Module Handbook: Fish Health Management

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

Module designation	Fish Health Management is a compulsory course for students of the Aquaculture Study Program. In this course, aspects of disease control through environmental management, parasite treatment, bacterial disease treatment, various disease diagnosis methods will be studied, increased disease resistance through immunostimulants, vaccinations, probiotics, improvement of the aquatic environment by bioremediation and quarantine. Assessment of students is carried out during lectures through activeness in lectures and discussions, quizzes, assignments. Examinations are also carried out in writing in the form of midterm and final semester exams.
Module level, if applicable	Undergraduate
Code, if applicable	PIA 20193151
Subtitle, if applicable	Manajemen Kesehatan Ikan
Courses, if applicable	-
Semester(s) in which the module is taught	5th
Person responsible for the module	Dr. Ir. Triyanto, M.Si.
Lecturer	Dr. Ir. Alim Isnansetyo, M.Sc. Noer Kasanah, M.Si, Apt. Ph.D Dr. Ir. Triyanto, M.Si. Dr. Ir. Murwantoko, M.Si.
Language	Indonesian

Relation to curriculum	Study Program, Compulsory
Type of teaching, contact hours	Activities: 1. Lecture offline and online (lecture, discussion, assignment; 50 min/meeting) 2. Examinations (mid-term and final exam) 3. Independent studies online platform (eLOK, eLISA) (quiz, examination, discussion, and private study) This course uses blended learning and SCL (small group discussion, case-based learning) method.
Workload	1. Lecture 2 SKS x 50 minutes x 16 meetings = 1,600 minutes = 26.67 hours = 26.67 hours/30 hours = 0.89 ECTS 2. Structural Assignment 2 SKS x 60 minutes x 16 meetings = 1,920 minutes = 32.00 hours = 32.00 hours/30 hours = 1.07 ECTS 3. Self Study 2 SKS x 60 minutes x 16 meetings = 1,920 minutes = 32.00 hours = 32.00 hours/30 hours = 1.07 ECTS Total = 3.03 ECTS
Credit points	2 credit points
Requirements according to the examination regulations	Students must attend at least 70% of the total 14 class meetings to be eligible to take the final exams.
Recommended prerequisites	Parasite and Fish Diseases

Module objectives/intended learning outcomes	Course Learning Outcomes: CO-1: Fish Defense System; Vaccinations; Immunostimulants (PLO3-PI). CO-2: Fish Pathogen Detection (PCR, ELISA, etc.) (PLO5-P3). CO-3: Epidemiology and Surveillance; Chemotherapy; Antibiotics; Probiotics and Bioremediation (PLO5-P3). Program Learning Outcomes: PLO3-P1: To be able to explain sustainable fisheries and marine systems, including management and utilization of aquatic resources, socio-economics, fish culture, and processing of fishery products. PLO5-P5: To be able to provide an in-depth explanation of the theoretical concepts of techniques and management of aquatic organisms cultivation in fresh, brackish, and/or marine water that are productive, high quality, and sustainable using the latest technology, which includes preparation of infrastructure, management of water, fish-seeds, feed, health, and harvest.

Content	Course Learning Outcomes CLO1 1. Introduction and importance of fish health management 2. Fish Defense System 3. Vaccinations - 1 4. Vaccinations - 2 5. Immunostimulants - 1 6. Immunostimulants - 2 CLO2 7. Pathogen Detection - 1 8. Pathogen Detection - 2 CLO3 9. Epidemiology and Surveillance - 1 10. Epidemiology and Surveillance - 2 11. Chemoteuraphic 12. Antibiotics 13. Probiotics 14. Bioremediation
Study and examination requirements and forms of examination	Lectures Quizzes, paper, presentation Midterm examination Final examination

Media employed	LCD Zoom Video Textbook
Reading list	Ellis, A.E. (Ed). 1988. Fish Vaccination. Academic Press. Noga, E.J. 2000. Fish Disease: Diagnosis and Treatment. Iowa State Press. Roberts, R.J. 2001. Fish pathology, 3rd Edition. W.B. Sound