.I Ahmad Solih, S.Ag, M.E.I Ahmad Syahirul Alim, Lc., M.Pd.I Wachid Ramadhan, Lc., MA M. Anhar Nasution, S.Pi., M.E.I Qoriatul Hasanah, Lc, MRIK
Language	Indonesian
Relation to curriculum	Compulsory courses for Muslims undergraduate students
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Able to explain the urgency of science in the view of Islam and the urge to seek and apply it to life 2. Able to explain the concept of science in Islam and eliminate the dichotomous attitude that contradicts science and Islam 3. Able to explain the concept of Islam as rahmatan lil'alamiin with a strong belief in the truth of Islam and being tolerant of other religions 4. Able to explain the main teachings of Islam related to Akidah, Sharia, Morals and Da'wah 5. Have the right attitude in understanding the teachings of Islam, and have the awareness to become a better Muslim 6. Have an honest, disciplined and enthusiastic attitude in developing knowledge based on the Quran

	7. Able to read the Quran well and diligently worship and perform various activities according to Islamic teachings
Content	<p>This course discusses the basics of Islamic religious teachings comprehensively (kaaffah) as a basis for thinking and acting in the development of scientific and professional disciplines, as well as being a reference in daily behavior so that Muslim intellectuals who are faithful, pious and have noble character can be realized.</p> <p>This course covers the following materials: Science in an Islamic perspective, Islam as rahmatan lil'alamiin, basic principles and implementation of Islamic aqidah, basic principles and implementation of Islamic sharia, building Islamic morals and Islamic da'wah.</p> <p>This course is also equipped with a practicum that discusses the practical values and teachings of Islam in everyday life.</p>
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<p>Mandatory Reading:</p> <ol style="list-style-type: none"> 1. Al-Qur'an and Translations, Islamic Religious Education 2. Guidebook compiled by TIM PAI-IPB <p>Additional Reading:</p> <ol style="list-style-type: none"> 1. Faridz M. 1999. <i>Pokok-pokok Ajaran Islam</i>. Jakarta(ID): Penerbit Pustaka. 2. Ilyas Y. 1999. <i>Kuliah Akhlak</i>. Jakarta(ID): LIPPI. 3. Ilyas Y. 2002. <i>Kuliah Aqidah Islam</i>. Yogyakarta(ID): LPDI UMY. 4. Qardhawy Y. 1996. <i>Tauhid dan Fenomena Kemusyrikan</i>. Surabaya(ID): Pustaka Progresif. 5. Qardhawy Y. 1997. <i>Pengantar Kajian Islam</i>. Jakarta(ID): Pustaka Kautsar. 6. Shalih bin Fauzan. 1999. <i>Kitab Tauhid I</i>. Jakarta(ID): Darul Haq. 7. Yaqub H. 1996. <i>Etika Islam</i>. Bandung(ID): CV. Diponegoro.

IPB100-104-110 Religion Education

Module Name	Religion Education
Module level, if applicable	Beginner
Code, if applicable	IPB104
Subtitle, if applicable	-
Courses, if applicable	IPB104 Buddhist Education
Semester(s) in which the module is taught	1 st Semester
Person responsible for the module	Ir Hermawan Wana, MSi.
Lecturer	Ir Hermawan Wana, MSi.
Language	Indonesian
Relation to curriculum	Compulsory courses for Buddhist undergraduate students
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Students are able to rearrange the concept of God Almighty 2. Students are able to describe human nature and inner qualities regarding their roles and responsibilities in life 3. Students are able to provide arguments that they are part of the community and can play an active role in advancing their community 4. Students are able to compare the enactment of laws made by humans with universal laws 5. Students are able to examine the morality for attaining the highest happiness, in addition to samādhi and pañña 6. Students are able to integrate the role of science and Buddhism in everyday life 7. Students are able to abstract culture in Buddhism 8. Students are able to describe politics in the study of Buddhism 9. Students are able to create inter-religious harmony in the study of Buddhism
Content	In this course, students learn the concept of God Almighty, human nature and inner qualities regarding their roles and responsibilities in life, they are part of society and can play an active role in advancing their society. Students study morality to achieve the highest happiness, in addition to

	samādhi and pañña, study man-made laws with universal laws and integrate the role of science and Buddhism in daily life. Students learn culture, politics, and inter-religious harmony in Buddhist studies.
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : Assessed from the element / variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	White board, power point slide, microphone
Reading list	<ol style="list-style-type: none"> 1. Aryakumara. 2013. <i>Asoka</i>. Jakarta(ID): Dhammacitta Press. 2. Bodhi. 2015. <i>Anguttara Nikaya (Khotbah-Khotbah Numerikal Sang Buddha)</i>. Jakarta(ID): DhammaCitta Press. 3. Buddhagosa, Bhadantacariya. 1975. <i>The Path of Purification (Visudhi magga)</i>. Kandy Srilanka: Buddhist Publication Society. 4. David, Rhys. 1977. <i>Dialgues of The Buddha</i> Vol. I, II, III (Digha Nikaya I, II, III). London(GB): Pali Text Society. 5. David, Rhys. 1989. <i>Kindred Sayings</i> Vol. I, II, III, IV, V (Samyutta Nikaya). Oxford(GB): Pali Text Society. 6. Dhammika. 2006. <i>Maklumat Raja Asoka Insight</i>. Yogyakarta(ID): Vidyasena Production. 7. Dharmmananda, Sri. 2002. <i>Keyakinan Umat Buddha</i>. (Terjemahan Ida Kumiati). Jakarta(ID): Karaniya & Ehipassiko. 8. Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset Teknologi dan Pendidikan Tinggi. 2016. <i>Materi Terbuka Kesadaran Pajak untuk Perguruan Tinggi</i>. Jakarta(ID): DIKTI Materi Terbuka Kesadaran Pajak Dalam Pendidikan Tinggi. 9. Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset Teknologi dan Pendidikan Tinggi. 2016. <i>Pendidikan Agama Buddha untuk Perguruan Tinggi</i>. Jakarta(ID): DIKTI. 10. Hare. 1989. <i>Gradual Sayings</i> Vol. I, II, III, IV, V (Anguttara Nikaya). Oxford(GB): Pali Text Society. 11. Maurice Walshe. 2009. <i>Khotbah-khotbah Panjang Sang Buddha (Digha Nikaya)</i>. Jakarta(ID): DhammaCitta Press. 12. Mehm Tin Mon. 2013. <i>Karma Pencipta Sesungguhnya</i>. Jakarta(ID): Yayasan Hadaya Vatthu. 13. Nandasena Ratnapala. 1997. <i>Buddhist Democratic Political Theory and Practice (An Alternative Democracy for the 21st Century ?)</i>. Colombo(LK): Sarvodaya Vishva Lekha Publication. 14. Narada. 1998. <i>Sang Buddha dan Ajaran-Ajarannya</i> Jilid I & II. Jakarta(ID): Yayasan Dhammadipa Arama. 15. Nyanatiloka, Mahathera. 1970. <i>Hidup Bebas Bahagia</i>. Surabaya(ID): The Light of the Borobudur. 16. Siddhi Butr-Indr. 1979. <i>The Social Philosophy of Buddhism</i>. Bangkok(TH): Mahamangutarajaviyalaya Press. 17. Taniputera, Ivan. 2003. <i>Sains Modern dan Buddhisme</i>. Jakarta(ID): Yayasan Penerbit Karaniya. 18. Wahyono Mulyadi. 1995. <i>Sejarah Perkembangan Agama Buddha I</i>. Jakarta(ID): Direktorat Jenderal Bimbingan Masyarakat Hindu Buddha, Departemen Agama Buddha dan Universitas Terbuka. 19. Wijaya-Mukti, Krisnanda. 2003. <i>Wacana Buddha-Dharma</i>. Jakarta(ID): Yayasan Dharma Pembangunan bekerjasama dengan Ekayana Buddhist Centre. 20. Wowor, Corneles. 1991. <i>Pandangan Sosial Agama Buddha</i>. Jakarta(ID): Aryasuryacandra.

IPB100-104-110 Religion Education

Module Name	Religion Education
Module level, if applicable	Beginner
Code, if applicable	IPB110
Subtitle, if applicable	-
Courses, if applicable	IPB110 Confucian Education
Semester(s) in which the module is taught	1 st Semester
Person responsible for the module	
Lecturer	Team teaching
Language	Indonesian
Relation to curriculum	Compulsory courses for Confucian undergraduate students
Type of teaching	Lectures, responses, tutorials, seminars or equivalent, field practice, research, community service and/or other equivalent forms of learning
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Faithful to God Almighty and able to show a religious attitude 2. Upholding human values in carrying out tasks based on religion, morals and ethics 3. Contribute to improving the quality of life in society, nation, state and civilization based on Pancasila 4. Act as a proud citizen and love the homeland, have nationalism and a sense of responsibility to the country and nation 5. Appreciate the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others 6. Work together and have social sensitivity and concern for society and the environment 7. Obey the law and discipline in social and state life 8. Internalizing academic values, norms, and ethics 9. Demonstrate a responsible attitude towards work in their area of expertise independently 10. Internalize the spirit of independence, struggle, and entrepreneurship.
Content	The scriptures, the purpose of life, the activities that should be carried out in an effort to live life as a Junzi, how the creation of the universe and

humans and their relation to the nature of existence as humans, Godhead and faith in the Ru-Confucian religion, Prophet and Prophethood, Shenming and its relation to home worship, worship and religious holidays along with the basic values contained therein, which cannot be separated from studies based on the concepts of yin-yang, Tian Di Ren and history which are expected to encourage students to have faith and moral ethics that are applied in everyday life. -day because of his belief that Only Virtue pleases before TIAN. With this lecture, students understand that in order to achieve their true goals as human beings, a conscious and faith-filled effort is needed to apply the Religious and Philosophical values of the Ru-Confucian religion in their physical and spiritual lives.

Study and examination requirements and forms of examination

Cognitive : midterm exam, final exam, quizzes, assignments

Psychomotor : practice

Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort

Media employed

Book, white board, power point slide, microphone

Reading list

Mandatory Reading;

1. Si Shu Kitab Yang Empat, Matakin Solo. 2012
2. Tata Laksana Upacara Agama Khonghucu, Matakin Solo. 1984
3. Wu Jing Kitab Yang Lima, Matakin Solo. 1984
4. Xiao Jing Kitab Bakti - Matakin Solo. 1984

Additional Readings;

1. Nio Joe Lan. 2013. *Peradaban Tionghoa Selayang Pandang*. Jakarta(ID): PT. Gramedia Pustaka.
 2. Tjhie Tjay Ing Xs. 2010. *Panduan Pengajaran Dasar Agama Khonghucu. Matakin. Solo(ID)*.
 3. Tim Edukasi Perpajakan Direktorat Jendral Pajak Kementerian Keuangan Republik Indonesia. 2016. *Materi Terbuka Kesadaran Pajak untuk Perguruan Tinggi*. Jakarta(ID): Direktorat Jendral Pajak Kementerian Keuangan Republik Indonesia.
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2. IPB106 Indonesian Language

Module Name	Indonesian Language		
Module level, if applicable	Beginner		
Code, if applicable	IPB106		
Subtitle, if applicable	-		
Courses, if applicable	IPB106 Indonesian Language		
Semester(s) in which the module is taught	1 st Semester		
Person responsible for the module	Dr. Endang Sri Wahyuni, SS, M.Si		
Lecturer	Team teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Able to explain the concept of language, the history of the Indonesian language, the position of the Indonesian language, the functions of the Indonesian language 2. Able to explain and identify linguistic aspects, ranging from simple levels of spelling, vocabulary, sentences, paragraphs, to types of text 3. Able to correct language errors 4. Able to use the written and spoken variety of Indonesian in accordance with the rules 5. Mastering the skills and application of steps for writing scientific papers which include the pre-writing stage, writing stage, and editing stage 6. Able to do simple research and then compile it into a paper according to the field of science 7. Able to communicate verbally properly and correctly and able to present research results 		
Content	This course contains material that increases the sense of national love in the form of the history of the Indonesian language. Materials related to improving language skills in the form of writing effective sentences include spelling, word selection, and structure. Materials for reading and		

	writing skills are in the form of paragraph preparation techniques, text preparation, reading selection, critical thinking, and preparation of scientific papers. The material for oral language skills is in the form of oral presentation.
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Kamus Besar Bahasa Indonesia (KBBI) 2. Pedoman Ejaan Bahasa Indonesia yang Disempurnakan

3. IPB107 Introduction to Agricultural Sciences

Module Name	Introduction to Agricultural Sciences		
Module level, if applicable	Beginner		
Code, if applicable	IPB107		
Subtitle, if applicable	-		
Courses, if applicable	IPB107 Introduction to Agricultural Sciences		
Semester(s) in which the module is taught	1 st Semester		
Person responsible for the module	Prof. Dr. Ir. Hadi Susilo Arifin, M.S.		
Lecturer	Prof. Dr. Ir. Hadi Susilo Arifin, M.S. Prof. Dr. Ir. Kukuh Murtalaksono, M.S. Prof. Dr. Ir. Ahmad Sulaeman, M.S. Dr. Ir. Budi Setiawan, M.S. Prof. Dr. Ir. I. Komang Gede Wiryawan Prof. Dr. Ir. Didi Sopandie, M.Agr. Dr. Ir. Sugeng Santoso, M.Agr. Dr. drh. Ligaya ITA Tumbelaka, SpMP., M.Sc Dr. Ir. Tania June, M.Sc Dr. drh. Koekoeh Santoso		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After taking this course, students are able to explain agriculture in a broad sense and the supporting sciences		
Content	This course is designed and structured to take IPB University students to the world of agriculture in abroad sense		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	

	Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none">1. Nasution AH. 2010. Pengantar Ilmu Pertanian. IPB Press: Bogor2. Khomsan A, Wahyudi AT (Editor). 2015. Tantangan Generasi Muda Dalam Pertanian, Pangan, dan Energi, Pemikiran Guru Besar IPB. IPB Press: Bogor

4. MAT101 Fundamentals of Mathematics

Module Name	Fundamentals of Mathematics		
Module level, if applicable	Beginner		
Code, if applicable	MAT101		
Subtitle, if applicable	-		
Courses, if applicable	MAT101 Fundamentals of Mathematics		
Semester(s) in which the module is taught	1 st semester		
Person responsible for the module	Windiani Erliana, S.Si, M.Si.		
Lecturer	Team teaching from Department of Mathematic		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Able to explain basic mathematical concepts (interval, inequalities and absolute values; function; limit and continuity of function; function derivative; function integration; matrix; as well as a system of linear equations) 2. Able to use basic mathematical techniques to solve simple math problems 3. Able to apply basic mathematical concepts and techniques to solve applied problems 		
Content	This course discusses the basic concepts of mathematics which include concepts of inequality and absolute value, function and model, limit and continuous function, derivative, integral, matrix and system of linear equations with more emphasis on aspects of calculation.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	

Media employed	LCD projector, microphone, white board
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Reading list	<ol style="list-style-type: none">1. Stewart J. 2002. <i>Kalkulus</i>. Ed ke-4. Jilid 1. Ed, Susila IN, Gunawan H. Calculus. 4th Ed. Jakarta (ID): Penerbit Erlangga.2. Tim Penulis. 2017. <i>Diktat Kuliah Landasan Matematika</i>. Bogor (ID): Departemen Matematika FMIPA IPB.3. Varberg D, Purcell EJ, Rigdon SE. 2011. <i>Kalkulus</i>. Ed ke-9. Jilid 1. Susila IN, penerjemah. Jakarta(ID): Penerbit Erlangga
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Reading list

1. Chang R. 2003. *General Chemistry: The Essential Concepts*. Boston(US): McGraw Hill.
 2. Suchocki J. 2007. *Conceptual Chemistry: Understanding Our World of Atoms and Molecules*. Ed. Ke-3. San Fransisco(US): Pearson Benjamin Cummings.
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6. BIO100 Biology

Module Name	Biology		
Module level, if applicable	Beginner		
Code, if applicable	BIO100		
Subtitle, if applicable	-		
Courses, if applicable	BIO100 Biology		
Semester(s) in which the module is taught	1 st Semester		
Person responsible for the module	Biology Department Team Teaching		
Lecturer	Biology Department Team Teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Explaining the scope of biology, observe and explain the structure and metabolism of cells. 2. Observing and explaining the basic cellular reproduction and patterns of inheritance. 3. Observing and explaining the structure and expression of genes, and biotechnology. 4. Observing and explaining the diversity, structure and biological functions of organisms: monera, protists, fungi, plantae, animalia. 5. Observing and explaining the ecology: population, community, ecosystem and bioconservation. 		
Content	<p>This course explains the theories and basic principles of biology that form the basis for further courses in the major / department. The lecture begins by explaining the scope of biology and the origins of life, then proceeding to the Midterm Examination, lectures explaining the structure and function of biology at the cellular level, genetics and its application in biotechnology. In the next section until the Final Examination, the lecture explains about biodiversity and biological functions at the level of organisms (monera, protists, fungi, plantae, and animalia), population, community, ecosystem, and conservation biology. Examples and the application of each topic are given to help students</p>		

	understand basic principles and theories. This course is equipped with practicum as a support of theoretical knowledge provided in lectures.
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson. 2014. Campbell Biology.10th. Pearson Education, Inc 2. Neil A. Campbell, Jane B. Reece. 2008. Biology 8th. Pearson Benjamin Cummings: San Francisco.

