

Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Aquatic Biology	Semester Credit	Summer Session 2
Key words	Plankton, Benthos, Nekton, Algae, Marine Ecology		
Professor	Professor Tomoko YAMAMOTO Associate professor Toru KOBARI Associate professor Gen KUME Assistant professor Hikaru ENDO		
Contact office	Rm. 3-2, Build.1 (Prof. Yamamoto), Rm. 2-5, Build. 5 (Prof. Kobari) Rm. 3-4, Build. 5 (Prof. Kume), Rm. 3-5, Build. 5 (Prof. Endo)		
Contact hours	During the intensive course		
Target	To let students to obtain basic knowledge for 1) biology and ecology of marine organisms, 2) food web and marine ecosystem, 3) their impacts on fisheries and human activities.		
Course description	This lecture is separated into four major sections that are conducted by four professors, respectively. Each major section is scheduled for one day. Students are subjected to a report to check their understandings.		
Schedule	<ol style="list-style-type: none">1. Plankton Biology and Ecology 1: T. Kobari2. Plankton Biology and Ecology 2: T. Kobari3. Plankton Biology and Ecology 3: T. Kobari4. Plankton Biology and Ecology 4: T. Kobari5. Biology and Ecology Benthic Animals 1: T. Yamamoto6. Biology and Ecology Benthic Animals 2: T. Yamamoto7. Biology and Ecology Benthic Animals 3: T. Yamamoto8. Biology and Ecology Benthic Animals 4: T. Yamamoto9. Fish Biology and Ecology 1: G. Kume10. Fish Biology and Ecology 2: G. Kume11. Fish Biology and Ecology 3: G. Kume12. Fish Biology and Ecology 4: G. Kume13. Algae Biology and Ecology 1: H. Endo14. Algae Biology and Ecology 2: H. Endo15. Algae Biology and Ecology 3: H. Endo		
Important items	to understand basic ideas of marine biology, marine ecology and biological oceanography		
Self-studies and other advices	Students need to submit reports of the subjects on biology and ecology of plankton, benthos, fish and algae and the related issues.		
Textbooks	Documents are provided and the related materials will be introduced.		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method:	Reports of the subjects are evaluated. Credits are provided when students can solve more than 60% of the subjects.		
Evaluation criteria:	Pass if assessment of practice in schedule 6 is not less than 60%		
Relevant matters:	This class is basically described in English.		

http://www.agri-fish-web.jp/syllabus/view/syllabusViewDetail.php?nendo=2019&sylb_cd=3g1900000018

Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Aquatic Bioresource Science and Technology	Semester Credit	Summer Session 2
Key words	Fisheries, management, technology		
Professor	Professor Miguel VAZQUEZARCHDALE (Coordinator) Professor Kazuhiko ANRAKU Professor Jun OHTOMI Associate Professor Wataru DOI Associate Professor Keigo EBATA Associate Professor Munechika ISHIZAKI Associate Professor Takaaki NISHI Associate Professor Yuichi YAMANAKA		
Contact office	Rm. 2-15, Build.1		
Contact hours	After class		
Target	To teach students the basic knowledge of fisheries resource sciences		
Course description	Explanation on fisheries resources, biological characteristics, fishing gear and operation, fish behavior, and measuring instruments used in fishing operation		
Schedule	<ol style="list-style-type: none"> 1. Introduction of the course (Miguel) 2. World fisheries review (Miguel) 3. Solutions to declining fisheries resources (Miguel) 4. Local fisheries resource development, support and management 1 (Ishizaki) 5. Local fisheries resource development, support and management 2 (Ishizaki) 6. Basic properties of sensory system and behavior of aquatic animals (Anraku) 7. Behavior of aquatic animals to fishing gear (Anraku) 8. Biological characteristics of fisheries resources 1 (Ohtomi) 9. Biological characteristics of fisheries resources 2 (Ohtomi/Doi) 10. Biological characteristics of fisheries resources 3 (Doi) 11. Fishery electronic equipment 1 (Nishi T.) 12. Fishery electronic equipment 2 (Nishi T./Yamanaka) 13. Environmental observation by the remote sensing 3 (Yamanaka) 14. Fishing Gear Design 1 (Ebata) 15. Fishing Gear Design 2 (Ebata) 		
Important items	To understand the basic knowledge on fisheries resource sciences		
Self-studies and other advices	Homework needs searching and summarizing journal papers and preparing reports on all items of 15 lectures.		
Textbooks	Handout is prepared by the lecturer and students have to find relevant journal papers.		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method	Pass if satisfactory reporting and participating into discussions are not less than 60% of classes. Total evaluation is consisted of report 80% and discussion participation 20%.		
Evaluation criteria	Pass if score is not less than 60%		
Relevant matters			

