



# THE MODULE HANDBOOK

## FACULTY OF BIOLOGY

### Ichthyology

<b>Module code</b>	BIO 41103
<b>Module level</b>	3 <sup>rd</sup> year of Undergraduate Program in Biology
<b>Abbreviation, if applicable</b>	-
<b>Sub-heading, if applicable</b>	-
<b>Courses included in the module, if applicable</b>	-
<b>Semester/term</b>	Even
<b>Module coordinator(s)</b>	Drs. Trijoko, M.Si.
<b>Lecture(s)</b>	1. Drs. Trijoko, M.Si. 2. Mulyati Sarto, S.Si., M,Si. 3. Donan Satria Yudha, S.Si., M.Sc.
<b>Language</b>	Indonesia
<b>Classification within the Curriculum</b>	Elective course
<b>Teaching format/class hours per week during the semester</b>	This course is organized into one class and planned to have 14 teaching weeks and 2 weeks of examination.
<b>Workload</b>	Estimated working hour: 10,5 hours/week.
<b>Credit points</b>	2-1 credits
<b>Requirements</b>	Animal Systematics (BIO 31101)
<b>Learning goals/competencies</b>	<ol style="list-style-type: none"><li><b>1. Knowledge and understanding</b><ol style="list-style-type: none"><li>a. Understanding basic concept, principal, theories, and identification of fishes.</li><li>b. Understanding facts, concepts, principal and theory of fish distribution in the field of biological sciences.</li><li>c. Knowing and understanding relationship between Ichthyology and other biological sciences.</li><li>d. Improve the understanding of the important value of fishes in the use of fauna resources</li><li>e. Fish cultivation system with the sustainable concept.</li></ol></li><li><b>2. Ability/intellectual skill</b><ol style="list-style-type: none"><li>a. Using and build the identification keys of fishes (Chondrichthyes and Osteichthyes) correctly.</li></ol></li></ol>



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	<ul style="list-style-type: none"><li>b. Understanding the basic theory and laboratory tools/equipments use to support laboratory work and research.</li><li>c. Collecting and observation on any Ichthyological research data.</li><li>d. Integrating and evaluating information and data from many resources (books, journals, electronic resources, etc.).</li></ul> <p><b>3. Practical skill</b></p> <ul style="list-style-type: none"><li>a. Understanding the diagnostic characters of fishes</li><li>b. Planning and doing scientific research in the field of Ichthyology.</li><li>c. Planning and doing fish cultivation.</li><li>d. Analyzing experimental results and determines its validity.</li><li>e. Making and presenting technical report scientifically.</li></ul> <p><b>4. Managerial and transferable skill</b></p> <ul style="list-style-type: none"><li>a. Conducting communication effectively, either written, oral or with images.</li><li>b. Applying and integrating biology into other science branch.</li></ul> <p><b>5. Attitude</b></p> <ul style="list-style-type: none"><li>a. Collecting fish samples with consideration of the ecosystem sustainability</li><li>b. Managing the fish cultivation with the principle of sustainability.</li></ul>
<b>Content</b>	<p>Ichthyology is one of the animal systematic branch which studying fishes. The course provided for students who need more information about fish systematics, biology and opportunity for cultivations. This study comprise of characteristics, phylogeny, classification, taxonomy, anatomy, reproduction, physiology and biogeography of fish. Ichthyology can be used to find the solution for any taxonomy and fish cultivation problems, continuous benefit/ use and development of several fish species as national fisheries comodity. This course focused on theory and practical skills on identification, important value of the species or taxa, sampling methods and several research based learning will be provided.</p>
<b>Study/exam achievements</b>	<p><b>1. Theory</b></p> <ul style="list-style-type: none"><li>a. Midterm: 40 %</li><li>b. Final examination: 40 %</li><li>c. Assignment and attendance: 20 %</li></ul> <p><b>2. Laboratory work</b></p> <ul style="list-style-type: none"><li>a. Pretest: 30 %</li><li>b. Weekly reports: 30 %</li></ul>



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	c. Specific report: 40 %
<b>Forms of media</b>	White board, notebook, specimen, LCD
<b>Literature</b>	<ol style="list-style-type: none"><li>1. Lagler K.F; Bordach, J.E; and R. Miller.1977. Ichthyology. Second edition. John Willey and Sons Inc. New York.</li><li>2. Joseph S. Nelson. 1984. Fishes of The world.</li><li>3. Hoar W.W.; Randall D.J. dan Donaldson E.M. 1983. Fish Fisiology. Volume IX. Reproduction. Academic Press, INC. Toronto</li><li>4. Ewa Kamler. 1992. Early Life History of Fish an Energetics Approach. Chapman and Hall. Melbourne . Madras.</li><li>5. Madyaningrum, I.R. 2000. Komunitas dan distrubusi spasial ikan familia Chaetodontidae di Pasir Putih, Situbondo, Jawa Timur. Skripsi Fakultas Biologi UGM.</li><li>6. Moch. Ihsan Effendi. 2002. Biologi Perikanan. Yayasan Pustaka Nusantara. Yogyakarta.</li><li>7. Mulat Witarti 2002. Pengaruh pemberian pakan cacing rambut (<i>Tubifex</i> sp) terhadap pertumbuhan dan sintasan larva ikan Gurameh (<i>Osphronemus gouramy</i>, Lacepede). Skripsi Fakultas Biologi UGM</li><li>8. Trijoko. 2014. Keragaman jenis ikan di Sungai Opak di Daerah Istimewa Yogyakarta pasca erupsi merapi tahun 2010.</li><li>9. Trijoko dan Amelia F. 2012. Bioenkapsulasi <i>Spirulina platensis</i>, Gomont. Pada artemia untuk peningkatan sintasan benih ikan Gurame (<i>Osphronemus gouramy</i>, Lacepede) dengan uji tantang <i>Aeromonas hydrophila</i> Chester. Seminar Nasional Perikanan Nasional VII. Fak pertanian UGM</li><li>10. Trijoko dan Fx. S. Pranoto. 2006. Keanekaragaman jenis ikan di sepanjang aliran sungai Opak. Daerah Istimewa Yogyakarta. Prosiding Seminar Nasional Ikan IV. Jatiluhur.</li><li>11. Trijoko dan H. Setyaningrum. 2006. Pengaruh penambahan <i>Azolla</i> spp pada pakan terhadap pertumbuhan ikan Nila (<i>Oreochromis niloticus</i>, Trewavas) di media air laut. Prosiding Seminar Nasional Ikan IV. Jatiluhur.</li></ol>