7. EKO100 General Economics

Module Name	General Economics		
Module level, if applicable	Beginner		
Code, if applicable	EKO100		
Subtitle, if applicable	-		
Courses, if applicable	EKO100 General Economics		
Semester(s) in which the module is taught	1 st and 2 nd semester		
Person responsible for the module	Faculty of Economy and Management Team Teaching		
Lecturer	Faculty of Economy and Management Team Teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending this course, student is able to understand of economics as a branch of science, understand the behavior of households, companies and markets in economic decision making, understand macroeconomics, problems and the actual conditions of Indonesian macroeconomics		
Content	This course is designed to provide a general overview of Indonesian economics and economics		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		
Reading list	<ol style="list-style-type: none"> 1. Lipsey. R. G., P. O Steiner, and D. D. Purpis. 1987. Economics. Harper International Edition. 2. <i>Books for practical class:</i> 		

-
3. Penuntun Responsi Ekonomi Umum. 2013. Departemen Ilmu Ekonomi (IE), Fakultas Ekonomi dan Manajemen (FEM). IPB.
 4. Lipsey. R. G., P. O Steiner, and D. D. Purpis. 1987. Economics. Harper International Edition. 3
 5. Gregory, M. 2006. Principles of Economics (Pengantar Ekonomi Mikro) Edisi 3. Salemba Empat.
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8. IPB111 Pancasila Education

Module Name	Pancasila Education		
Module level, if applicable	Beginner		
Code, if applicable	IPB111		
Subtitle, if applicable	-		
Courses, if applicable	IPB111 Pancasila Education		
Semester(s) in which the module is taught	1 st semester		
Person responsible for the module	Dr. Ir. Didid Diapari, MS		
Lecturer	Pancasila Education Team Teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	Students understand and can describe the concept of citizenship as a whole in an effort to strengthen awareness of defending the country, strengthening citizen behavior, mastering the basic problems of national and state life, and being pro-active towards changes that occur so that they become professional scientists who have a sense of nationality and love for the homeland, democratic, civilized, become citizens who are competitive, disciplined and actively participate in building a peaceful life based on the Pancasila value.		
Content	This course is about Pancasila and its implementation, national identity, constitution, democracy, citizens, human rights, geopolitics, geostrategy, National Police, good governance, regional autonomy, and anti-corruption education.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		

Reading list

1. Herdiawanto H, Jumanta H, Hayati YS. 2010. *Cerdas Kritis dan Aktif Berwarganegara : Pendidikan Kewarganegaraan Untuk Perguruan Tinggi*. Jakarta(ID): Erlangga.
 2. Pendidikan Kewarganegaraan: Demokrasi, Hak Asasi Manusia, Masyarakat Madani. 2003. ICCE UIN dan Prenada Media.
 3. Rangkuti PA. 2007. *Membangun Kesadaran Bela Negara*. Bogor(ID): IPB Press.
 4. Setiadi EM. 2007. *Panduan Kuliah Pendidikan Pancasila untuk Perguruan Tinggi*. Jakarta(ID): Gramedia.
 5. Winarno. 2008. *Paradigma Baru Pendidikan Kewarganegaraan : Panduan Kuliah di Perguruan Tinggi*. Jakarta(ID): Sinar Grafika.
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9. IPB108 English

Module Name	English
Module level, if applicable	Beginner
Code, if applicable	IPB108
Subtitle, if applicable	-
Courses, if applicable	IPB108 English
Semester(s) in which the module is taught	1 st semester
Person responsible for the module	Dra. Tatie Soedewo M.A
Lecturer	English Team Teaching
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program
Type of teaching	Lecturer presentation, group discussion
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	1. Able to applying "reading skills" in understanding texts in English 2. Knowing the structure of language to support understanding of texts in English
Content	This course is designed and structured to guide IPB University students so they can face the era of globalization with sufficient English language. The topics discussed are knowledge of grammar and reading techniques that are very useful such as: skimming, scanning, guessing meanings from context, text organization and transferring information.
Study and examination requirements and forms of examination	Cognitive : midterm exam, final exam, quizzes, assignments Psychomotor : practice Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Abdulaziz, Helen Taylor, & Alfred D. Stover. 1980. Academic Challenges in Reading. Prentice-Hall, Inc. Englewood Cliffs, N.J.

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2. Anson M. Chris, Schwegler A. Robert. 2001. *The Longman Handbook for Writers and Readers*, An Imprint of Addison Wesley Longman, Inc.
 3. Dobbs, Carrie. 1989. *Reading for a Reason*. Prentice Hall Regents Englewood Cliffs, N.J.
 4. Feverstein, Tamar and Miriam S. 1995. *Enhancing Reading Comprehension in the Language Learning Classroom*. Alta Book Center Pub. San Francisco, California.
 5. Grellet, Francois. 1981. *A Practical Guide to Reading Comprehension Exercises*. Cambridge University Press.
 6. Hornby, A.S. 1991. *Oxford Advanced Learner's Dictionary*. Oxford UP.
 7. Karen Blanchard et.al. 1997. *For Your Information 3*. Longman.
 8. Kranhlee, Karl. 1976. *Reading Together: A Reading Activities Text*. St. Martin Press.
 9. Labarca. Angela and James M. Hendrickson. 1984. *Our Global Village*. Harcourt Brace Jovanovich, Inc.
 10. Latulippe, L.D. 1987. *Developing Academic Reading Skills*. Prentice Hall Regents, Englewood Cliffs, N.J.
 11. Maingay, S. 1983. *Making Sense of Reading: an Introduction to Reading Skills in English*. Australia Nelson.
 12. Marcelino, M. 1999. *Materials for Foundations of Academic Writing Course*. AMINEF, Jakarta.
 13. Mickulecky, Beatrice S. 2004. *More Reading Power, Reading for Pleasure, Comprehension Skills, Thinking Skills, Reading Faster*. Pearson Education, Inc.
 14. Oshima, Alice, and Ann Hogue. 1999. *Writing Academic English*. Longman.
 15. Praninkas, Jean. 1975. *Rapid Review of English Grammar*. Prentice Hall.
 16. Rowland, Black S. and Lisa Rosenthal. 1986. *Academic English and Study Skills for International Students*. Prentice Hall. N.J.
 17. Skykes, J.B. 1989. *The Concise Oxford Dictionary*. Oxford UP.
 18. The British Council. 1979. *Reading and Thinking: Exploring Functions*. Oxford UP.
 19. Torres G, Eunice. Smith L. Michael. *English for Fisheries Technology*. National Bookstore, Inc.
 20. Valerie Kay. 1985. *Biological Sciences "Developing Reading Skill in English"*. Pergamon Press.
 21. Woods, Enid Nolan and David Foll. 1986. *Penguin Advanced Reading Skills*. Penguin Book Ltd. England.
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10. IPB112 Sports and Arts

Module Name	Sports and Arts		
Module level, if applicable	Beginner		
Code, if applicable	IPB112		
Subtitle, if applicable	-		
Courses, if applicable	IPB112 Sports and Arts		
Semester(s) in which the module is taught	1 st semester		
Person responsible for the module	Sitti Sugiah		
Lecturer	Team teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Practical	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 2380 min (39.7 hours)
Credit points	1 SCH x 1.44 = 1.44 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Through sports activities, it is hoped that students will grow and develop in a healthy and fresh body, and can develop their personality to be more harmonious 2. As well as being able to contribute, especially through motion experiences so that as a whole they can grow and develop physical, spiritual, social, emotional, intellectual, moral, and spiritual elements 		
Content	Sports and art learning is an effort for lecturers and students to actualize all the potential of their activities as humans in the form of attitudes, actions and works that are given form, content and direction towards personal unity according to human ideals.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	Megaphone, ball, cone sport, timer		

Reading list

1. Diktat Kuliah Olahraga dan Seni
 2. Pendidikan Jasmani dan Kesehatan
 3. Pedoman tentang Senam Aerobik
 4. Pedoman Mengajar Atletik
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11. FIS100 Physics

Module Name	Physics		
Module level, if applicable	Beginner		
Code, if applicable	FIS100		
Subtitle, if applicable	-		
Courses, if applicable	FIS100 Physics		
Semester(s) in which the module is taught	1 st semester		
Person responsible for the module	Dr. Mersi Kurniati		
Lecturer	Physics Team teaching		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	Student is able to use various physical formulations in the scope of solving simple physics problems and applying them to other fields		
Content	This course is taught to provide students with insight into the scope of mechanics, vibration waves, dynamics, electricity, electromagnetism and modern physics as well as providing a basis that is suitable for students who need basic physics.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		
Reading list	<ol style="list-style-type: none"> 1. Cutnell KD, Johnson KW. 2013. Introduction to Physics. Wiley: Singapore 2. Wilson JD, Buffa AJ. 2000. College Physics, Fourth Edition, Prentice Hall: New Jersey 		

3. Beiser A. 1992. Modern Technical Physics, Sixth Edition.
Addison Wesley: Reading

12. KPM130 General Sociology

Module Name	General Sociology		
Module level, if applicable	Beginner		
Code, if applicable	KPM130		
Subtitle, if applicable	-		
Courses, if applicable	KPM130 General Sociology		
Semester(s) in which the module is taught	Odd or even Semester		
Person responsible for the module	SKPM Department Teaching Team		
Lecturer	Ir. Murdianto, M.S. Mahmudi Siwi, S.P., M.Si. Ir. Fredian Tonny, M.S.		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Students are able to explain sociological concepts and theories regarding interaction, social structure, social stratification, culture and social change 2. Students are able to identify social realities and social problems at the group, organizational, institutional, community, community, and global levels 3. Students are able to analyze social change based on the dimensions of power and authority, communication patterns, gender and development with qualitative and quantitative approaches 		
Content	This course explains the history and development of Sociology; Sociology as a Perspective; Social Interaction and Structure; Society and Culture; Social Institutions; Group; Organization and Bureaucracy; Social Stratification; Power and Authority; Communication Patterns, Community Forms and Ecological Adaptation Patterns; Gender and Development; and Social Change and Development		

Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Charon, J.M. 1980. <i>The Meaning of Sociology</i>. Alfred Publishing Co. Inc. America. 2. Calhoun, C., et.al. 1994. <i>Sociology</i> (6th edition). McGraw-Hill, Inc. USA. 3. Wibisono, Koento. 1982. <i>Arti Perkembangan Menurut Filsafat Positivisme Auguste Comte</i>. Yogyakarta: Gadjah Mada University Press. 4. Press. 5. Gillin, J.L. & J.P. Gillin, 1954. <i>Cultural Sociology</i> (3rd printing). New York: The Macmillan Co. 6. Maiolo, J., et.al., 1991. <i>Study Guide to Accompany Bassis, Gelles and Levine: Sociology An Introduction</i>. McGraw-Hill, Inc. USA. 7. Soekanto, S., 1990. <i>Sosiologi Suatu Pengantar</i>. Jakarta: Rajawali Press. 8. Geertz, C. 1976. <i>Agricultural Involution: process of ecological change in Indonesia</i>. Berkeley: University of California Press. 9. Herskovits, M.J. 1955. <i>Cultural Anthropology</i>. New York: Alfred A. Knopf. 10. Koentjaraningrat (Ed.). 1979. <i>Manusia dan Kebudayaan di Indonesia</i>. Jakarta: Penerbit Djambatan. 11. Kluckhohn, F.R. 1961. "Dominant and variant value-orientation" in: FR Cluckhohn & HA Murray (Eds.), <i>Personality in Nature, Society and Culture</i>. New York: Alfred A Knoff. 12. Redfield, R. 1956. <i>Peasant society and culture</i>. Chicago: University of Chicago Press. 13. Tan, M.G. 1973. "Masalah perencanaan penelitian" dalam Koentjaraningrat (Ed.), <i>Metode-metode Penelitian Masyarakat</i>. Jakarta: LIPI. 14. Dorn, J.A.A. van & C.J. Lammers. 1959. <i>Modern Sosiologie een sistematiscie inleiding</i>. Utrecht Antwerpen: Het Spectrum. 15. Koentjaraningrat. 1964. <i>Pengantar Antropologi</i>, Jakarta: Penerbit Universitas. 16. Koentjaraningrat . 1979. <i>Kebudayaan, Mentalitas dan Pembangunan</i>. Jakarta: Gramedia. 17. MacIver, R.M. & C.H. Page. 1957. <i>Society and Introductory Analysis</i>. New York: Rinehart and Company, Inc. 18. Merton, R.K. 1967. <i>Social Theory and Social Structure</i>. New York: The Free Press. Polak. 19. J.B.A.F.M. 1966. <i>Sosiologi: Suatu Buku Pengantar Ringkas</i>. Jakarta: Penerbit dan Balai Buku "Ichtiar". 20. Soemardjan, S. & S. Soemardi (Eds.). 1974. <i>Setangkai Bunga Sosiologi</i>. Jakarta: Yayasan Badan Penerbit Fakultas Ekonomi Universitas Indonesia. 21. Uphoff, N. 1993. "Grassroots Organizations and NGOs in Rural Development: Opportunities with Diminishing States and Expanding Markets." <i>World Development</i>, Vol 21(4): pp607-622. 22. Uphoff, N. 1986. <i>Local Institutional Development: An Analytical Sourcebook with Cases</i>. New York: Kumarian Press. 23. Bierstedt, R. 1982. <i>The Social Order</i>. Bombay: Tata McGraw Hill Publishing.

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24. Koentjaraningrat, 1979, "Isi konsep desa di Indonesia" dalam Koentjaraningrat (Ed.), Masyarakat Desa di Indonesia Masa Ini. Jakarta: Yayasan Penerbit Fakultas Ekonomi Universitas Indonesia.
 25. Merton, R.K. 1967. Social Theory and Social Structure. New York: The Free Press.
 26. Bassis, M.S., R.G. Jelles, and A. Levine, 1991, Sociology An Introduction, New York: Mc Graw Hill.
 27. Berelson, B. & G.A. Steiner. 1964. Human Behaviour. Harcourt: Brase & World.
 28. Etzioni, A.1982. Organisasi-organisasi Modern. Jakarta: UI Press.
 29. Himes (1976). The Study of Sociology An Introduction. Illinois: Scott, Foresman and Co.
 30. Schoorl, J.W., 1982. Modernisasi. Jakarta: Gramedia.
 31. Soekanto, S. 1983. Struktur Sosil Masyarakat. Jakarta: Gramedia.
 32. Weber, Max . 1974. The Theory of Social and Economic Organization. New York: The Free Press.
 33. Bierstedt, R. 1970. The Social Order An Introduction to Sociology. New York: McGraw Hill Book Co.
 34. Calhoun, C. et al. 1994. Sociology An Introduction. McGraw Hill, Inc.
 35. Sorokin, P.A. 1959. Social and Cultural Mobility. London: Collier-Macmillan Ltd.
 36. Wertheim, W.F. 1959. Indonesian Society in Transition A Study of Social Change. S'Gravenhage: W van Hoeve.
 37. Nisbet, R.A. 1993. The Sociological Tradition. London: Transaction Publishers.
 38. Mulyana, D. 2001. Ilmu Komunikasi: Suatu Pengantar. Bandung: Remaja Rosdakarya.
 39. Lerner, D. 1978. Memudarnya Masyarakat Tradisional. Yogyakarta: Penerbit Universitas Gadjah Mada.
 40. Wright, H. N. 1997. Komunikasi: Kunci Perkawinan Bahagia. Yogyakarta: Penerbit Gloria.
 41. Ada Konflik Mangrove (Kompas, Senin 9 Juni 2013)
 42. Proyek Kanal Banjir Bebaskan Jakarta dari Banjir ? (M Clara Wresti dan Iwan Santosa 25
 43. Petani Berhadapan dengan Kekuasaan (Sri Hartati Samhadi, Ahmad Arif, Maria Hartiningsih, Kompas, 11 April 2008)
 44. Bappenas 2004 Konferensi Lingkungan hidup stocholm, swedia, 1972
 45. Yulfita Raharjo. 2012. Sosialisasi PMK No. 93/PMK.02/2011 Bagi Eselon I dan II Bappenas. Jakarta: Bappenas
 46. Harper, C.L . 1989. Exploring Social Change. New Jersey: Prentice-Hall.
 47. Sztompka, P. 1993. The Sociology of Social Change. Oxford, Cambridge: Blackwell.
 48. Suwarsono & A.Y. So. 1991. Perubahan Sosial dan Pembangunan di Indonesia: Teori-teori Modernisasi, Dependensi dan Sistem Dunia. Jakarta: LP3ES.
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13. MSP111 Limnology

Module Name	Limnology
Module level, if applicable	Beginner
Code, if applicable	MSP111
Subtitle, if applicable	-
Courses, if applicable	MSP111 Limnology
Semester(s) in which the module is taught	2 nd Semester
Person responsible for the module	Dr. Majariana Krisanti, S.Pi, M.Si.
Lecturer	Dr. Ir. Niken T.M Pratiwi, M.Si.
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Total = 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class
Recommended prerequisites	-
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe the typology and characteristics of freshwater both flowing (lotic, from upstream to estuary [downstream/estuary] and inundated (lentic, natural, and artificial), covering aspects of Paleolimnology, physical aspects (morphometry, light, and temperature), chemical and biological aspects, utilization and management efforts.
Content	This course is taught to provide students with insight into the role of limnology, classification of inland waters (i.e. lake, river), morphometric, light, organic matter and nutrient, and aquatic biota (plankton, benthos, periphyton, plants, and decomposer).
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board

Reading list

1. Cole, G.A. 1983. Textbook of Limnology, 3rd ed (re Issued 1988). Waveland Press. Inc. Prospect Heights, Illinois. 401 p.
 2. Goldman, C.R. And A.J. Horne. 1983. Limnology. Mc.Graw-Hill International Book Company, Tokyo. 464 p.
 2. Golterman, 1978. Physiological Limnology. Elsevier Publishing Co., Amsterdam 489 p.
 3. Hakanson, L. 1981. A Manual of lake morphometry. Spinger-Verlag. Berlin. Heidelberg. Newyork. 73 p.
 4. Henderson – Sellers, B and H.R. Markland 1987. Decaying Lakes: The Origin and Control of Cultural Eutrophication. John Willeys and Sons. Cicester. New York. 254 p.
 5. Hynes, H.B.N. 1970. The Ecology of Running Waters. University of Toronto Press. Toronto, 555 p
 6. Wetzel, R.G. 1983. Limnology. 2nd Ed. W.B. Saunders Company. Philadelphia. 767 p
 7. Wetzel, R.G and B. Gopal. 1988. Limnology in Developing Countries. Vol 1 and 3. International Association of Theoretical and Applied Limnology.
 8. Puspita, L., E. Ratnawati, I.N.N. Suryadiputra, 2005 Lahan Basah Buatan di Indonesia, Wetlands International, xxi + 261. ISBN No: 979-99373-3-7
 9. Davies, J., Claridge G and Nirarita E., 1995. Wetlands Benefits: The Potential for Wetlands to Support and maintain Development. AWB Publication No 87.
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14. AGB100 Introduction to Entrepreneurships

Module Name	Introduction to Entrepreneurships		
Module level, if applicable	Beginner		
Code, if applicable	AGB100		
Subtitle, if applicable	-		
Courses, if applicable	AGB100 Introduction to Entrepreneurships		
Semester(s) in which the module is taught	1 st and 2 nd semester		
Person responsible for the module	Dr. Ir. Burhanuddin, M.M.		
Lecturer	Burhanuddin, Rachmat Pambudy, Lukman M Baga, Narni Farmayanti, Rachmat Yanuar, Yusalina, Harmini, Tintin Sarianti, Netti Tinaprila, Anna Fariyanti, Joko Purwono, Andriyono Kilat Adhi, Wahyu Budi Priatna, Suharno, Amzul Rifin, Suprehatin, Etriya, Eva Yolynda, Nia Rosiana, Feryanto, Tursina Andita Putri		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program		
Type of teaching	Lecturer presentation, discussion, talk show		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 2380 min (39.7 hours)
Credit points	1 SCH x 1.44 = 1.44 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	Students have new insights about entrepreneurial potential and are motivated to develop themselves and able to change the way of thinking in developing an entrepreneurial spirit		
Content	This course explains the role and importance of entrepreneurship, how to build dreams, development entrepreneurial motivation, entrepreneurial characteristics, discovery and development of entrepreneurial ideas and experience from business practitioners		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		

Reading list

1. Ciputra. 2009. *Ciputra Quantum Leap Entrepreneurship Mengubah Masa Depan Bangsa dan Masa Depan Anda*. Jakarta(ID): PT Elex Mediacomputindo.
 2. Drucker, Peter, F. 1991. *Inovasi dan Kewiraswastaan, Praktik dan Dasar-dasar*. Alih Bahasa oleh Rusjdi Naib. Penerbit Erlangga.
 3. Longenecker, Justin G. Carlos W. Moore, J. William Petty. 2000. *Kewirausahaan, Manajemen Usaha Kecil*. Salemba Empat.
 4. Wijayanto, Dian, Salim S. 2007. *The Secret Behind Your Dream : Dahsyatnya Kekuatan Impian yang Mempengaruhi Kesuksesan Anda*. Jakarta(ID): Sketsa Inti Media.
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15. FPK101 Introduction to Fisheries and Marine Sciences