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Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Aquaculture	Semester Credit	Summer Session 2
Key words	Nutrition, Fish physiology, Fish disease, Larval rearing		
Professor	Professor Tomonari KOTANI Professor Atsushi YAMAMOTO Professor Manabu ISHIKAWA Associate professor Satoshi TASUMI Assistant professor Saichiro YOKOYAMA		
Contact office	Rm. 2-3, Build. 5 (TK), Rm. 2-1, Build. 5 (AY), Rm. 1-2, Build.2 (MI),		
Contact hours	After class		
Target	To let students to be able to understand principles of: methodology of aquaculture, present status of aquaculture of typical fish and shellfish species, latest information of aquaculture production in Japan and other countries.		
Course description	Principles of: the fundamental knowledge of system and present status of aquaculture and stock enhancement, carried out in Japan and all over the world		
Schedule	<ol style="list-style-type: none"> 1. Rearing methods of larval finfish 2. Live feeds for larval finfish 3. Aquafarming 4. Methodology for improvement of survival 5. Lipid nutrition of aquatic animals 6. Interaction of nutrients in aquatic animals 7. Research of aquatic nutrition and isotope 8. Environmental conservation for aquaculture and recycled land-based aquaculture system 9. Anti-nutritional factors in feed ingredients 10. Nutrigenomics in fish nutrition 11. Recent methods for fish and shellfish immunology 12. Recent topics of fish and shellfish immunology 13. Infectious diseases in cultured species 14. Prevention for epidemics I 15. Prevention for epidemics II 		
Important items:	1) Understanding the methodology of aquaculture, 2) Learning the present status of aquaculture of typical fish and shellfish species and acquiring the knowledge of the method for aquaculture of those species, 3) Understanding the latest information of aquacultural production in Japan and other countries		
Self-studies and other advices	Each lecturer will direct the contents.		
Textbooks	Prepared by the professor each time		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method	Understanding level of the contents provided in the class will be evaluated based on examination and/or report		
Evaluation criteria	Pass if the sum of report evaluation or examination score is equal to or more than 60%.		
Relevant matters	Explanations in English when overseas students are in the class		
	http://www.agri-fish-web.jp/syllabus/view/syllabusViewDetail.php?nendo=2019&sylb_cd=3g1900000021		

Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Latest Analytical and Experimental Methods (Biochemistry)	Semester Credit	Summer Session 1
Key words	Protein, SDS-PAGE, Immunocytochemistry, Food proximate analysis, High performance liquid chromatography,		
Professor	Professor Masaharu KOMATSU Professor Manabu ISHIKAWA Associate professor Kazuhiro SHIOZAKI		
Contact office	Rm. 3-1, Build.2 (KS)		
Contact hours	After class		
Target	To let students be able to understand the principles of analysis of various chemicals and proteins for Biochemistry and Molecular biology.		
Course description	Principles of measuring devices used in Marine biochemistry researches are lectured and students have practical activities on how to use the devices.		
Schedule	<ol style="list-style-type: none"> 1. High performance liquid chromatography I 2. High performance liquid chromatography II 3. High performance liquid chromatography III 4. High performance liquid chromatography IV 5. High performance liquid chromatography V 6. Bioinformatics for DNA and amino acid sequence analysis 7. Theory of proteomics and chemical biology 8. Preparation of serum and plasma proteins from fish blood 9. Sodium dodecyl sulfate electrophoresis 10. Zymography analysis 11. Data analysis of Protein experiments 12. Theory of immuno-staining 13. Preparation of cultured cell 14. Immuno-staining with organelle-specific marker 15. Immuno-staining analysis 		
Important items:	to understand the principles and handling methods of measuring devices		
Self-studies and other advices	Homework needs searching and summarizing a journal paper after a class and preparing reports for the next class.		
Textbooks	Prepared by the professor each time		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method	Analysis operation, use of measuring devices in practices, and understanding of the principle of operation are monitored, and submitted report in each item is assessed.		
Evaluation criteria	Pass if reports and continuous assessment of participation to practices are not less than 60%		
Relevant matters	Explanations in English		

Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Latest Analytical and Experimental Methods (Basic Biology)	Semester Credit	Summer Session 1
Key words	Aquaculture science and microbiology: Image analysis, measurement of size and activity, isolation and cultivation of microorganisms, microscopic observation, techniques for microbial ecology.		
Professor	Professor Tomonari KOTANI Professor Takeshi YOSHIKAWA		
Contact office	Rm 2-3, Build 5 (TK); Rm. 2-2, Build. 2 (TY)		
Contact hours	After class		
Target	To let students to be able to understand principles of aquaculture science, and microbiology including: microscopic observation; measurements of body and activity of larval fishes and zooplankton; microbial isolation, cultivation, and their related experimental equipment.		
Course description	Microbiology and aquaculture Science in the following dimensions: measurements of body and activity of larval fishes and zooplankton; microbial isolation, cultivation, observation, and their related experimental equipment.		
Schedule	<ol style="list-style-type: none">1. Outline of aquatic microbial ecology and applied microbiology (TY)2. Outline of molecular biological techniques applicable to aquatic microbial ecology3. Enumeration of microorganisms with quantitative PCR (qPCR) - Preparation of the reaction mixture (TY)4. Enumeration of microorganisms with quantitative PCR (qPCR) - Operation of the equipment (TY)5. Enumeration of microorganisms with quantitative PCR (qPCR) - Data analysis (TY)6. Microbial community analysis with denaturing gradient gel electrophoresis (DGGE) – PCR (TY)7. Microbial community analysis with denaturing gradient gel electrophoresis (DGGE) – Electrophoresis (TY)8. Microbial community analysis with denaturing gradient gel electrophoresis (DGGE) - Data analyses (TY)9. How to measure the dissolved oxygen concentration (TK)10. Observation of oxygen consumption of organisms (TK)11. How to evaluate the metabolism of organisms (TK)12. How to count the number of microalgae (TK)13. How to count the number of zooplankton (TK)14. Measurement of size of organisms (TK)15. How to use the image analysis in the measurement of organisms (TK)		
Important items:	to understand the experimental procedures as well as their principles on analyzing aquatic microbial ecology.		
Self-studies and other advices	The participants should prepare the contents to be provided at the next lecture and review the provided contents or obtained experimental data.		
Textbooks	Handouts will be given at the class.		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method	Understanding level of the contents provided in the class will be evaluated based on submitted reports.		
Evaluation criteria	The degree of understanding the contents provided in the class should reach 60%.		
Relevant matters	The class will be conducted in English.		

Graduate School of Agriculture, Forestry, and Fisheries, Kagoshima University

Subject title	Latest Analytical and Experimental Methods (Open)	Semester Credit	Summer Session 1
Key words	Analytical chemistry, Molecular biology, Food analytical chemistry, Basic techniques for biology, Social sciences		
Professor	Professor who supervise an individual student of a member school while studying in the School of Fisheries, Kagoshima University		
Contact office	To be discussed between a supervising professor and a student		
Contact hours	After class		
Target	To obtain methods of researches in a specific field of fisheries science, which is decided by a supervising professor, taking student's interests into consideration. The supervising professor is appointed on the basis of request by a student or interests informed before coming to Kagoshima University.		
Course description	Basic principles related to analytical chemistry, molecular biology, food analytical chemistry, basic techniques for biology are widely lectured.		
Schedule	To be discussed between a host professor and student		
Important items:	Contents and topics are decided through discussion between a supervising professor and a student on the basis of student's interest		
Self-studies and other advices	Homework needs searching and summarizing a journal paper after a class and preparing for reports for the next class.		
Textbooks	Prepared by the professor		
Requisites to take subject:	Unconditional and no prerequisite		
Assessment method	Understanding level of the contents provided in the class will be evaluated based on Discussion I and II.		
Evaluation criteria	Pass if the evaluation is equal to or more than 60%.		
Relevant matters	Explanations in English		