Module Name	Introduction to Fisheries and Marine Sciences		
Module level, if applicable	Beginner		
Code, if applicable	FPK101		
Subtitle, if applicable	-		
Courses, if applicable	FPK101 Introduction to Fisheries and Marine Sciences		
Semester(s) in which the module is taught	2nd semester		
Person responsible for the module	Dr. Luky Adrianto, Prof. Dr. Joko Santoso		
Lecturer	Dr. Odang Cahrman (Lecturer team coordinator of BDP) Dr. Agustinus P. Samosir (Lecturer team coordinator of MSP) Dr. Wini Tri Laksani (Lecturer team coordinator of THP) Prof. Mulyono S. Basokoro (Lecturer team coordinator of PSP) Dr. I Wayan Nurjaya (Lecturer team coordinator of ITK)		
Language	Indonesian		
Relation to curriculum	Compulsory basic courses for undergraduate program in Faculty of Fisheries and Marine Sciences		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending this course, student is able to explain the science and technology of fisheries and marine resources, their use and management as well as the sustainability of fisheries and marine resources.		
Content	This course explains the science, technology and art (IPTEKS) of fisheries and marine resources, including the condition of resources, the environment, humans, their utilization and management, as well as the current issues of fisheries and marine in Indonesia and the World.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element/variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		

Reading list

1. Day, T. 1999. Oceans, Revised Edition. Facts on Files. 337 p
 2. Garrison, T. 2006. Essentials of Oceanography (Fifth Edition). Brooks/Cole Cengage Learning. Canada. 463 p
 3. Lalli, C.M. and T.R. Parsons. 2006. Biological Oceanography An Introduction. Elsevier. Amsterdam. 337 p
 4. Pinet, P. R. 2009. Invitation to Oceanography (Fifth Edition). Jones and Bartlett Publishers. USA. 609 p
 5. Tait, R.V. and F.A. Dipper, 1998. Elements of Marine Ecology (Fourth Edition). ButterworthHeinemann. 473 p
 6. OC/UNESCO, FAO, IMO, UNDP. 2011. A Blueprint for Ocean and Coastal Sustainability. IOC/UNESCO
 7. Von Brandt A. 1984. Fish Catching Methods of the World. England: Fishing News Books Ltd
 8. Kementerian Kelautan dan Perikanan. 2010. Kapal Penangkapan Ikan dan Alat Penangkapan Ikan. Jakarta.
 9. Ayodhya. 1981. Metode Penangkapan Ikan. Yayasan Dewi Sri. Bogor.
 10. FAO. 1982. Further Fishing Trials with Bottom Set Long Lines in Sri Lanka Bay of Bengal. Madras. India.
 11. Sainsbury J. 1996. Commercial Fishing Method an Introduction to Vessel and Gear. FAO Fishing News Books. England.
 12. Pillay TVR and Kutty MN. 2005. Aquaculture principles and practices, 2nd edition. Blackwell Publishing.
 13. Parker R. 2002. Aquaculture science. Delmar. USA.
 14. Royce WF. 1984. Introduction to the Practice of Fishery Science. Revised Ed. San Diego: Academic Press.
 15. The state of world fisheries and aquaculture, FAO. 2010
 16. Stickney, R.R. 2005. Aquaculture: An introduction text. CABI Publishing, Oxfordshire, UK. 265 p.
 17. Alasalvar C, Taylor T. 2002. Seafoods-Quality, Technology, and Nutraceutical Applications. Springer-Verlag Berlin Heidelberg New York.
 18. Bremmer HA. 2002. Safety and Quality Issues in Fish Processing. CRC Press. Woodhead Publishing Limited Cambridge England.
 19. Clucas, Word AR. 1996. Post Harvest Fisheries Development. A Guide to Handling, Preservation, Processing and Quality.
 20. Tanikawa. 1985. Marine Products in Japan. Koseisha Koseikaku. Tokyo.
 21. E. W. Lusas and L. W. Rooney. 2000. Snack Foods Processing. CRC Press LLC. Boca Raton, Florida. USA.
 22. Hall GM. 1992. Fish Processing Technology. Blackie Academic and Professional USA and Canada VCH Publishers, Inc. New York.
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16. ITK221 General Oceanography

Module Name	General Oceanography									
Module level, if applicable	Beginner									
Code, if applicable	ITK221									
Subtitle, if applicable	-									
Courses, if applicable	ITK221 General Oceanography									
Semester(s) in which the module is taught	3 rd Semester									
Person responsible for the module	Dr. Ir. I Wayan Nurjaya, M.Sc.									
Lecturer	<ol style="list-style-type: none"> 1. Dr. Ir. I Wayan Nurjaya, M.Sc. 2. Prof. Dr. Ir. Mulia Purba, M.Sc. 3. Dr. Ir. Tri Prartono, M.Sc. 4. Dr. Ir. Nyoman M.N. Natih, M.Si. 5. Dr. Alan Frendy Koropitan, S.Pi, M.Si. 6. Dr. Ir. Yuli Naulita, M.Si. 7. Dr. Ir Agus S. Atmadipoera, DESS 8. M. Tri Hartanto, S.Pi, M.Si. 									
Language	Indonesian									
Relation to curriculum	Basic Courses for undergraduate program in Faculty of Fisheries and Marine Sciences									
Type of teaching	Lecturer presentation, discussion									
Workload	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Class</td> <td style="width: 40%;">: 2 × 170 min × 14 meetings</td> <td style="width: 30%;">= 4760 min</td> </tr> <tr> <td>Practical class</td> <td>: 1 × 170 min × 14 meetings</td> <td>= 2380 min</td> </tr> <tr> <td>Total</td> <td></td> <td>= 7140 min (119 hours)</td> </tr> </table>	Class	: 2 × 170 min × 14 meetings	= 4760 min	Practical class	: 1 × 170 min × 14 meetings	= 2380 min	Total		= 7140 min (119 hours)
Class	: 2 × 170 min × 14 meetings	= 4760 min								
Practical class	: 1 × 170 min × 14 meetings	= 2380 min								
Total		= 7140 min (119 hours)								
Credit points	3 SCH x 1.44 = 4.32 ECTS									
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 									
Recommended prerequisites	-									
Module objectives/intended learning outcomes	Student is able to explain the general description of the sea and the processes that occur geologically, physically, chemically, biologically and the ocean life.									
Content	This course provides the introduction to nature of ocean waters which includes the description of seabed, the physical, chemical and biological nature of sea water, and productivity in the sea.									
Study and examination requirements and forms of examination	Cognitive : midterm exam, final exam, quizzes, assignments Psychomotor : practice									

	Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white boar
Reading list	<ol style="list-style-type: none"> 1. Garrison T. 2011. Essentials of Oceanography. 6th Edition. USA: Brooks/Cole CENGAGE Learning. 2. Pinet PR. 2009. Invitation to Oceanography. 5th Edition. Sudbury, Massachusetts: Jones and Bartlett Publishers. 3. Sverdrup KA, Duxbury AB, Duxbury AC. 2006. Fundamentals of Oceanography. 5th Edition. New York: Mc Graw Hill. 4. Pipkin, B.W., D.S. Garstline, R.E. Casey and D.E. Hammond. 1977. Laboratory Exercises in Oceanography. (Second ed.). W.H. Freeman and Company. 257 p 5. Poche, D.J., W.P. Roberts and J.E. Dendinger. 1979. Oceanography Exercise (Revised Ed.). Burgess Publishing Company. 129 p 6. Schlitzer, R. 2005. User Guide for Ocean data View. Multi- Platform Version 3.1. http://www.awi-bremerhaven.de/GEO/ODV. 62 p 7. Parson, T.R., Y. Maita and C.M. Lalli, 1984. A Manual of Chemical and Biological Methods for Seawater Analysis, Pergamon Press, Oxford

17. STK211 Statistics

Module Name	Statistics
Module level, if applicable	Beginner
Code, if applicable	STK211
Subtitle, if applicable	-
Courses, if applicable	STK211 Statistics
Semester(s) in which the module is taught	4 th Semester
Person responsible for the module	Prof. Dr. Mennofatria Boer
Lecturer	1. Prof. Dr. Mennofatria Boer 2. Dr. Rahmat Kurnia
Language	Indonesian
Relation to curriculum	Basic courses for undergraduate program in Faculty of Fisheries and Marine Sciences
Type of teaching	Lecturer presentation, discussion
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Able to formulate problems and compile efficient data collection designs and apply them in the form of simple surveys and standardized trials (full factorial, orthogonal) in accordance with the context of the problem 2. Able to manage and analyze data using statistical techniques sequentially with the help of statistical software, as well as translating the results of the analysis in accordance with the context. 3. Able to present various analytical results in a form that is easily understood by users. 4. Mastering the basic principles of trials, experimental design, hypothesis testing and data analysis in the application of data collection and analysis design. 5. Able to communicate and interact with practitioners in quantitative applied fields and full responsibility in carrying out the work in environment

Content	<p>This course explains the basic principles of statistical methods and some simple analytical methods that can be applied to various applied fields, such as Agriculture, Biology, Social Sciences, Business, and so on.</p> <p>This course also forms the basis for further statistical subjects such as Categorical Data Analysis, Regression Analysis, Experimental Design, Quality Control Statistics, and Time Series Analysis.</p> <p>The topics in this course are statistical descriptions, opportunities, principles for estimating and testing hypotheses, estimating and testing hypotheses about proportions, estimating and testing hypotheses about mean values, correlations, simple linear regression, and contingency tables.</p>
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Agresti A, Franklin CA, Klingenberg B. 2018. Statistics The Art of Science and Learning from Data. 4th Edition. Harlow: Pearson. 2. Mendenhall W, Beaver RJ, Beaver BM. 2013. Introduction to Probability and Statistics. 14th Edition. CENGAGE Learning.

	Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Alkaya, E, Demirer, G.N., 2016. Minimizing and adding value to seafood processing wastes. <i>Food and Bioproducts Processing</i>, 10:195-202 2. Ioannis S. Boziaris. 2014. <i>Seafood Processing: Technology, quality and Safety</i>. Wiley Blackwell. UK 3. Alasalvar C, Taylor T. 2002. <i>Seafoods-Quality, Technology, and Nutraceutical Applications</i>. Springer-Herlag Berlin Heidelberg New York. 4. Beneman, J.R. (1990) in: <i>Algal Biotechnology</i>. Eds : Cresswell, R.C. et al. P: 319-337. 5. Beneman J R. (2000) Hydrogen production by microalgae. <i>J. Applied Phycology</i> 12, 291-300. 6. Bremmer HA. 2002. <i>Safety and Quality Issues in Fish Processing</i>. CRC Press. Woodhead Publishing Limited Cambridge England. 7. Clucas, I.J. 1981. <i>Fish Handling, Preservation and Processing in the Tropics, Part 1</i>. Tropical product Institute, London. 8. Clucas, Word AR. 1996. <i>Post Harvest Fisheries Development. A Guide to Handling, Preservation, Processing and Quality</i>. 9. Faulkner, D.J. (1995 - 2004) <i>Marine Natural Product</i>. Natural Product Report. The Royal Society of Chemistry. 10. Haard N F and Simpson B K. Marcel Dekker (editors). 2000 <i>Seafood Enzymes</i>. New York. (681p). 11. Hall GM. 1992. <i>Fish Processing Technology</i>. Blackie Academic and Professional USA and Canada VCH Publishers, Inc. New York. 12. Ghirardi ML, Zhang L, Lee JW, Flynn T, Seibert M, Greenbaum E and Melis A. (2000) Microalgae: a green source of renewable energy. <i>Trends in Biotechnology</i> 18, 506-511. 13. Hardjito (2000) <i>Proceeding of The International Symposium on Marine Biotechnology PKSPL, IPB</i> 14. Huss H.H. 1995. <i>Quality and Quality Changes in Fresh Fish</i>. FAO. Rome. 15. Keller S. (editor). 1990. <i>Making Profits out of Seafood Wastes.: Alaska Sea Grant College Program, Anchorage</i>. 16. <i>Kumpulan Hasil Penelitian Pasca Panen Perikanan. Buku I dan II</i>. 1988. Balai Penelitian Perikanan, Jakarta. 17. Luten, J B, T. Borresen, and J. Oehlenschlager. 1997. <i>Seafood from Producer to Consumer, Integrated Approach to Quality</i>. Elsevier. 18. Martin A M. Chapman and Hall, London (editor). 1994. <i>Fisheries Processing Biotechnology Application</i>. 19. Minocha, S.C. 1999. Genetic engineering of marine macroalgae: current status and future perspectives. <i>World Aquaculture</i> 30: 29-30, 57. 20. National Academy of Science (2004). <i>Marine Biotechnology in the Twenty-First Century: Problems, Promise, Products</i>. National Academy Press, Washinton, D.C. USA. 21. Okuzumi M., Fujii T. 2000. <i>Nutritional and Functional Properties of Squid and Cuttlefish</i>. National Cooperative Association of Squid Processors. 22. Park JW and MT Morrissey. 2000. <i>Surimi and Surimi Seafood</i>. Marcel Dekker Inc., New York. 23. Stansby, M. E. 1963. <i>Industrial Fishery Technology</i>. Reinhold publishing, Corporation, New York. 24. Trilaksani W., Wahyuni M. 2004. <i>An Overview of Fermented fish Product in Indonesia. Proceeding of JSPS-DGHE International</i>

Workshop on Processing Technology of Fisheries Products Vol. 18.
March 2004.

25. Torry advisory Note No. 1- 59. Torry Research Station. Ministry of Agriculture, Fishery and food. Aberdeen. England.
 26. Voigt M N and Botta JR (editors). 1990. Advances in Fisheries Technology and Biotechnology for Increased Profitability: Technomic Publishing, Lancaster. (566 p).
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19. PSP212 Fishing Methods

Module Name	Fishing Methods									
Module level, if applicable	Beginner									
Code, if applicable	PSP212									
Subtitle, if applicable	-									
Courses, if applicable	PSP212 Fishing Methods									
Semester(s) in which the module is taught	3 rd Semester									
Person responsible for the module	Prof. Dr. Ir. Mulyono S. Baskoro, M.Sc									
Lecturer	<ol style="list-style-type: none"> 1. Dr. Roza Yusfiandayani, S.Pi 2. Prof. Dr. Ir. Ari Purbayanto, M.Sc 3. Dr. Ir. M. Fedi A. Sondita, M.Sc 4. Dr. Sulaeman Martasuganda, B.Sc, M.Sc 5. Dr. Ir. Ronny I. Wahyu, M.Phil 6. Dr. Ir. Wazir Mawardi M.Si 7. Dr. Ir. Zulkarnain, M.Si 8. Dr. Mochammad Riyanto, S.Pi, M.Si 9. Dr. Am Azbas Taurusman, S.Pi, M.Si 10. Dr. Ir. M. Imron, M.Si 									
Language	Indonesian									
Relation to curriculum	Compulsory Courses for undergraduate program in Faculty of Fisheries and Marine Sciences									
Type of teaching	Lecturer presentation, discussion									
Workload	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Class</td> <td style="width: 40%;">: 2 × 170 min × 14 meetings</td> <td style="width: 30%;">= 4760 min</td> </tr> <tr> <td>Practical class</td> <td>: 1 × 170 min × 14 meetings</td> <td>= 2380 min</td> </tr> <tr> <td>Total</td> <td></td> <td>= 7140 min (119 hours)</td> </tr> </table>	Class	: 2 × 170 min × 14 meetings	= 4760 min	Practical class	: 1 × 170 min × 14 meetings	= 2380 min	Total		= 7140 min (119 hours)
Class	: 2 × 170 min × 14 meetings	= 4760 min								
Practical class	: 1 × 170 min × 14 meetings	= 2380 min								
Total		= 7140 min (119 hours)								
Credit points	3 SCH x 1.44 = 4.32 ECTS									
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 									
Recommended prerequisites	-									
Module objectives/intended learning outcomes	Students understand and be able to apply aspects of fishing methods related to the environment of fish behavior and fishing ground in relation to the development of tools and technology for environmentally friendly fishing.									
Content	This course explains the classification of fishing methods based on the classification of A. Von Brandt and Indonesian Fisheries Statistics Classification which consists of the first methods of fishing, then simple tools or gear for fishing, principles of fishing methods based on their type and habitat, ways fishing with anesthesia and using various types of trap equipment, target fish species, fishing grounds, understanding of the use									

of certain types of fish behavior that come out of the water in certain circumstances in special fishing gear, and bag-shaped fishing gear that has vertical openings, understanding of the fishing gear being dragged, the type of target fish and fishing area, understanding of trawl and its types, purse seine and its types, as well as the target fish species and fishing area, understanding the method of the fishing gear by encircling the fish and its types, as well as target species, understanding the fishing method by dragging fish and using lift nets in fishing, understanding the types of gear and how to catch fish with gear that is dropped vertically down and how to catch fish with trap gear, understanding types of tools and methods of catching fish with entangled gear and how to harvest waters that are relatively modern in nature.

All this knowledge is needed in developing environmentally friendly fishing technology.

Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Ayodhya A.U. 1981. Metode Penangkapan Ikan. Bogor : Yayasan Dewi Sri. 2. Baskoro, M.S dan Roza Y. 2015. Metode Penangkapan Ikan (Buku Ajar). Bogor : Departemen PSP, FPIK- IPB. 3. Ben – Yami, M. 1987. Fishing with Light. Published by Arrangement with the Agrimiture Organization of the United Nation. Farnham, Surrey England, Fishing News Book Ltd. 4. FAO. 1995. Code of Conduct for Responsible Fisheries. Rome, Food and Agriculture Organization of the United Nations. 5. Nomura, M. and Yamazaki, 1977. Fishing Techniques I. Tokyo, Japan. 6. Nomura, M., 1981. Fishing Techniques II. Tokyo, Japan. 7. Nybakken. J.W 1992. Biologi Laut Suatu Pendekatan Ekologis. (alih bahasa HM Eidman, Koesbiono, Dietrich Geoffrey Bengen, Malikusworo) 8. Pane, A.B. 2000. Bahan Kuliah Bioteknologi Pemanfaatan Sumberdaya Ikan. FPIK IPB, Bogor. 9. Prado, J. 1990. Fishermen’s Workbook. England, Fishing News Books. 10. Royce, W.E. 1996. Fishery science (revised edition). Academic press, London. 11. Sadhori, S.N, 1985. Teknik Penangkapan Ikan, Keterampilan Perikanan. Bandung : Penerbit Angkasa. 12. Sainsbury, J. C. 1986. Commercial Fishing Method. An Introduction to vessel and gears. England, Fishing News Book, Ltd. 13. von Brandt, A 1984. Fish Catching Methods of the World. England: Fishing News Books Ltd. 14. von Brandt, A 2005. Fish Catching Methods of the World. Fourth Edition. Blackwell Publishing Ltd. 15. Subani, W dan Barus H.R. 1989. Alat Penangkapan Ikan dan Udang Laut di Indonesia, Jurnal Penelitian Perikanan Laut (edisi khusus) no. 50. Jakarta : Balai Penelitian Perikanan Laut. Departemen Pertanian.

16. Martasuganda. S. 2002. Set Net (Teichi ami), Serial Teknologi Penangkapan Ikan Berwawasan Lingkungan. Bogor : Jurusan PSP FPIK – IPB.

20. BDP200 Fundamental of Aquaculture

Module Name	Fundamental of Aquaculture		
Module level, if applicable	Beginner		
Code, if applicable	BDP200		
Subtitle, if applicable	-		
Courses, if applicable	BDP200 Fundamental of Aquaculture		
Semester(s) in which the module is taught	3 rd Semester		
Person responsible for the module	Prof. Dr. M. Agus Suprayudi		
Lecturer	Team Teaching from Department of Aquaculture		
Language	Indonesian		
Relation to curriculum	Basic Courses for undergraduate program in Faculty of Fisheries and Marine Sciences		
Type of teaching	Lecturer presentation, discussion, group discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After taking this course, student is able to explain the components of aquaculture and the basic principles of aquaculture production.		
Content	Fundamental of Aquaculture course provides the explanation of the aquaculture components such as fish, water, containers and feed; and the principles that underlying the increase in aquaculture production.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		
Reading list	Effendi, I. 2000. Pengantar Akuakultur. Relevant Journals/Publications		

21. KPM210 Principles of Communication

Module Name	Principles of Communication									
Module level, if applicable	Beginner									
Code, if applicable	KPM210									
Subtitle, if applicable	-									
Courses, if applicable	KPM210 Principles of Communication									
Semester(s) in which the module is taught	5 th Semester									
Person responsible for the module	Dr. Ir. Ninuk Purnaningsih, MSi (NPS)									
Lecturer	<ol style="list-style-type: none"> 1. Prof. Dr.Ir. Sumardjo, MS. 2. Prof. Dr. Ir. Pudji Muljono, MSi 3. Dr. Ir. Amiruddin Saleh, MS 4. Dr. Ir. Anna Fatchiya, MSi 5. Asri Sulistiawati, SP.MSi 6. Dr.Ir. Djuara P Lubis, MS 7. Dr. Dwi Retno Hapsari, SP.MSi 8. Dr. Ir. Dwi Sadono, MSi 9. Ir. Hadiyanto, MS 10. Dr. Ir. Sarwititi Sarwoprasodjo, MS 11. Dr. Ir. Siti Amanah, MSc 12. Ir. Sutisna Riyanto, MSi 									
Language	Indonesian									
Relation to curriculum	Basic Courses for undergraduate program in Faculty of Fisheries and Marine Sciences									
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning									
Workload	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Class</td> <td style="width: 40%;">: 2 × 170 min × 14 meetings</td> <td style="width: 30%;">= 4760 min</td> </tr> <tr> <td>Practical class</td> <td>: 1 × 170 min × 14 meetings</td> <td>= 2380 min</td> </tr> <tr> <td>Total</td> <td></td> <td>= 7140 min (119 hours)</td> </tr> </table>	Class	: 2 × 170 min × 14 meetings	= 4760 min	Practical class	: 1 × 170 min × 14 meetings	= 2380 min	Total		= 7140 min (119 hours)
Class	: 2 × 170 min × 14 meetings	= 4760 min								
Practical class	: 1 × 170 min × 14 meetings	= 2380 min								
Total		= 7140 min (119 hours)								
Credit points	3 SCH x 1.44 = 4.32 ECTS									
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 									
Recommended prerequisites	KPM130 General Sociology									
Module objectives/intended learning outcomes	After attending this course students can explain the importance of communication in development and social change, Development issues, the definition of development communication concepts, the roles and competencies of development communicators, the core values of development communication, development communication media, domains and the communication profession development.									

Content	This course provides students to discuss the importance of communication in development and social change, development issues, the definition of development communication concepts, the roles and competencies of development communicators, the core values of development communication, development communication media, domains and professions communication development.
Study and examination requirements and forms of examination	<p>Cognitive : midterm exam, final exam, quizzes, assignments</p> <p>Psychomotor : practice</p> <p>Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board

22. MSP222 Aquatic Invertebrates

Module Name	Aquatic Invertebrates		
Module level, if applicable	Beginner		
Code, if applicable	MSP222		
Subtitle, if applicable	-		
Courses, if applicable	MSP222 Aquatic Invertebrates		
Semester(s) in which the module is taught	2 nd Semester		
Person responsible for the module	Prof. Dr. Ir. Djamar Tumpal F. Lumban Batu, M.Agr		
Lecturer	1. Prof. Dr. Ir. Sulistiono, M.Sc 2. Ir. Agustinus M. Samosir, M.Phil		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	Students are able to understand and explain general classification, biology (which includes descriptions of morphology, anatomy, digestive system, reproduction, life cycle, integration, blood circulation, respiration, etc.), the relationship between existence and habitat, and the economic significance of several types of aquatic invertebrate animals.		
Content	This course discusses the structure and role of aquatic invertebrates in fishery resources, as well as functions of organs in the reproduction and growth of aquatic invertebrates.		
Study and examination requirements and forms of examination	Cognitive	: midterm exam, final exam, quizzes, assignments	
	Psychomotor	: practice	
	Affective	: assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort	
Media employed	LCD projector, microphone, white board		

Reading list

1. Barnes, R.D. 1974. Invertebrate Zoology. 3rd ed. W. B. Saunders Company. Philadelphia.
 2. Barnes, S.K, P. Callow and P.J.W. Olive. 1998 & 1993. The Invertebrate a New Synthesis. Blackwell Scientific Publications. London
 3. Hyman, L.H. 1940, 1951 & 1952. The Invertebrates: Protozoa Through Ctenopora. Vol. I,II & III. McGraw-Hill Book Company. New York.
 4. Kaestner, A. 1967, 1968 & 1970. The Invertebrates. Vol. 1-6. McGraw-Hill Book Company. New York.
 5. Pennak, R.W. 1964, 1978 & 1989. Collegiate Dictionary of Zoology. The Royal Press Company. New York.
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23. MSP221 Aquatic Ecology

Module Name	Aquatic Ecology									
Module level, if applicable	Beginner									
Code, if applicable	MSP221									
Subtitle, if applicable	-									
Courses, if applicable	MSP221 Aquatic Ecology									
Semester(s) in which the module is taught	3 rd Semester									
Person responsible for the module	Dr. Charles PH Simanjuntak, S.Pi., M.Si.									
Lecturer	<ol style="list-style-type: none"> 1. Prof. M.F. Rahardjo 2. Prof. Djamar TF Lumban Batu 3. Prof. Ario Damar 4. Prof. Etty Riani 5. Dr. Ir. Fredinan Yulianda, M.Sc. 									
Language	Indonesian									
Relation to curriculum	Compulsory Courses for undergraduate program in Aquatic Resources Management									
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion									
Workload	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Class</td> <td style="width: 40%;">: 2 × 170 min × 14 meetings</td> <td style="width: 30%;">= 4760 min</td> </tr> <tr> <td>Practical class</td> <td>: 1 × 170 min × 14 meetings</td> <td>= 2380 min</td> </tr> <tr> <td>Total</td> <td></td> <td>= 7140 min (119 hours)</td> </tr> </table>	Class	: 2 × 170 min × 14 meetings	= 4760 min	Practical class	: 1 × 170 min × 14 meetings	= 2380 min	Total		= 7140 min (119 hours)
Class	: 2 × 170 min × 14 meetings	= 4760 min								
Practical class	: 1 × 170 min × 14 meetings	= 2380 min								
Total		= 7140 min (119 hours)								
Credit points	3 SCH x 1.44 = 4.32 ECTS									
Requirements according to the examination regulations	<ol style="list-style-type: none"> 1. Registered in this course 2. Minimum 80% attendance in lecture class 3. 100% attendance in practical class 									
Recommended prerequisites	-									
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain the basic concepts of aquatic ecology which includes populations, communities, ecosystems, and processes as well as their interrelationships and roles in the fisheries and marine sector.									
Content	The Aquatic Ecology course is taught to provide students with insight into ecological processes in the aquatic environment (energy flow, material cycles, water limiting factors); organizational structure of aquatic organisms (species, population, and community); inland water ecosystems (rivers, swamps, lakes), estuarine, coastal and marine waters (seagrass, mangroves, coral reefs), ecosystem development, pollution, global climate change, biodiversity and conservation).									
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice									

	Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Barnes RSK & Mann KH. 1991. Fundamental of Aquatic Ecology, 2nd Edition. Blackwell Science Ltd. 2. Begon M, Townsend CR, Harper JL. 2006. Ecology: From Individuals to Ecosystems. Fourth edition. Blackwell Publishing Ltd. Oxford. 3. Boaden PJS & Seed R. 1985. An Introduction to Coastal Ecology. Chapman & Hall. 4. Brower JE, Zar JH, von Ende CN.1990. Field and Laboratory Methods for General Ecology. 3rd Edition. Wm. C. Brown Publishers, Dubuque 5. Castro P & Huber ME. 2016. Marine Biology, Tenth Edition. McGraw-Hill Education. 6. Dodds WK and Whiles MR. 2010. Freshwater Ecology: Concepts and Environmental Applications of Limnology. Academic Press. 7. Dudgeon D (eds.). 2008. Tropical Stream Ecology. First edition. Academic Press. 8. Giller PS. 1984 Community Structure and the Niche. Chapman and Hall, London 9. Krebs, C.J. 1999. Ecological Methodology, 2nd ed. Benjamin Cummings, Menlo Park. 10. Mitra A & Zaman S. 2016. Basics of Marine and Estuarine Ecology. Springer India. 11. Nybaken JW, Bertness MD, 2005 Marine biology: an ecological approach. Sixth edition. Pearson Education, Inc., San Francisco 12. Rahardjo MF, Simanjuntak CPH, Asriansyah A. 2020. Panduan Praktikum Ekologi Perairan. Edisi Ketiga. IPB Press. <p>Southwood TRE, Henderson PA. 2000. Ecological Methodology, 3rd edition, Blackwell Science Ltd. London.</p>

24. MSP223 Ichthyology

Module Name	Ichthyology
Module level, if applicable	Beginner
Code, if applicable	MSP223
Subtitle, if applicable	-
Courses, if applicable	MSP223 Ichthyology
Semester(s) in which the module is taught	3 rd Semester
Person responsible for the module	Prof. Dr. Ir. Sulistiono, MSc
Lecturer	1. Prof. Dr. Ir. Sulistiono, MSc 2. Prof. Dr. Ir. Ridwan Affandi, DEA 3. Prof. Dr. Ir. M.F Rahardjo, DEA 4. Dr. Charles P. H. Simanjuntak, S.Pi, M.Si 5. Dr. Ir. M. Mukhlis Kamal. M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in this course 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	Student is able to explain the fish species, classification, morphology, anatomy, identification, distribution of fish, and its applications in fisheries and marine
Content	This course explains the classification, morphology, anatomy, identification, distribution of fish, especially geographical and ecological in Indonesia, the introduction of several fish species that are important in fisheries, and fish diversity.
Study and examination requirements and forms of examination	Cognitive : midterm exam, final exam, quizzes, assignments Psychomotor : practice Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort

Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Affandi, R, Sjafei DS, Rahardjo, MF, Sulistiono. Pedoman Praktikum Iktiologi. PAU Ilmu Hayati - IPB. 2. Moyle, PB & Cech, JJ. Jr. 1988. Fishes: an introduction to ichthyology. Prentice Hall, Englewood Cliff, N Jersey. 3. Rahardjo, MF, Sjafei, DS, Affandi R, Sulistiono. 2011. Iktiologi. CV Lubuk Agung, Bandung. 4. Sjafei, DS, Rahardjo, MF, Affandi, R, Brojo M. 1989. Sistematika Ikan. PAU Ilmu Hayati - IPB. 5. Saanin, H. 1984. Taksonomi dan kunci identifikasi ikan. Vol. 1 dan 2, Bina Cipta, Bandung.

25. MSP232 Fishery Resources

Module Name	Fishery Resources
Module level, if applicable	Beginner
Code, if applicable	MSP232
Subtitle, if applicable	-
Courses, if applicable	MSP232 Fishery Resources
Semester(s) in which the module is taught	3 rd Semester
Person responsible for the module	Dr. Ir. Zairion, M.Sc
Lecturer	1. Dr. Yonvitner, S.Pi, M.Si 2. Dr. Ali Mashar, S.Pi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Total = 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course
Recommended prerequisites	-
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain the characteristics of types/groups of fishery resource commodities that have economic value from various habitats and its potential to be developed to support sustainable use management.
Content	This course discusses the characteristics of types/groups of fishery resource commodities that have economic value and its potential development for various purposes to support sustainable use management.
Study and examination requirements and forms of examination	Cognitive : midterm exam, final exam, quizzes, assignments Psychomotor : practice Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. FAO. 1997. The State of World Fishery Resources, Marine Fisheries. FAO Fisheries Circular, 920. 173 p.

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2. FAO. 1999. The State of World Fishery Resources, Inland Fisheries. FAO Fisheries Circular, 942. 53 p.
 3. Kootelat, M., A.J. Whitten, S. N. Kartikasari, S. Wirjoatmodjo. 1993. Ikan Air Tawar Indonesia Bagian Barat dan Sulawesi.
 4. Royce, W.F. 1984. Introduction to the Practice of Fisheries Sciences.
 5. Widodo, J., K.A. Azis, B.E. Priyono, G.H. Tampubolon, N. Naamin, dan A. Jamali (Editor). 1998. Potensi dan Penyebaran Sumberdaya Ikan Laut di Indonesia. KOMNAS PENGKAJIAN STOK SUMBERDAYA IKAN LAUT, LIPI. Jakarta.
 6. King, M. 1995. Fisheries Biology, Assessment & Management. Fishing News Books, Blackwell Science Ltd.
 7. DAHURI, R. 2003. Keanekaragaman Hayati Laut: Aset Pembangunan Berkelanjutan Indonesia.
 8. FAO. 2001. The living marine resources of the Western Central Pacific. Volume 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals. FAO Species Identification Guide for Fishery Purposes.
 9. Nuitja INS. 1992. Biologi dan Ekologi Pelestarian Penyu Laut. IPB Press. Bogor
 10. FAO. 1993. Marine mammals of the World. FAO Species Identification Guide for Fishery Purposes.
 11. FAO. 1998. The living marine resources of the Western Central Pacific. Volume 1. Seaweeds, corals, bivalves and gastropods. FAO Species Identification Guide for Fishery Purposes.
 12. Carpenter, K.E. and V.H. Niem (Editor). 1998. The Living Marine Resources of The Western Central Pacific, Vol. 2: Cephalopods, Crustacean, holothurians, and Sharks. FAO Species Identification Field Guide for Fishery Purposes, FAO-UN. Rome. 1380 p.
 13. DITJEN PERIKANAN – DEPTAN. 1990. Ketentuan Kerja Pengumpulan, Pengolahan, dan Penyajian Data Statistik Perikanan. Buku 1; Standard Statistik Perikanan.
 14. De Bruin, G.H.P., B.C. Russel, and A. Bogusch. 1994. The Marine Fishery Resources of Sri Langka. FAO Species Identification Field Guide for Fishery Purposes, FAO-UN. Rome. 400 p.
 15. Soewardi, K., I.S. Andi, dan U. Juariah. 2004. Moluska Ekonomis Penting di Perairan Jawa Barat
 16. Bal, D.V. dan K.V. Rao. 1984. Marine Fisheries. Tata Mc Graw – Hill Publishing Company Limited.
 17. PUSLITBANGKAN – DEPTAN. 1991. Petunjuk Teknis Pemanfaatan dan Pengelolaan Sumberdaya Ikan Demersal Ekonomis Penting.
 18. FAO. 1993. FAO Species Catalogue: Grouper of The World. FAO Fisheries Synopsis 125 (16). Rome. 382 p + plates
 19. BPPT. 1987. Sumberdaya Laut Indonesia
 20. DKP. Statistik Perikanan Indonesia (the newest edition).
 21. DKP. Statistik Ekspor Perikanan Indonesia (the newest edition).
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26. MSP212 Water Quality

Module Name	Water Quality
Module level, if applicable	Beginner
Code, if applicable	MSP212
Subtitle, if applicable	-
Courses, if applicable	MSP212 Water Quality
Semester(s) in which the module is taught	3 rd Semester
Person responsible for the module	Dr. Ir. Sigid Hariyadi, M.Sc
Lecturer	1. Dr. Ir. Hefni Effendi, M.Phil. 2. Dr. Majariana Krisanti, S.Pi, M.Si. 3. Inna Puspa Ayu, S.Pi, M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning
Workload	Class : 1 × 170 min × 14 meetings = 2380 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class
Recommended prerequisites	KIM101
Module objectives/intended learning outcomes	After attending the lecture, students are able to identify water quality status and explain environmental conditions based on physical-chemical-biological parameters.
Content	This course is taught to provide students with insight into scope of water quality parameters; sampling techniques; characteristics of suspended materials, dissolved oxygen, BOD ₅ , COD, alkalinity, pH, CO ₂ , Ca, Mg, nitrogen, phosphorus, metals, detergent, oil and lipid, hydrocarbon, pesticide, fecal coliform; N and P cycle; and influencing factors of water quality.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort

Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. APHA. 2005. Standard methods for the examination of water and wastewater. 21st ed. American Public Health Association (APHA), American Water Works Association (AWWA) and Water Pollution Control Federation (WPCF). Washington D.C. 2. APHA. 2017. Standard methods for the examination of water and wastewater. 22nd ed. American Public Health Association, American Water Works Association and Water Pollution Control Federation. Washington D.C. 3. Boyd, C. E. 1990. Water quality in ponds for aquaculture. Auburn University of Agriculture Experiment Station. Alabama. USA. 359 p. 4. Boyd, CE. Tucker, CS. 1992. Water Quality and Pond Soil Analyses for Aquaculture. Alabama Agricultural Experiment Station, Auburn University, Alabama. 5. Cole, G.A. 1983. Textbook of limnology. Third Edition. Waveland Press, Inc. USA. 401 p. 6. Cole, GA. 1988. Textbook of Limnology. 3rd ed. Wavelang Press, Inc. Prospect Heights, Illinois. 7. Delzer, GC and McKenzie, SW. 2003. Five-Day Biochemical Oxygen Demand. U.S. Geological Survey Techniques of Water-Resources Investigations (USGS TWRI) Book 9, Chap. A7 (3rd ed.), Section 7.0. 8. Gower, AM. 1980. Water Quality in Catchment Ecosystems. John Wiley & Sons. New York. 335p. 9. Hadi, A. 2005. Prinsip Pengelolaan Pengambilan Sampel Lingkungan. PT. Gramedia Pustaka Utama. Jakarta. 10. Lind, O. T. 1985. Handbook of Common Method in Limnology. Second Edition. Kendal/Hunt Publishing Company. Iowa. 199 p. 11. Metcalf and Eddy. 1991. Wastewater Engineering: treatment, disposal, reuse. 3rd ed. (Revised by: G. Tchobanoglous and F.L. Burton). McGraw-Hill, Inc. New York, Singapore. 1334 p. 12. Pratiwi, NTP, Hariiyadi S, Ayu IP. 2018. Buku Ajar LIMNOLOGI - Pengantar. IPB Press. 94 hal. 13. Ryding, SO. and W. Rast. 1989. The control of eutrophication of lakes and reservoirs. Man and The Biosphere Series, Voll. UNESCO – Paris and The Parthenon Publishing Group. 314 p. 14. Smith, A.C.S and Mudder, T.I. 1998. The Environmental Geochemistry of Cyanide in The Environmental Geochemistry of Mineral Deposits Part A Processes, Techniques and Health Issues, eds Plumlee and Logsdon. Review in Economic Geology and Logsdon. Review in Economic Geology Volume 6A, Society of Economic Geologists. 15. Weiner ER. 2008. Applications of Environmental Aquatic Chemistry: A practical guide. 2nd ed. Boca Raton-London-New York: CRC Press. 16. Wurts AW and Durborow RM. 1992. Interactions of pH, Carbon Dioxide, Alkalinity and Hardness in Fish Ponds. Southern Regional Aquaculture Center (SRAC).

27. MSP233 Aquatic Resources Information System

Module Name	Aquatic Resources Information System		
Module level, if applicable	Beginner		
Code, if applicable	MSP233		
Subtitle, if applicable	-		
Courses, if applicable	MSP233 Aquatic Resources Information System		
Semester(s) in which the module is taught	3 rd Semester		
Person responsible for the module	Dr. Ir. Achmad Fahrudin, M.Si.		
Lecturer	Prof. Dr. Ir. Mennofatria Boer, DEA Dr. Ir. Rahmat Kurnia, M.Si. Dr. Fery Kurniawan, S.Kel., M.Si.		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH × 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in this course 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to build linkages between variables in the analysis of aquatic resource systems based on the analysis of information system aspects, as well as create, modify and plan programming algorithms, computer programming languages, programming information systems with network-based software, spatial-based information systems, spatial information systems distribution of water resources, designing management of information system installations for aquatic resources.		
Content	Water resource system analysis, information system aspect analysis, programming algorithms, computer programming languages, basic information system programming, introduction to information systems with software, network-based information systems, spatial-based information systems, spatial information systems for distribution of aquatic resources, management of information system installations for aquatic resources.		

Study and examination requirements and forms of examination	<p>Cognitive: Midterm exam, Final exam, Quizzes, Assignments</p> <p>Psychomotor: Practice</p> <p>Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Burrough PA. 1986. Principles of Geographical Information System for Land Resources Assesment. Monograph on Soil and Resources Surveys. No. 12. UK: Oxford Science Publication. 2. Demers, M. N. (2000) Fundamentals of Geographical Information Systems.2nd edition. USA, John Wiley & Sons Inc. 3. Djodihardo, Harjono. 1984. Pengantar Sistem Komputer. Erlangga. Jakarta. 4. Eagles. P. F. J. (1984) The Planning and Management of Environmentally Sensitive Areas. USA: Longman Inc., New York. 5. Fathansyah. 2004. Buku Teks Komputer Basis Data. Bandung (ID): Informatika. 6. Feng Z, Been-Lim DH, Billingshurs M. 2008. Trends in Augmented Reality Tracking, Interaction and Display: A Review of Ten Years of ISMAR. 7. Heywood, I., Cornelius, S. & Carver, S. 1998. An Introduction to Geographical Information Systems. England, Longman. 8. Jogyanto HM. 1995. Analisis dan Desain Sistem Informasi Pendekatan Terstruktur Teori dan Praktek Aplikasi Bisnis. Yogyakarta (ID): Adni Offset. 9. Jurana JM. 1996. Problems Related to GIS Application and Geographic Database Development in Developing Countries. International Conference on The Role of GIS for the Enhancement of National Spasial Planning. Jakarta 21-22 October 1996. 10. Kennish MJ. 1990. Ecology of Estuary. Volume II. Biological Aspect. Florida (US): CRC Press. 11. Khan ME. 2010. Different Forms of Software Testing Techniques for Finding Errors. International Journal of Computer Science Issues. 7(1):11-16. 12. Kingsford MJ. 2000. Coastal Marine Ecology of Temperate Australia. Underwood AJ, Chapman MG, editor. Sydney (AU): University of New South Wales Press Ltd. 13. Steve Hull, Ian Dickie, Rob Tinch, Justine Saunders. 2014. Issues and challenges in spatio-temporal application of an ecosystem services framework to UK seas. Marine Policy. 45(2014)359–367 14. Stoehr, Thomas. 2002. Managing e-bussines. Springer Verlag. Berlin. 15. Wilson, Matthew A. 2004. The EcoValue Project: A Web-based, Geographic Approach to the Delivery of the Economic Values of Ecosystem Services. University of Vermont, School of Business Administration, Rubenstein School of Environment and Natural Resources, Gund Institute for Ecological Economics.

28. MSP225 Functional Ichthyology

Module Name	Functional Ichthyology		
Module level, if applicable	Intermediate		
Code, if applicable	MSP225		
Subtitle, if applicable	-		
Courses, if applicable	MSP225 Functional Ichthyology		
Semester(s) in which the module is taught	4 th Semester		
Person responsible for the module	Dr. Ir. M. Mukhlis Kamal, M.Sc.		
Lecturer	1. Prof. Dr. Ir. Ridwan Affandi 2. Prof. Dr. Ir. MF Rahardjo 3. Dr. Charles P. H. Simanjuntak, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class 		
Recommended prerequisites	MSP223		
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe the anatomy and functional of ten organ systems of fishes and their importance for management		
Content	This course is taught to provide students with insight into integument, muscle, skeletal systems; respiration, circulation, excretion, and osmoregulation systems; digestion system and growth; reproduction system, embriology, early development; nerve and hormon system; synopsis.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Affandi, R, Sjafei DS, Rahardjo, MF, Sulistiono. Pedoman Praktikum Iktiologi. PAU Ilmu Hayati - IPB.		

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2. Moyle, PB & Cech, JJ. Jr. 1988. *Fishes: an introduction to ichthyology*. Prentice Hall, Englewood Cliff, N Jersey.
 3. Rahardjo, MF, Sjafei, DS, Affandi R, Sulistiono. 2011. *Iktiologi*. CV Lubuk Agung, Bandung.
 4. Sjafei, DS, Rahardjo, MF, Affandi, R, Brojo M. 1989. *Sistematika Ikan*. PAU Ilmu Hayati - IPB.
 5. Saanin, H. 1984. *Taksonomi dan kunci identifikasi ikan*. Vol. 1 dan 2, Bina Cipta, Bandung.
 6. Artikel dan Jurnal ilmiah Nasional dan Internasional yang relevan untuk setiap chapter
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29. MSP226 Aquatic Animal Physiology

Module Name	Aquatic Animal Physiology		
Module level, if applicable	Intermediate		
Code, if applicable	MSP226		
Subtitle, if applicable	-		
Courses, if applicable	MSP226 Aquatic Animal Physiology		
Semester(s) in which the module is taught	4 th Semester		
Person responsible for the module	Prof. Dr. Ir. Ridwan Affandi, DEA		
Lecturer	<ol style="list-style-type: none"> 1. Prof. Dr. Ir. Djamar T. F Lumbanbatu, M.Sc 2. Dr. Ir. Yunizar Ernawati, MS 3. Dr. Ir. M. Mukhlis Kamal, M.Sc 4. Prof. Dr. Ir. ETTY Riani, MS 		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion		
Workload	Class	: 2 x 170 min x 14 meetings	= 4760 min
	Practical class	: 1 x 170 min x 14 meetings	= 2380 min
	Total		= 7140 min
			(119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	MSP223		
Module objectives/intended learning outcomes	After attending the lecture, students are able to understand and apply physiological processes for optimizing fisheries production		
Content	This course is taught to provide students with insight into physiology of cell, nerve, and hormon; physiological adaptation; circulation; respiration; excretion and osmoregulation; digestion and absorption; growth; bioenergetic; and reproduction.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	<ol style="list-style-type: none"> 1. Fish Physiology. Volume I-XI Edited by W.S. Hoar, D.J. Randall and EIM. Donaldson. Academic Press. Inc 		

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2. The Physiology of Crustacea. Volume 1-4 Edited by T.H. Waterman. Academic Press. Inc
 3. General and Comparative Physiology (1983). Edited by W.S. Hoar. Jey Print Pack Private Limited, New Delhi.
 4. Fisiologi hewan air (2003). Penulis Affandi & M.U. Tang. UNRI Press.
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30. MSP227 Ecology of Coastal and Tropical Seas

Module Name	Ecology of Coastal and Tropical Seas	
Module level, if applicable	Intermediate	
Code, if applicable	MSP227	
Subtitle, if applicable	-	
Courses, if applicable	MSP226 Aquatic Animal Physiology	
Semester(s) in which the module is taught	4 th Semester	
Person responsible for the module	Prof. Dr. Ir. Ario Damar, M.Si	
Lecturer	1. Dr. Ir. Fredinan Yulianda, M.Sc 2. Dr. Ir. Mohammad Mukhlis Kamal, M.Sc 3. Ir. Agustinus M. Samosir, M.Phil 4. Dr. Ir. Mohammad Mukhlis Kamal, M.Sc	
Language	Indonesian	
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management	
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study	
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)	
Credit points	3 SCH x 1.44 = 4.32 ECTS	
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 	
Recommended prerequisites	MSP221	
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain the ecological dynamics of coastal and marine waters with a focus on tropical coastal ecosystems based on the processes and principles of the physical-chemical-biological-ecological dynamics of the coastal and tropical seas, as a basis for coastal and tropical marine management.	
Content	This course is taught to provide students with insight into ecological boundaries of coastal and sea; physical and chemical processes in coastal area; typology of estuary and its physical-chemical process; pelagic ecosystem based on plankton community; primary productivity; spatial and temporal dynamic in coastal waters; benthic ecosystem, substrate type, and its ecological process; coral reef ecosystem; seagrass ecosystem; ichthyoplankton, fish larvae; mangrove ecosystem; antropogenic activities in coastal area; basic concept of coastal management.	

Study and examination requirements and forms of examination	<p>Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice</p> <p>Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Boehlertt, G.W. 1996. Larval dispersal and survival in tropical reef fishes. In: Polunin, N.V.C. and R.M. Callum (eds.) <i>Reef Fisheries</i> p: 61-112 2. Brown, J., A. Colling, D. Park, J. Phillips, D. Rothery and J. Wright. 1989. <i>Seawater : Its Composition, Properties and Behaviour</i>. Pergamonn Press. Osford. pp 5 – 38. 3. Cicin_sain, B. and R.W. Knecht. 1998. <i>Integrated Coastal and Ocean Management : Concept and Practices</i>. Island Press, Washington DC : 15 – 63 pp. 4. Cloern, J.E. (2001). Our evolving conceptual model of the coastal eutrophication problem. <i>Mar. Ecol. Prog. Ser.</i> 210:223-253. 5. FAO. 1994. Mangrove forest management guidelines. FAO Forestry Paper 117 : 5-44 6. FAO. 1994. Mangrove forest management guidelines. FAO Forestry Paper 117 : 45-159 7. Heath, M.R. 1992. Field investigation of the early life stages of marine fish. In: <i>Advance in Marine Biology</i> Vol. 28 8. Laroche, J., E. Baron, and N.B. Rasoanandrasana. 1997. Temporal patterns in a fish assemblage of mangrove in Madagascar. <i>Journal of Fish Biology</i> 51: 3-20 9. Little, M.C., P.J. Reay, and S.J. Grove. 1988. The fish community of an East African Mangrove. <i>Journal of Fish Biology</i> 32: 729-747. 10. Lowe-McConnel, R.H. 1987. <i>Ecological studies in Tropical fish communities</i>. 11. Mann, K.H. and J.R.N. Lazier. 1996. <i>Dynamics of Marine Ecosystems: Biological-Physical Interactions in the Oceans</i>. Second Edition. Blackwell Science : 1 – 98 pp. 12. Nybakken, J.W. 1993. <i>Marine Biologi. An Ecological Approach</i>. Third ditian. Harper Collins College Publishers, Inc. New York. 426p. 13. Odum, E.P. 1971. <i>Fundamentals of Ecology</i>. Third Edition. pp : 352 – 361. 14. Pethick, J. 1997. <i>An Introduction to Coastal Geomorphology</i>. Arnold Publ. London : 1 – 9 and 167 – 191 pp. 15. Raffaelli, D and S. Hawkins. 1996. <i>Intertidal Ecology</i>. Chapman and Hall, London, 356 pp. 16. Reise, K. 2001. <i>Ecological Comparisons of Sedimentary Shores</i>. Ecological Studies 151. Springer-Verlag. Berlin.

31. MSP231 Fisheries Biology

Module Name	Fisheries Biology		
Module level, if applicable	Beginner		
Code, if applicable	MSP231		
Subtitle, if applicable	-		
Courses, if applicable	MSP231 Fisheries Biology		
Semester(s) in which the module is taught	4 th Semester		
Person responsible for the module	Dr. Yonvitner, S.Pi, M.Si		
Lecturer	1. Dr. Ir. Isdrajad Setyobudiandi, M.Sc 2. Dr. Ir. Yunizar Ernawati, MS		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to understand and explain the objectives of fishery biology, having the knowledge of natural history process to plan various development of fish resources for future sustainable management.		
Content	This course is taught to provide students with insight into fishery biology concept; migration, niche, competition and predation; life cycle, embriogenesis, maturity, fecundity, spawning; growth, food and feeding habit; age at first maturity and trophic level; and natural history concept as a basic for fishery biology.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Effendie, M. I. 2000. Biologi Perikanan
 2. Gulland, J. A. 1983. Fish Stock Assessment. A Manual of Basic Method. FAO, Vol. 1, John Wiley and Sons.
 3. Norris, D. O. dan R. E. Jones. 1987. Hormones and reproduction in fishes, amphibians, and reptiles. Plenum Press, N. Y.
 4. Ricker, W. E. 1975. Computation and Interpretation of Biological Statistics of Fish Populations. J. Fish. Res. Board Can. Bulletin 191.
 5. Sparre, P. dan S. C. Venema. 1998. Introduksi pengkajian stok ikan tropis. Buku 1: Manual. FAO-Puslitbang Perikanan, Balitbang Pertanian Indonesia.
 6. Weatherly, A. H. 1972. The Biology of Fish Growth. Academic Press, London.
 7. Woynarovich, E. and H. Horvath. 1980. The artificial propagation of warm water finfish. A Manual for extension. Fish. Tech. Pap., No. 201. FAO, Rome
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32. MSP301 Scientific Research Method

Module Name	Scientific Research Method		
Module level, if applicable	Intermediate		
Code, if applicable	MSP301		
Subtitle, if applicable	-		
Courses, if applicable	MSP301 Scientific Research Method		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si		
Lecturer	Dr. Ir. Rahmat Kurnia, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to understand the philosophy of science and technology; explain the essence and process of research; scientific research mindset; research topics and problems (coverage according to competence by Division in the Department); research framework and hypotheses, data collection and analysis methods; presenting scientific information and applying writing methods for the preparation of undergraduate thesis.		
Content	This course is taught to provide students with insight into the scope of the study related to the competence of MSP in the field of biology and ecology of aquatic biota, aquatic resources management, fishery resources management, conservation and ecotourism in freshwater, brackish, coastal, marine and small islands; research problem formulation in accordance with research objectives; research design, data collection; data analysis and interpretation; literature review; scientific writing techniques.		

Study and examination requirements and forms of examination	<p>Cognitive: Midterm exam, Final exam, Quizzes, Assignments</p> <p>Psychomotor: Practice</p> <p>Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Nazir M. 1983. Metode Penelitian. Ghalia Indonesia, Bogor. 542 hal 2. Barnard C., F. Gilbert, and P. McGregor. 1996. Asking question in biologi: design, analysis, and presentation in practical work. Addison Wisley Longman Ltd. Harlow UK. 157 p. 3. Lindsay, D. 1996. A Guide to scientific writing, 2nd ed. Addison Wisley Longman Ltd. Australia. 126 p. 4. Fowler J. and L. Cohen. 1997. Practical statistic for field biologi. John Wiley & Sons. Chichester. 227p. 5. Bengen, D.G. 1999. Teknik Pengambilan Contoh dan Analisis Data Biofisik Sumberdaya Pesisir. PKSPL-PMO SACDP PEMDA Tk. II Cilacap. 99 hal 6. Atmadilaga, D.H. 1994. Panduan Skripsi, Tesis, Desertasi Pionir Jaya, Bandung. 161 hal. 7. Neter E., Altman PL., Burgan MW., Holmgreen NH., Pollock G., dan Zipf E.M. 1982. C.B.E. Style Manual, a guide for authors, editors, and publishers in the biological sciences. 5thed. Council of Biology Editors, Inc. Bethesda, MD, U.S.A 8. PPKI version 4

33. MSP310 Aquatic Pollution and Bio-indicators

Module Name	Aquatic Pollution and Bio-indicators		
Module level, if applicable	Intermediate		
Code, if applicable	MSP310		
Subtitle, if applicable	-		
Courses, if applicable	MSP310 Aquatic Pollution and Bioindicator		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Prof. Dr. Ir. Yusli Wardiatno, M.Sc		
Lecturer	1. Dr. Ir. Sigid Hariyadi, M.Sc 2. Aliati Iswantari, S.Pi. M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe pollution in fresh, brackish, and marine waters by studying the sources and characteristics of pollutants, processes experienced by pollutants in waters, impacts on aquatic ecosystems including the use of bioindicators, as well as the basic concept of estimating pollutants.		
Content	This course is taught to provide students with insight into the scope of water pollution, sources of N and P pollution; heavy metals pollution; pesticide and PCBs pollution; effects of pollutants to organisms and environment; pollutant index and parameters; pollution control regulations; biomonitoring, bioindicator, and bioassay concepts.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		

Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Abel, P.D. 1989. <i>Water Pollution Biology</i>. John Wiley & Sons. New York. 2. Clark, R.B. 1986. <i>Marine Pollution</i>. Clarendon Press, Oxford. 215 p. 3. David M.L. and David A.C., 1991. <i>Introduction to environmental Engineering</i>. Mc Graw-Hill International Edition. 822 pp. 4. Eckenfelder Jr. W.W., 1989. <i>Industrial Water Pollution Control</i>. 2nd Edition. Mc. Graw-Hill International Edition. 400 pp. 5. Preston, M.R. 1989. <i>Marine pollution</i> pp. 53 - 197. In <i>Chemical Oceanography</i> (J.P. Riley ed.), Volume 9, Academic Press, London. 6. Khiatuddin, M., 2003. <i>Melestarikan Sumber Daya Air dengan Teknologi Rawa Buatan</i>. Gajah Mada University Press. 253 pp 7. Lani Puspita, Eka Ratnawati, I N.N. Suryadiputra dan A. A. Mutia. 2005. <i>Lahan Basah Buatan di Indonesia</i> 8. Laws, E.A. 1993. <i>Aquatic Pollution: an introductory text</i>. Wiley Interscience, New York. 611p. 9. Mason, C.F. 1991. <i>Biology of freshwster pollution</i>. 2nd ed. Longman Scientific & Technical, Essex, U.K. 351 p. 10. Mara, D., 1976. <i>Sewage Treatment in Hot Climate</i>. A. Willey-Interscience Publication. 168 pp. 11. Metcalf and Eddy. 1991. <i>Wastewater Engineering, Treatment-disposal-Reuse</i>. 3rd edition 12. Moshiri, G. A. 1993. <i>Constructed Wetlands for Water Quality Improvement</i>. Lewis Publishers. Boca Raton. 13. Nemerow, N.L. 1991. <i>Stream, Lake, Estuary, and Ocean Pollution: Environmental Engineering Series</i>. 2nd Edition. Van Nostrand Reinhold. New York. 14. Suryadiputra, I.N.N., 1995. <i>Teknologi Pengolahan Air Limbah (satu pengantar)</i>. Tidak dipublikasikan. (Diktat Kuliah).

34. MSP311 Planktonology

Module Name	Planktonology		
Module level, if applicable	Intermediate		
Code, if applicable	MSP311		
Subtitle, if applicable	-		
Courses, if applicable	MSP311 Planktonology		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si		
Lecturer	1. Dr. Majariana Krisanti, S.Pi, M.Si 2. Inna Puspa Ayu, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe the potential of plankton and primary producers in aquatic ecosystems and their benefits for humans.		
Content	This course is taught to provide students with insight into terminology and classification of plankton and aquatic producers; discusses their behavior, role, and ecological relationships in aquatic ecosystems; several environmental indices to assess the water condition.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Belcher, H dan E. Swale. 1979. An illustrated Guide of River Phytoplankton. Crown Copy Right. London. 64 p.		

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2. Davis, C.C. 1955. The Marine and Freshwater Plankton. Michigan State University Press.
 3. Edmonson, W.T. 1963. Freshwater Biology. John Wiley and Sons, Inc. Seattle.
 4. Fritsch, F.E. 1959. The Structure and Reproduction of the algae. Cambridge University Press.
 5. Goldman, C.R. 1985. Primary Productivity in Aquatic Environments.
 6. Harris, G.P. 1986. Phytoplankton Ecology: Structure, Function, and Fluctuation. Chapman and Hall. New York.
 7. Legendre, L. dan P. Legendre. 1983. Numerical Ecology. Elsevier Scientific Publ. Co. Amsterdam, Oxford. 428 p.
 8. Mizuno, T. 1979. Illustration of The Freshwater Plankton of Japan. Hokusha Publishing Co. Ltd. Japan. 313 p.
 9. Odum, E.P. 1971. Fundamentals of Ecology. W.B Saunders Company. Philadelphia.
 10. Prescott, G.w. 1970. How to Know the Freshwater Algae. WMC Brown Company Publishers. Dubuque, Iowa.
 11. Ravera, O. 1979. Biological Aspect of Freshwater Pollution. Pergamon Press. London.
 12. Weitzel, R.L. 1979. Periphyton Measurement and Application: *In* Methods and Measurement of periphyton Communities. American Society for Testing and Animal. Philadelphia. 725 p.
 13. Shubert, L.E. 1984. Algae as ecological indicators. Academic Press. London. 434 p.
 14. Belcher H, E Swale. 1976. A beg inner's guide to Freshwater Algae. Culture Centre of Algae and Protozoa. Cambridge.
 15. Sigeo, D. C. 2005. Freshwater microbiology: biodiversity and dynamic interactions of microorganisms in the freshwater Environment. John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England
 16. Suthers IM, Rissik D. 2008. Plankton: a guide to their ecology and monitoring for water quality. CSIRO Publishing. Australia
 17. Borowitzka, M.A. & Borowitzka L.J. 1988. Micro-algal Biotechnology. Cambridge University Press. Melbourne. 477 p.
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35. MSP315 Aquatic Environmental Hydrodynamics

Module Name	Aquatic Environmental Hydrodynamics		
Module level, if applicable	Intermediate		
Code, if applicable	MSP315		
Subtitle, if applicable	-		
Courses, if applicable	MSP315 Hydrodynamic of Aquatic Environment		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Dr. Ir. Sigid Hariyadi, M.Sc		
Lecturer	Prof. Dr. Ir. Yusli Wardiatno, M.Sc		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain about mass and energy transportation driven by waves, tides, internal waves, upwelling, currents, turbulence, and water circulation that occur in the sea, estuaries, lakes; river hydrodynamics; various components of the earth's climate system; El Nino, seasonal climate anomalies, natural and anthropogenic climate change and their effects and impacts on the hydrodynamics of the aquatic environment.		
Content	This course is taught to provide students with insight into the scope of hydrodynamic; water density; hydrology cycle; characteristics of rivers, lake, and reservoir; inflow and outflow; tidal movement, estuary stratification; El Nino, La Nina phenomena and climate changes.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Etheridges, D.M., L.P. Steele, R.L. Langenfelds, R.J. Francey, J.M. Barnola, V.I. Morgan. 1996. "Natural and anthropogenic changes in atmospheric CO₂ over the last 1000 years from air in Antarctic ice and firn" *J. Geophys. Res.* 101 (D2) 4115-4128
 2. Gotovtsev A.V., 2010, Modification of the Streeter–Phelps System with the Aim to Account for the Feedback between Dissolved Oxygen Concentration and Organic Matter Oxidation Rate, ISSN 0097-8078, *Water Resources*, Vol. 37, No. 2, pp. 245–251. Pleiades Publishing, Ltd.
 3. Gray, V.R., 1998. "The IPCC future projections: are they plausible" *Climate Research* 10 155-162
 4. Jaworowski, Z. 1996 "Reliability of Ice Core Records for Climatic Projections" in "The Global Warming Debate", (John Emsley, Ed.) *European Science and Environment Forum*, London, 95-105.
 5. Jaworowski, Z., 1997. "Ice Core Data Show No Carbon Dioxide Increase" *21st Century Science and Technology* 10, (1) 42-52
 6. Ji, Z-G. 2008. *Hydrodynamics and water quality: Modelling rivers, lakes, and estuaries*. John Wiley & Sons, Inc. New Jersey.
 7. Jolánkai G., 1997, Basic river water quality models, Computer aided learning (CAL) programme on water quality modelling (WQMCAL version 1.1), International Hydrological Programme, Technical Documents in Hydrology, No. 13
 8. Lin S., 2001, *Water and Wastewater Calculations manual*, McGraw Hill
 9. Lung W. S., 2001, *Water quality modeling for wasteload allocations and TMDLs*, John Wiley & Sons, Inc.
 10. Russell C. S., Vaughan W. J., Clark C. D., Rodriguez D. J., Darling A. H., 2001, *Investing in water quality: measuring benefits, costs and risks*, Inter-American Development Bank, Washington D. C.
 11. Streeter H. W., Phelps E. B., 1925, *A Study of the pollution and natural purification of the Ohio river. III. Factors concerned in the phenomena of oxidation and reaeration*, Public Health Bulletin no. 146, Reprinted by U.S. Department of Health, Education and Welfare, Public Health Service, 1958
 12. Schnoor J., 1996, *Environmental Modeling, Fate and Transport of Pollutants in Water, Air and Soil*, Wiley-Interscience.
 13. Wurbs R. A., 1994, *Computer Models for Water-Resources Planning and Management*, Texas A & M University.
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36. MSP316 Aquatic Plants Science and Macroalgae

Module Name	Aquatic Plants Science and Macroalgae		
Module level, if applicable	Intermediate		
Code, if applicable	MSP316		
Subtitle, if applicable	-		
Courses, if applicable	MSP316 Aquatic Plants and Macroalgae		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Dr. Ir. Niken TM Pratiwi, MSi.		
Lecturer	1. Dr. Majariana Krisanti, S.Pi, M.Si 2. Inna Puspa Ayu, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe the identification of aquatic plant and macroalgae and understand their roles, functions, and benefits in various aquatic typologies, as well as their application economically and ecologically, especially in overcoming climate change.		
Content	This course is taught to provide students with insight into the terminology of aquatic plant, ecological position, classification of freshwater plant, distribution, zonation, and habitat; taxonomy and classification of seagrass and seaweed; distribution, zonation, and habitat; planning for management of aquatic plant related to global warming issue.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Fasset NC. 1990. A Manual of Aquatic Plants. Madison. University of Wisconsin Press.
 2. Pancho JV, Soerjani M. 1978. Aquatic weeds of Southeast Asia- A systematic account of common Southeast Asian aquatic weeds. Filipina. National Publishing Cooperative Inc.
 3. Sainty GR, Jacobs SWL. 2010. Waterplants in Australia. Australia. Merritt Madden Printing Pty. Ltd
 4. Sastrapadja S, Bimantoro R. 1981. Tumbuhan Air LIPI. Bogor. Lembaga Biologi Nasional-LIPI.
 5. Schweingruber FH, Kucerová A, Adamec L, Doležal J. 2020. Anatomic Atlas of Aquatic and Wetland Plant Stems. Switzerland. Springer.
 6. Soerjani M, Kostermans AJGH, Tjitrosoepomo G. 1987. Weed of Rice in Indonesia. Jakarta (ID): Balai Pustaka.
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37. MSP324 Aquatic Ecology Social System

Module Name	Aquatic Ecology Social System		
Module level, if applicable	Intermediate		
Code, if applicable	MSP324		
Subtitle, if applicable	-		
Courses, if applicable	MSP324 Aquatic Ecology Social System		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Ir. Agustinus M. Samosir, M.Phil.		
Lecturer	Dr. Ir. Luky Adrianto, M.Sc		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 		
Recommended prerequisites	MSP227		
Module objectives/intended learning outcomes	After attending the lecture, students are able to manage marine ecosystems in an integrated and sustainable way.		
Content	This course is taught to provide students with insight into the scope of ecosystem management, characteristics of marine ecosystem, ecosystem services, principles of ecosystem based management (EBM), scaling up EBM, tools in EBM such as Marxan, Ecopath, OCEAN; SES and EAFM.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. UNEP. Taking steps toward Marine and Coastal Ecosystem based Management. https://wedocs.unep.org/bitstream/handle/20.500.11822/13322/GLOCIEBM.pdf? 2. Clark and Jupiter. Principles and Practices of Marine EBM. https://macbio-pacific.info/wp-content/uploads/2017/08/EBM-guide.pdf		

3. IUCN. Ecosystem Management Series.
[https://www.iucn.org/commissions/commission-ecosystem-
management](https://www.iucn.org/commissions/commission-ecosystem-management)

38. MSP336 Fish Population Biology

Module Name	Fish Population Biology
Module level, if applicable	Intermediate
Code, if applicable	MSP336
Subtitle, if applicable	-
Courses, if applicable	MSP336 Fish Population Biology
Semester(s) in which the module is taught	4 th Semester
Person responsible for the module	Dr. Ir. Nurlisa A. Butet, M.Sc
Lecturer	1. Prof. Dr. Menofatria Boer, DEA 2. Prof. Dr. Kadarwan Soewardi, DEA
Language	Indonesian
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class
Recommended prerequisites	MSP231
Module objectives/intended learning outcomes	After attending the lecture, students are able to understand and apply the principles of fish population biology as a determinant of successful adaptation for the sustainable aquatic resources.
Content	This course is taught to provide students with insight into general structure and growth of population; molecular genetic based on DNA barcoding; and population genetic.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Emlen. M.J. 1984. The Coevolution of Population Dynamics and Behaviour. Population Biology. Macmillan Publishing Company. New York 2. Hedrick. W. P. 1984 The Evolution and ecology of Populations.

Population Biology. Jones and Bartlett publishers. Boston

3. Hartl D.L, 1980. Principles of Population genetics. Sinauer Assoc. Inc. Sunderland. 488p
 4. Frankham R., Ballon J. D., Briscoe D.A., 2002. Introduction to Conservation Genetics. Cambridge. Univ. Press. Cambridge. United Kingdom. 616 pp
 5. Nei M., S. Kumar 2000. Molecular Evolution and Phylogenetic. Oxford Univ. Press. 333p
 6. Brown H. D., O. T. Sandland., K. Hindar. 1992. Conservation of Biodiversity for Sustainable Development. Scandinavian Univ. Press. 313 p.
 7. Soewardi, K. 2007. Keragaman Genetik.
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39. MSP338 Fundamentals of Fish Population Dynamic

Module Name	Fundamentals of Fish Population Dynamic		
Module level, if applicable	Intermediate		
Code, if applicable	MSP338		
Subtitle, if applicable	-		
Courses, if applicable	MSP336 Fish Population Biology		
Semester(s) in which the module is taught	5 th Semester		
Person responsible for the module	Prof. Dr. Ir. Menofatria Boer		
Lecturer	Dr. Ir. Rahmat Kurnia, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain and determine fish population parameters (growth, mortality, recruitment, and reproduction), and calculate fish abundance.		
Content	This course discusses the changes that occur in a fish population which includes growth, mortality, recruitment, and reproduction, as well as methods for estimating fish abundance.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Lackey, R.T dan W.A. Hubert. 1978. Analysis of Exploited Fish Population., Virginia Polytechniquers Institute and Univ. Blacksburg, Virginia 2. Ricker, W.E. 1975. Computation and Interpretation of Biological Statistics of Fish Populations. J. Fish. Res. Board Can. Bulletin.		

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3. Beverton, R.J. H dan S.J. Holt. 1957. On the Dynamics of Exploited Fish Populations. Fish Invest. London, Ser. 2, 19:533p
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40. MSP31A Aquatic Productivity

Module Name	Aquatic Productivity
Module level, if applicable	Intermediate
Code, if applicable	MSP31A
Subtitle, if applicable	-
Courses, if applicable	MSP31A Aquatic Productivity
Semester(s) in which the module is taught	6 th Semester
Person responsible for the module	Prof. Dr. Ir. Yusli Wardiatno, M.Sc
Lecturer	1. Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si 2. Aliati Iswantari, S.Pi. M.Si
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class
Recommended prerequisites	MSP212
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe primary and secondary productivity in lotic and lentic ecosystem, methods to measure productivity and its component, and role in tropic level estimation.
Content	This course provides students with insight into primary and secondary productivity, tropic state, and nutrients loading in various aquatic ecosystem.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Wetzel, R.G. and G.E. Likens. 1979. Limnological Analysis. W.B. Saunders Company. Philadelphia-London-Toronto. 357 pp. 2. Schwoerbel. J. 1970. Methods of Hydrobiology (Freshwater

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- Biology). Pergamon Press. Oxford-London-Toronto-Sydney Braunschweig. 200 pp.
3. Cole, G.A. 1991. Textbook of Limnology. 2nd ed. Daint Louis. The C.V. MOSBY Company. 283 pp.
 4. Freshwater Biology Association, 1984. Methods of Measuring Secondary Productivity.
 5. Whitton, B. A. 1975. River Ecology. Blackwell Scientific Publications.
 6. Biotrop Special Publication no.40. 1991. Aquatic Weed Management. SEAMEO-BIOTROP, Bogor, Indonesia
 7. Boyd, G.E. 1968. Fresh-water Plants: A Potential source of Protein. *Economic Botany*, 22 : 359-368
 8. Boyd, C.E. 1970. Chemical Analysis of some Vascular Aquatic Plants. *Archivers of Hydrobiology* 67 (1) : 78-85
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 10. Carignan, R. And J. Kalf. 1980. Phosphorus Sources for Aquatic weeds: Water or Sediments. *Science*, 207 : 987-989
 11. Davies, G.W. 1980. Fibre Measurements of Some Aquatic Species with a view to New Sources of paper-Making Fibre. *Aquatic Botany*, 8 : 381-383
 12. Den Hartog, C. 1970. *The Seagrass of the World*. North Holland, Amsterdam.
 13. Hutchkinson, G.E. 1975. *A Treatise on Limnology*. Volume III. *Limnological Botany*. New york : John Wiley and Sons.
 14. Leith, H and J.J. Symoens (eds.) 1988. *Handbook of Vegetation Science*. Kluwer Academic Publihers, Dordrecht.
 15. National Academy of Sciences. 1976. *Making Aquatic Weeds Useful : Some Perspectives for Developing Countries*. Washington, D.C
 16. Pancho, J.V and Soerjani, M. 1978. *Aquatic Weeds of Southest Asia* National Publishing Cooperative Incorporated, Philippines.
 17. Sainty G.R and S. W. L Jacob. 1988. *Waterplants in Australia*. Sainty & Associates, Australia.
 18. Sculthrope, C.D. 1977. *The Biology of Aquatic Vascular Plants*. London : Edward Arnold.
 19. Soerjani, M. dan L.S Widyanto. 1971. *Pengelolaan gulma air di Indonesia*. Konferensi Himpunan Ilmu Tumbuhan Pengganggu Indonesia ke IV, Jakarta.
 20. Brij Gopal, 1987. *Water Hyacinth*. Elsevier Amsterdam.
 21. James, A. and L. Evison. 1979. *Biological Indicators of Water Quality*. John Wiley & Sons. Chichester.
 22. Mason, C. F. 1991. *Biology of Freshwater Pollution*. 2nd Edition. Longman. Singapore Publisher Pte Ltd. Singapore. 351 p.
 23. Abel, P. D. 1989. *Water Pollution Biology*. Ellis Horwood Limited. Chichester. 232 p.
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41. MSP318 Wastewater Treatment Technology

Module Name	Wastewater Treatment Technology		
Module level, if applicable	Intermediate		
Code, if applicable	MSP318		
Subtitle, if applicable	-		
Courses, if applicable	MSP318 Wastewater Treatment Technology		
Semester(s) in which the module is taught	6 th Semester		
Person responsible for the module	Dr. Ir. Hefni Effendi, M.Phill		
Lecturer	1. Prof. Dr. Ir. Yusli Wardiatno, M.Sc 2. Dr. Majariana Krisanti, S.Pi, M.Si 3. Dr. Zulhamsyah Imran, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion		
Workload	Class	: 1 × 170 min × 14 meetings	= 2380 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	MSP212		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain wastewater treatment, including physical, chemical, and biological treatment methods.		
Content	This course is taught to provide students with insight into principles of wastewater treatment, source of wastewater, and treatment of wastewater using physical, chemical, and biological methods.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Abel, P.D. 1989. Water Pollution Biology. John Wiley & Sons. New York.		

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2. Clark, R.B. 1986. *Marine Pollution*. Clarendon Press, Oxford. 215 p.
 3. David M.L. and David A.C., 1991. *Introduction to environmental Engineering*. Mc Graw-Hill International Edition. 822 pp.
 4. Eckenfelder Jr. W.W., 1989. *Industrial Water Pollution Control*. 2nd Edition. Mc. Graw-Hill International Edition. 400 pp.
 5. Preston, M.R. 1989. *Marine pollution* pp. 53 - 197. In *Chemical Oceanography* (J.P. Riley ed.), Volume 9, Academic Press, London.
 6. Khatuddin, M., 2003. *Melestarikan Sumber Daya Air dengan Teknologi Rawa Buatan*. Gajah Mada University Press. 253 pp
 7. Lani Puspita, Eka Ratnawati, I N.N. Suryadiputra dan A. A. Mutia. 2005. *Lahan Basah Buatan di Indonesia*
 8. Laws, E.A. 1993. *Aquatic Pollution: an introductory text*. Wiley Interscience, New York. 611p.
 9. Mason, C.F. 1991. *Biology of freshwster pollution*. 2nd ed. Longman Scientific & Technical, Essex, U.K. 351 p.
 10. Mara, D., 1976. *Sewage Treatment in Hot Climate*. A. Willey-Interscience Publication. 168 pp.
 11. Metcalf and Eddy. 1991. *Wastewater Engineering, Treatment-disposal-Reuse*. 3rd edition
 12. Moshiri, G. A. 1993. *Constructed Wetlands for Water Quality Improvement*. Lewis Publishers. Boca Raton.
 13. Nemerow, N.L. 1991. *Stream, Lake, Estuary, and Ocean Pollution: Environmental Engineering Series*. 2nd Edition. Van Nostrand Reinhold. New York.
 14. Suryadiputra, I.N.N., 1995. *Teknologi Pengolahan Air Limbah (satu pengantar)*. Tidak dipublikasikan. (Diktat Kuliah).
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42. MSP322 Conservation of Aquatic Resources

Module Name	Conservation of Aquatic Resources		
Module level, if applicable	Advance		
Code, if applicable	MSP322		
Subtitle, if applicable	-		
Courses, if applicable	MSP322 Conservation of Aquatic Resources		
Semester(s) in which the module is taught	6 th Semester		
Person responsible for the module	Dr. Ir. Fredinan Yulianda, M.Sc.		
Lecturer	1. Ir. Agustinus M. Samosir, M.Phil. 2. Dr. Fery Kurniawan, S.Kel., M.Si.		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to having knowledge to apply the management of conservation of aquatic resources and areas through conceptual approach, protection, and sustainable use.		
Content	This course is taught to provide students with insight into the definition and history of conservation, biodiversity, threats and damages on resources, function and benefit of conservation, regulation and policy of conservation in Indonesia, analysis of determining conservation status, conservation strategy, management strategy of species conservation.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Richard B. Primack, Jatna Supriatna, Muhammad Indrawan, dan Padmi Kramadibrata. 1998. Biologi Konservasi. Yayasan Obor Indonesia. Jakarta.
 2. R. Quentin Grafton, Ray Hilborn, Dale Squires, Maree Tait, Meryl J. Williams. 2010. Marine Fisheries Conservation and Management. Oxford University Press. Inc. Publ. 785p.
 3. Elliott, A. Norse, 1993. Global Marine Biological Diversity: Strategy for Building Conservation into Decision Making, Island Press, Suite 300. 1718 Connecticut Avenue, N.W. Washington DC.
 4. Rodney V. Salm. IUCN, 1989. Marine and Coastal Protected Areas: A Guide for Planners and Managers. Avenue Du Mont Blanc CH-1196 Gland, Switzerland.
 5. Soule, M.E., 1986. Conservation Biology (The science of scarcity and diversity). Sinauer Associates Inc, Pub. Sunderland, Massachusetts USA.
 6. Ditjen P3K, Departemen Kelautan dan Perikanan, 2003. Pedoman Wisata Bahari Berbasis Masyarakat di Kawasan Konservasi Laut. Jakarta-DKP.
 7. Howard S. Schiffman. 2008. Marine Conservation Agreements: The law and policy of Reservation and vetoes. Martinus nijhoff publisher, Leiden/ Boston. 297 p.
 8. Tundi Spring Agardy. 1997. Marine Protected Areas and Ocean Conservation. R.G. Landes Company and Academic Press, Inc. 259p.
 9. Peraturan Menteri Kelautan dan Perikanan Republik Indonesia Nomor per 02./Men/ 2009 Tentang Tata cara penetapan Kawasan Konservasi Perairan
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43. MSP326 Aquatic Mammalogy and Herpetology

Module Name	Aquatic Mammalogy and Herpetology		
Module level, if applicable	Intermediate		
Code, if applicable	MSP326		
Subtitle, if applicable	-		
Courses, if applicable	MSP326 Aquatic Mammalogy and Herpetology		
Semester(s) in which the module is taught	6 th Semester		
Person responsible for the module	Dr. Ir. M. Mukhlis Kamal, M.Sc		
Lecturer	Prof. Dr.Ir. Djamar T. F Lumbanbatu, M.Sc		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course 2. Minimum 80% attendance in lecture class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain the biological and ecological aspects of mammals, reptiles, and amphibians, their use and level of threats, and the conservation efforts.		
Content	This course is taught to provide students with insight into amphibians, reptile (turtles, crocodile), mammals (irrawadi dolphin, dugong, dolphin, whale), conservation and management.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	<ol style="list-style-type: none"> Elliott, A. Norse, 1993. Global Marine Biological Diversity: Strategy for Building Conservation into Decision Making, Island Press, Suite 300. 1718 Connecticut Avenue, N.W. Washington DC. Rodney V. Salm. IUCN, 1989. Marine and Coastal Protected Areas: A g Guide for Planners and Manger. Avenue Du Mont Blanca CH-1196 Gland, Switzerland. 		

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3. Richard B. Primack, 1993. *Essential of Conservation Biology*. Sinauer Associates Inc, Pub. Sinterland, Massachusetts USA.
 4. Yulianda, F., 2004. *Pedoman Penentuan Kriteria Kawasan Konservasi Laut*. Fakultas Perikanan dan Ilmu Kelautan, IPB Bogor.
 5. Soule, M.E., 1986. *Conservation Biology (The science of scarcity and diversity)*. Sinauer Associates Inc, Pub. Sinterland, Massachusetts USA.
 6. Ditjen P3K, Departemen Kelautan dan Perikanan, 2003. *Pedoman Wisata Bahari Berbasis Masyarakat di Kawasan Konservasi Laut*. Jakarta-DKP.
 7. Donelly, M., 1994. *Sea Turtle Mariculture: A review of relevant information for conservation and commerce*. Center for Marine Conservation, Washington, D.C. USA.
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44. MSP323 Aquatic Ecotoxicology

Module Name	Aquatic Ecotoxicology
Module level, if applicable	Intermediate
Code, if applicable	MSP323
Subtitle, if applicable	-
Courses, if applicable	MSP323 Aquatic Ecotoxicology
Semester(s) in which the module is taught	6 th Semester
Person responsible for the module	Prof. Dr. Ir. Djamar TF. Lumban Batu, M.Agr
Lecturer	Ir. Agustinus M. Samosir, M.Phil
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe the sources, physico-chemical properties, metabolisms, and effects of toxicants to organisms and environment; and to conduct monitoring and evaluation to support environmental management.
Content	This course is taught to provide students with insight into the scope of ecotoxicology, organic and inorganic toxic compounds, biological transformation, chronic effect, heavy metals, bioassay, bioaccumulation, monitoring and evaluation.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Lumbanbatu, D.F. 2017. Ekotoksikologi Perairan. IPB Press. 236 halaman.

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2. Lumbanbatu, D.F. 1998. Pengantar Ekotoksikologi Perairan. Laboratorium Hidrobiologi. Departemen Manajemen Sumberdaya Perairan. Fakultas Perikanan dan Ilmu Kelautan IPB. 164 Halaman
 3. Lumbanbatu, D.F. 2001. Metabolisme dari Bahan-Bahan Toksik. Laboratorium Ekobiologi Perairan. Departemen Manajemen Sumberdaya Perairan. Fakultas Perikanan dan Ilmu Kelautan IPB. 108 Halaman
 4. Lumbanbatu, D.F. 2002. Sel dan Organisasi Biokomia. Laboratorium Ekobiologi Perairan. Departemen Manajemen Sumberdaya Perairan. Fakultas Perikanan dan Ilmu Kelautan IPB. 59 Halaman
 5. Lumbanbatu, D.F. 2002. Pengaturan Hormonal. Modul 3. Diktat Kuliah: Fisiologi Organisme Laut. Laboratorium Ekobiologi Perairan. Departemen Manajemen Sumberdaya Perairan. Fakultas Perikanan dan Ilmu Kelautan IPB. 51 Halaman
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45. MSP333 Fish Stock Assessment

Module Name	Fish Stock Assessment
Module level, if applicable	Intermediate
Code, if applicable	MSP333
Subtitle, if applicable	-
Courses, if applicable	MSP333 Fish Stock Assessment
Semester(s) in which the module is taught	6 th Semester
Person responsible for the module	Prof. Dr. Ir. Mennofatria Boer
Lecturer	1. Dr. Ir. Luky Adrianto, M.Sc 2. Dr. Ir. Rahmat Kurnia, M.Si
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, group discussion, case study
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Practical class : 1 × 170 min × 14 meetings = 2380 min Total = 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class
Recommended prerequisites	MSP338
Module objectives/intended learning outcomes	After attending the lecture, students are able to determine fish stock using various methods which is commonly used in fisheries resources sustainable management.
Content	This course discusses stock assessment techniques (analytically/structurally, globally or combined/holistically) through simple models and more complex models such as surplus yield models and catch forecasting as well as dynamic pool models.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Gulland, J. A. 1983. Fish Stock Assessment. A Manual of Basic Method. FAO, VOL. 1, John Wiley and Sons. 2. Sparre, P. and S. C. Venema. 1998. Introduksi Pengkajian Stok

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- Ikan Tropis. Buku 1: Manual. FAO-Puslitbang Perikanan, Balitbang Pertanian Indonesia.
3. Ricker, W. E. 1975. Computation and Interpretation of Biological Statistics of Fish Population. J. Fish. Res. Board Can. Bulletin 191.
 4. Clark, C. 1985. Fisheries Management: Bioeconomic Approach. John Wiley and Sons
 5. Hillborn, R. and Walters, S. J. 1992 Quantitative Fisheries Stock Assessment. Chapman and Hall, New York, London. 570p.
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46. MSP339 Quantitative Methods in Fishery Resource

Module Name	Quantitative Methods in Fishery Resource		
Module level, if applicable	Intermediate		
Code, if applicable	MSP339		
Subtitle, if applicable	-		
Courses, if applicable	MSP339 Quantitative Methods in Fishery Resource		
Semester(s) in which the module is taught	6 th Semester		
Person responsible for the module	Dr. Ir. Rahmat Kurnia M.Si.		
Lecturer	1. Prof. Dr. Ir. Menofatria Boer D.E.A. 2. Dr. Ir. Luky Adrianto M.Sc.		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain and explore water resource information through sampling according to the rules, data analysis through appropriate techniques, design experiments and surveys, and understand the principle of multiple variables		
Content	This course is taught to provide students with insight into valid and good data, quantitative methods for processing aquatic resource data, the principles of resource sampling methods, determining the distribution of data in fisheries resources and the aquatic environment, analytical techniques, experimental design, survey methods, multiple regression, and introduction to multivariate, fisheries social-economic data collection techniques and their analysis.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		

Media employed

LCD projector, microphone, white board

Reading list

1. Anderson, T. W. 2003. An Introduction to Multivariate Statistical Analysis, 3th ed. John Wiley & Sons, Inc. 747p.
 2. Cochran K. L.; Garcia, SM. 2009. A Fishery Manager's Guidebook. FAO and Blackwell Publishing. 544p.
 3. Johnson, R. A; Bhattacharya, G. K. Statistics Principles and Methods, 6th ed. John Wiley & Sons, Inc. 686p.
 4. Karson MJ. 1982. Multivariate Statistical Methods, an Introduction. The IOWA STATE University press.
 5. Levy PS, Lemeshow S. 1999. Sampling of Population, Methods and Application, 3rd ed. New York: John Wiley & Sons
 6. Ludwig, J. A; Reynolds, J. F. 1988. Statistical ecology: a primer on methods and computing. John Wiley & Sons, Inc. 352p.
 7. Mattjik AA; Sumertajaya IM. 2002. Experimental Design with SAS and Minitab Aplication (Indonesia), 2nd ed. IPB Press.
 8. Montgomery, D. C. 2013. Design and Analysis of Experiments, 8th ed. John Wiley & Sons, Inc. 724p.
 9. Pielou EC. 2007. Mathematical Ecology. A Wiley-Interscience Publication, John Wiley & Son.
 10. Scheaffer RL, Mendenhall W, Ott RL. 2006. Elementary Survey Sampling, 6th ed. Belmont: Duxbury Press
 11. Stauffer HB. 2008. Contemporary Bayesian and Frequentist Statistical Research Methods for Natural Resource Scientists. John Wiley & Son.
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47. MSP319 Environmental Impact Assessment on Aquatic Ecosystem

Module Name	Environmental Impact Assessment on Aquatic Ecosystem		
Module level, if applicable	Intermediate		
Code, if applicable	MSP319		
Subtitle, if applicable	-		
Courses, if applicable	MSP319 Environmental Impact Assessment on Aquatic Ecosystem		
Semester(s) in which the module is taught	7 th Semester		
Person responsible for the module	Dr. Ir. Hefni Effendi, M.Phill		
Lecturer	1. Dr. Ir. Gatot Yulianto, M.Si 2. Dr. Zulhamsyah Imran, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, literature content observation, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to describe various development activities and their impacts on aquatic ecosystems and determine the criteria for significant impacts and their management efforts.		
Content	This course is taught to provide students with insight into various development activities and their impacts on aquatic ecosystems, the criteria for significant impacts as well as their management efforts.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Undang-undang RI No.23 Tahun 1997 (19 September 1997) tentang Pengelolaan Lingkungan Hidup. 2. Peraturan Pemerintah No.19 tahun 1999 (27 Februari 1999) tentang		

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- Pengendalian Pencemaran dan/atau Perusakan laut.
3. Peraturan Pemerintah No.27 Tahun 1999 (27 Februari 1999) tentang Analisis Mengenai Dampak Lingkungan.
 4. Peraturan Pemerintah No.28 tahun 2001 (19 Desember 2001) tentang Pengelolaan Kualitas Air dan Pengendalian Pencemaran Air.
 5. Keputusan Menteri Negara kependudukan dan Lingkungan Hidup No.02/MENKLH/I/1988 tentang Pedoman Penetapan Baku Mutu Lingkungan.
 6. Berbagai Laporan Amdal yang dikerjakan oleh pengajar.
 7. Soemarwoto Otto, 1988. Analisis Dampak Lingkungan. Gajah mada University Press.
 8. Suratmo, F. Gunarwan 1991. Analisis Mengenai Dampak Lingkungan. Gajah Mada University Press.
 9. News from newspaper which is related to Environmental Impact Assessment on Aquatic Ecosystem
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48. MSP413 Aquatic Resources Policy

Module Name	Aquatic Resources Policy		
Module level, if applicable	Advance		
Code, if applicable	MSP413		
Subtitle, if applicable	-		
Courses, if applicable	MSP413 Aquatic Resources Policy		
Semester(s) in which the module is taught	7 th Semester		
Person responsible for the module	Dr. Ir. Gatot Yulianto, M.Si		
Lecturer	Dr. Taryono, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to explain policy analysis in the policy-making process and concepts related to aquatic resources management policies.		
Content	This course is taught to provide students with insight into the term of aquatic resources as public goods and their consequences, national and international regulations and policies regarding the management of aquatic resources that have been established by the Government of Indonesia and international institutions. Furthermore, there will be discussion of policy issues, water resource management issues, government failures, and market failures that cause the need for policy intervention. At the end of this lecture, policy analysis as well as resource policy concepts, and institutional management of aquatic resources which is needed to achieve sustainable management.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Adrianto L. 2011. *Konstruksi Lokal Pengelolaan Sumberdaya Perikanan di Indonesia*. IPB Press. Bogor
 2. Charles AT. 2001. *Sustainable Fishery System*. Oxford: Blackwell Science.
 3. Danin S. 2005. *Pengantar Studi Penelitian Kebijakan*. Edisi I, Cet 3. Jakarta: Bumi Aksara.
 4. Djunaedi SO. 2011. *Sumberdaya Perairan - Potensi, Masalah dan Pengelolaan*. Bandung: Widya Padjajaran.
 5. Dunn WN. 2003. *Pengantar Analisis Kebijakan Publik*. Edisi Kedua. Cetakan Kelima Tim Fakultas ISIPOL Universitas Gadjah Mada, Penerjemah; Yogyakarta: Gadjah Mada University Press.
 6. Fauzi A. 2004. *Ekonomi Sumberdaya Alam dan Lingkungan. Teori dan Aplikasi*. Gramedia. Jakarta
 7. Fauzi, A. 2005. *Kebijakan Perikanan dan Kelautan. Isu, Sintesis dan Gagasan*. Bogor: Grafika Mardiyuana.
 8. Nugroho R. 2017. *Public Policy*. Edisi Keenam. PT Elex Media Komputindo. Jakarta. 898p.
 9. Muhammad S. 2011. *Kebijakan Pembangunan Perikanan dan Kelautan: Pendekatan Sistem*. UB Press. Malang
 10. Parson W. 2014. *Public Policy: Pengantar Teori dan Praktik Analisis Kebijakan*. Terjemahan. Edisi Pertama. Cetakan ke-5. Kencana Pernadamedia Group. Jakarta. 685p.
 11. Suharto E. 2008. *Analisis Kebijakan Publik*. Alfabeta. Bandung.
 12. Supriadi, H dan Alimuddin. 2011. *Hukum Perikanan di Indonesia*. Jakarta: Sinar Grafika
 13. Wahab SA. 2008. *Pengantar Analisis Kebijakan Publik*. Cetakan Kedua. UMM Press. Malang.
 14. Winarno B. 2016. *Kebijakan Publik Era Globalisasi*. CAPS (Center of Academic Publishing Service). Yogyakarta. 592p.
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49. MSP414 Aquatic Resources Management

Module Name	Aquatic Resources Management		
Module level, if applicable	Advance		
Code, if applicable	MSP414		
Subtitle, if applicable	-		
Courses, if applicable	MSP414 Aquatic Resources Management		
Semester(s) in which the module is taught	7 th Semester		
Person responsible for the module	Dr. Ir. Sigid Hariyadi, M.Sc		
Lecturer	<ol style="list-style-type: none"> 1. Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si 2. Dr. Taryono, S.Pi, M.Si 3. Aliati Iswantari, S.Pi. M.Si 		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	MSP31A		
Module objectives/intended learning outcomes	After attending the lecture, students are able to (a) explain management planning for optimal and sustainable use of aquatic resources for the welfare of the community; (b) understand the principles of aquatic resources management, including understanding the scope, typology, evaluation of potential status, and institutional aspects.		
Content	This course is taught to provide students with insight into aquatic resources management planning and the principles of aquatic resources management (scope, typology, potential status evaluation, and institutional aspects)		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Anonymus 1988. Konsep Pengelolaan Perairan Danau. Biotrop
 2. EPA.199. The Lake and Reservoir Restoration Guidance Manual. North American Lake Management Society
 3. Jorgensen, S.E. 1980. Lake Management. Pergamon Press, Oxford
 4. Payne, A.I.1986. The Ecology of Tropical Lakes and Rivers. John Wiley & Sons. Chichester. 299 p.
 5. Boyd C.E.1979. Water Quality in Warm Water Fish Pond. Auburn Uniiv. 352 p
 6. Suryadiputra, I.N.N., Alue. Dohong, R. S. B.Waspodo Roh S.B. Waspodo, Lili. Muslihat, Irwansyah. R. Lubis, Fery. Hasudungan and Iwan. T. C. Wibisono, 2005. A Guide to the blocking of canals and ditches in conjunction with the community. CCFPI Project. Wetlands International-Indonesia Programme and Wildlife Habitat Canada. Bogor. ISBN No: 979-99373-5-3
 7. Murdiyarso, D. 2003. Sepuluh Tahun Perjalanan Negoisasi Konvensi Perubahan Iklim, Wetlands International/IPB, xviii + 200. ISBN NO: 2003979-709-071-X
 8. Wibisono, I.T.C. and I Nyoman. N. Suryadiputra. 2006. Study of Lessons Learned from Mangrove/Coastal Ecosystem Restoration Efforts in Aceh since the Tsunami. Wetlands International – Indonesia Programme/ UNEP. Bogor. xiii + 83.
 9. Suryadiputra I,N.N.; I.T.C Wibisono, I.T.C. and F. Hasudungan F. 2008. Case studies in Environmental Management and the Practice of Reducing Disaster Risk in Indonesia. Wetlands International – Indonesia Programme- UNEP. Bogor. xxvi + 112.
 10. Wibisono, I.T.C., Eko. Budi. Priyanto, dan I N.N. Suryadiputra. 2006. Panduan Praktis Rehabilitasi Pantai: Sebuah Pengalaman Merehabilitasi Kawasan Pesisir. Wetlands International - Indonesia Programme & UNEP. Bogor. x + 70.
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50. MSP415 Integrated Coastal Area Management

Module Name	Integrated Coastal Area Management		
Module level, if applicable	Advance		
Code, if applicable	MSP415		
Subtitle, if applicable	-		
Courses, if applicable	MSP415 Integrated Coastal Area Management		
Semester(s) in which the module is taught	7 th Semester		
Person responsible for the module	Dr. Ir. Bambang Widigdo		
Lecturer	Dr. Zulhamsyah Imran, S.Pi, M.Si		
Language	Indonesian		
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Total		= 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to arrange principles of strategic planning of integrated coastal management.		
Content	This course is taught to provide students with insight into the potential and development of coastal areas, the concept of integrated and sustainable coastal environmental management, characteristics of coastal ecosystems, coastal dynamics, the principles of spatial planning for coastal areas through a chemical biophysical approach, and socio-economic and cultural characteristics.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		
Reading list	1. Dahuri, R., J. Rais, S.P. Ginting, dan M.J. Sitepu. 1996. Pengelolaan Sumber Daya Wilayah Pesisir dan Lautan Secara Terpadu. PT Pradnya Paramita, Jakarta. 2. Hotta, K. dan I.M. Dutton (editor), 1995. Coastal Management in the		

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- Asia-Pacific Region: Issues and Approaches. Japan Marine Science and Technology Federation, Tokyo.
3. Clark, R. B., 1986. Marine Pollution. Clarendon Press, Oxford.
 4. Clark, J.R., 1992. Integrated Manajement of Coastal Zone.
 5. Carter, R.W.G., 1988. Coastal Environment. OECD, 1993. Coastal Zone Management. Integrated Policy. OECD, Paris Coastal Zone Economics
 6. Widigdo, B. 2001. Bahan bacaan kuliah Manajemen Perikanan Pesisir.
 7. Kay R. and J. Alder. 1999. Coastal Planning and Management. E & FN SPON London & New York.
 8. Yulianto, G. 2003. Prilaku Sosial Ekonomi Masyarakat Wilayah Pesisir dan Pola Penanganannya, Makalah Disampaikan pada pelatihan ICZPM di Jambi.
 9. Yulianto, G. 2000. Valuasi ekonomi sumberdaya alam dan jasa-jasa lingkungan wilayah pesisir: Menuju Pembangunan Berkelanjutan. Makalah disampaikan pada Seminar Pengelolaan terpadu Wilayah Pesisir Kab. Indramayu.
 10. Undang Undang RI No. 27/2007 tentang Pengelolaan Wilayah Pesisir dan Pulau-Pulau Kecil.
 11. Yulianto, G. 2002. Perencanaan dan Mekanisme Konsultasi Publik dalam Penyusunan Perencanaan Pengelolaan Kawasan Pesisir. Makalah dalam Pelatihan ICZPM di Bogor.
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51. MSP422 Aquatic Ecotourism

Module Name	Aquatic Ecotourism
Module level, if applicable	Advance
Code, if applicable	MSP422
Subtitle, if applicable	-
Courses, if applicable	MSP422 Aquatic Ecotourism
Semester(s) in which the module is taught	7 th Semester
Person responsible for the module	Dr. Ir. Fredinan Yulianda, M.Sc
Lecturer	1. Ir. Agustinus Samosir, M.Phil 2. Dr. Ir. Handoko Adi Susanto, M.Sc
Language	Indonesian
Relation to curriculum	Compulsory course for undergraduate program in Aquatic Resources Management
Type of teaching	Lecturer presentation, discussion, group discussion, case study
Workload	Class : 2 × 170 min × 14 meetings = 4760 min Total = 4760 min (79.3 hours)
Credit points	2 SCH x 1.44 = 2.88 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> Registered in this course Minimum 80% attendance in lecture class 100% attendance in practical class
Recommended prerequisites	-
Module objectives/intended learning outcomes	After attending the lecture, students are having knowledge to apply the management of aquatic ecotourism through a conceptual approach, suitability of natural resources, and carrying capacity for sustainable use
Content	This course is taught to provide students with insight into the concept of ecotourism; characteristics of resources, ecosystems, area; suitability and carrying capacity of natural resources for ecotourism; social and economy issues influencing ecotourism; planning and strategy for ecotourism development; ecotourism in conservation area.
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort
Media employed	LCD projector, microphone, white board
Reading list	1. Ekowisata Bahari sebagai alternatif pemanfaatan sumberdaya pesisir berbasis konservasi. Makalah Ekowisata. Tahun 2007. Departemen Manajemen Sumberdaya Perairan, Fakultas Perikanan dan Ilmu

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- Kelautan IPB.
2. Ekoturisme: Petunjuk untuk perencanaan dan pengelola, Penyunting Kreg Lindberg dan Donald E. Hawkins, tahun 1993. The ecotourism society, North Bennington.
 3. Pengusahaan Ekowisata, editor: Chafid Fandeli dan Mukhlison. Tahun 2000. Pustaka Pelajar.
 4. Marine Ecotourism-A Marketing Initiative in West Clare. Zena Hocht. 2001. Atlantic Area INTERREG-IIC Programme.
 5. Marine Ecotourism: Issues and Experiences (Aspects of Tourism, 7). 2003. Brian Garrod, Julie C. Wilson. Multilingual Matters Limited. 266 p.
 6. Managing Coastal Tourism Resorts: A Global Perspective. 2007. Editors: Sheela Agarwal and Gareth Shaw. Channel View Publications. Clevedon • Buffalo • Toronto. 344 p.
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52. MSP432 Fishery Resources Management

Module Name	Fishery Resources Management		
Module level, if applicable	Advance		
Code, if applicable	MSP432		
Subtitle, if applicable	-		
Courses, if applicable	MSP432 Fishery Resources Management		
Semester(s) in which the module is taught	7 th Semester		
Person responsible for the module	Prof. Dr. Ir. Mennofatria Boer		
Lecturer	Dr. Ir. Luky Adrianto, M.Sc		
Language	Indonesian		
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management		
Type of teaching	Lecturer presentation, discussion, group discussion, case study		
Workload	Class	: 2 × 170 min × 14 meetings	= 4760 min
	Practical class	: 1 × 170 min × 14 meetings	= 2380 min
	Total		= 7140 min (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS		
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in lecture class • 100% attendance in practical class 		
Recommended prerequisites	-		
Module objectives/intended learning outcomes	After attending the lecture, students are able to (a) understand the fisheries system which consists of fish resource and habitat sub-systems, fishery actor sub-systems and fisheries management, policy sub-systems, know the characteristics of fisheries uncertainty; (b) explain the components of fisheries management, typology of fisheries management tools (fisheries management measures) and the stages of fisheries planning.		
Content	This course is taught to provide students with insight into fisheries system both in ocean and inland water ecosystems, components of fisheries management, typology of fisheries management, and stages of fisheries planning.		
Study and examination requirements and forms of examination	Cognitive: Midterm exam, Final exam, Quizzes, Assignments Psychomotor: Practice Affective: Assessed from the element/ variables achievement, namely (a) Contributions (attendance, active, role, initiative, and language), (b) Being on time, (c) Effort		
Media employed	LCD projector, microphone, white board		

Reading list

1. Bhukaswan, T. 1980. Management of Asian reservoir fisheries. FAO Fisheries Technical Paper No. 27, FAO, Rome.
 2. Fiedler, P.L. and S.K. Jain. 1992. Conservation biology: The theory and practice of nature conservation, preservation, and management. Chapman & Hall, New York.
 3. Frontier, S. 1985. Diversity and structure in aquatic ecosystems. Oceanogr. Mar. Biol. Ann. Rev., Margaret Barnes, (Ed.), Aberdeen Univ. Press.
 4. Horvart, L. and E. Woynarovich. 1980. The artificial propagation of warm-water finfish. A Manual for extension, Fisheries Technical Paper, No.201., FAO, Rome.
 5. Jin-Eong, O. and G. Wooi-Khoon. 1983. Productivity of the mangrove ecosystem: Management implication. Proceeding of the Workshop on Productivity of the mangrove. UNESCO/UNDP, Universiti Sains Malaysia and Malaysia National Science Research Development Council.
 6. McConnell, L. 1987. Ecological studies in tropical fish communities.
 7. UNEP-IETC. 1999. Planning and management of lakes and reservoirs, an integrated approach to eutrophication. Osaka/Shiga.
 8. UNEP-IETC, ILEC. 2001. Lakes and reservoirs: Similarities, Differences and Importance. Vol.1. ISBN4-906356-27-3.
 9. UNEP-IETC, ILEC. 2001. Lakes and reservoirs: The watershed: Water from the mountain into the sea. Vol.2. ISBN4-906356-29-X.
 10. UNEP-IETC, ILEC. 2001. Lakes and reservoirs: Water QUALITY: The impact of eutrophication. Vol.3. ISBN4-906356-31-1
 11. Welcomme, R.L. 1979. Fishery management in large rivers. FAO Fisheries Technical Paper No.194. FAO, Rome.
 12. Whitton, B.A. 1975. River ecology. Studies in ecology, Vol. 2. Univ. of California Press, Berkeley and Los Angeles.
 13. Aquabio. 1982. Japanese Artificial Reef Technology. Technical Report 604, Tokyo.
 14. Krebs, C.J. 1985. Ecology. Harper & Row Publisher N.Y.
 15. World Conservation Strategy. 1980. IUCN, UNEP, WWF.
 16. Fisheries of Japan. 1987. Japan Fisheries Association.
 17. UNAR, M. 1965. A Review of The Indonesian Shrimp Fishery and its Present Developments. MFR Paper 1030.
 18. Garcia, S.M; Zerbi, A; Aliaume, C; Do Chi, T; Lasserre, G. 2003. The Ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook. FAO Fisheries Tech. Paper. No. 443, Rome, FAO, 71 p.
 19. FAO. 2003. Fisheries management. 2. The Ecosystem approach to fisheries. FAO Tech Guidelines for fisheries. ISSN 1020-5292.
 20. FAO. 1997. Fisheries management. FAO Tech Guidelines for responsible fisheries. ISBN 92-5-103962-3.
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53. FPK401 Community Services

Module Name	Community Services
Module level, if applicable	Advance
Code, if applicable	FPK401
Subtitle, if applicable	-
Courses, if applicable	FPK401 Community Services
Semester(s) in which the module is taught	Odd Semester
Person responsible for the module	Community Services (IPB KKNT) Committee
Lecturer	Team Teaching from Faculty of Fisheries and Marine Sciences
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in IPB University
Type of teaching	Lecture, practical work on site, reporting, presentation
Workload	Total = 7140 minutes (119 hours)
Credit points	3 SCH x 1.44 = 4.32 ECTS
Requirements according to the examination regulations	<ul style="list-style-type: none"> • Registered in this course • Minimum 80% attendance in this course
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Students are able to identify, plan, implement and evaluate the community empowerment programs in the field of fisheries and marine. 2. Having caring and commitment, skill full in communicating and collaborating between professions to contribute in overcoming problems that exist in society. 3. Able to initiate and develop stakeholder cooperation networks. 4. Have a sense of guidance and empathy for the problems faced in the community, as well as an understanding of cultural customs and national outlook.
Content	Minimum 40 day full-time in the community - Fieldwork - Verbal and written communication - Reporting
Study and examination requirements and forms of examination	Cognitive : assignments, report, exam Psychomotor : practice Affective : assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort
Media employed	Field work Internship in the community

54. MSP402 Seminar

Module Name	Seminar
Module level, if applicable	Advance
Code, if applicable	MSP402
Subtitle, if applicable	-
Courses, if applicable	MSP402 Seminar
Semester(s) in which the module is taught	Odd and even semester
Person responsible for the module	Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si
Lecturer	<ol style="list-style-type: none"> 1. Dr. Ali Mashar, S.Pi, M.Si 2. Dr. Rahmat Kurnia, S.Pi, M.Si 3. Aliati Iswantari, S.Pi, M.Si 4. Supervisor and Examiner (depend on the research topic)
Language	Indonesian
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	<ul style="list-style-type: none"> • Attending other students' seminar • Consultation with supervisors • Conducting presentation in the seminar
Workload	<ol style="list-style-type: none"> 1. Attending seminars from students in similar department and other departments in the Faculty of Fisheries and Marine Sciences 2. Product of this course will be a scientific summary of research and presentation in the seminar <p>Total: 2380 min</p>
Credit points	1 SCH x 1.44 = 1.44 ECTS
Requirements according to the examination regulations	<ol style="list-style-type: none"> 1. Registered in this course 2. Attending minimum 15 seminars from students in similar department and minimum of each 3 seminars from other departments in the Faculty of Fisheries and Marine Sciences 3. Fulfil all of the administration to conduct seminar
Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Affective: Indicates the behavior, layout and appearance speak polite and educated</p> <p>Cognitive Psychomotor: Ability to communicate ideas and knowledge formally in writing and orally</p> <p>Affective-Psychomotor: Understanding the definition and role of their potential and be able to search, find and select facts and information related to aquatic resources management applications</p>
Content	Attending seminar, consultation with supervisors, conducting seminar

Study and examination requirements and forms of examination	<p>Cognitive: Writing, Seminar, Presentation</p> <p>Psychomotor: Writing Skill, Analysis Skill, Programming Skill, Presentation Skill</p> <p>Affective: Assessed from the element/variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Nazir M. 1983. Metode Penelitian. Ghalia Indonesia, Bogor. 542 hal 2. Barnard C., F. Gilbert, and P. McGregor. 1996. Asking question in biology: design, analysis, and presentation in practical work. Addison Wisley Longman Ltd. Harlow UK. 157 p. 3. Lindsay, D. 1996. A Guide to scientific writing, 2nd ed. Addison Wisley Longman Ltd. Australia. 126 p. 4. Fowler J. and L. Cohen. 1997. Practical statistic for field biologi. John Wiley & Sons. Chichester. 227p. 5. Bengen, D.G. 1999. Teknik Pengambilan Contoh dan Analisis Data Biofisik Sumberdaya Pesisir. PKSPL-PMO SACDP PEMDA Tk. II Cilacap. 99 hal 6. Atmadilaga, D.H. 1994. Panduan Skripsi, Tesis, Desertasi Pionir Jaya, Bandung. 161 hal. 7. Neter E., Altman PL., Burgan MW., Holmgreen NH., Pollock G., dan Zipf E.M. 1982. C.B.E. Style Manual, a guide for authors, editors, and publishers in the biological sciences. 5thed. Council of Biology Editors, Inc. Bethesda, MD, U.S.A 8. PPKI version 4

55. MSP403 Undergraduate Thesis

Module Name	Undergraduate Thesis
Module level, if applicable	Advance
Code, if applicable	MSP403
Subtitle, if applicable	-
Courses, if applicable	MSP403 Undergraduate Thesis
Semester(s) in which the module is taught	Odd and even semester
Person responsible for the module	Dr. Ir. Niken Tunjung Murti Pratiwi, M.Si
Lecturer	<ol style="list-style-type: none"> 1. Dr. Ali Mashar, S.Pi, M.Si 2. Dr. Rahmat Kurnia, S.Pi, M.Si 3. Supervisor and Examiner (depend on the research topic)
Language	Indonesian and/or English
Relation to curriculum	Compulsory courses for undergraduate program in Aquatic Resources Management
Type of teaching	Research, consultation, undergraduate thesis writing, final examination
Workload	Semesters of supervised research and scientific writing. Product of this course will be an undergraduate thesis and examination. 6 x 170 min x 14 meetings = 14280 min (238 hours)
Credit points	6 SCH x 1.44 = 8.64 ECTS
Requirements according to the examination regulations	Final examination can be done after: <ul style="list-style-type: none"> • The undergraduate thesis is approved by the supervisor(s). • Student had conducted seminar • Mark from all courses is complete
Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Affective: Indicates the behavior, layout and appearance speak polite and educated, and able to convey ideas and knowledge honestly, based, structured, effective and accurate in a scope of selected application.</p> <p>Cognitive Psychomotor: Ability to communicate ideas and knowledge formally in writing and orally as well as demonstrate the ability to use the approach, methods and completion of certain problem in aquatic resources management.</p> <p>Affective-Psychomotor: Understanding the definition and role of their potential and be able to search, find and select facts and information related to aquatic resources management</p>
Content	Research methods (experiment/measurement/observation/field surveys, experiments scaled/laboratory, modeling/simulation, literature study), processing, analysis, presentation and interpretation of data, survey literature citations, and literature, thesis writing, proof reading, plagiarism check, presentation, and examination.

Study and examination requirements and forms of examination	<p>Cognitive: Writing, Comprehensive Exam, Seminar, Paper, Thesis, Presentation</p> <p>Psychomotor: Writing Skill, Analysis Skill, Programming Skill, Presentation Skill</p> <p>Affective: Assessed from the element/variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort</p>
Media employed	LCD projector, microphone, white board
Reading list	<ol style="list-style-type: none"> 1. Nazir M. 1983. Metode Penelitian. Ghalia Indonesia, Bogor. 542 hal 2. Barnard C., F. Gilbert, and P. McGregor. 1996. Asking question in biologi: design, analysis, and presentation in practical work. Addison Wisley Longman Ltd. Harlow UK. 157 p. 3. Lindsay, D. 1996. A Guide to scientific writing, 2nd ed. Addison Wisley Longman Ltd. Australia. 126 p. 4. Fowler J. and L. Cohen. 1997. Practical statistic for field biologi. John Wiley & Sons. Chichester. 227p. 5. Bengen, D.G. 1999. Teknik Pengambilan Contoh dan Analisis Data Biofisik Sumberdaya Pesisir. PKSPL-PMO SACDP PEMDA Tk. II Cilacap. 99 hal 6. Atmadilaga, D.H. 1994. Panduan Skripsi, Tesis, Desertasi Pionir Jaya, Bandung. 161 hal. 7. Neter E., Altman PL., Burgan MW., Holmgreen NH., Pollock G., dan Zipf E.M. 1982. C.B.E. Style Manual, a guide for authors, editors, and publishers in the biological sciences. 5thed. Council of Biology Editors, Inc. Bethesda, MD, U.S.A 8. PPKI version 4

