

AQUATIC ECOLOGY AND MANAGEMENT (B.S.)



The B.S. in Aquatic Ecology and Management is designed for students interested in examining the biological, physical, chemical, geological and hydrological aspects of lakes and ponds, rivers and streams, wetlands and groundwaters, with an emphasis on water quality.

All of the following courses (22 credits):

- FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management (3 cr.)
- FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab (2 cr.)
- FW 102 Fundamentals of Fisheries and Wildlife – New Student Seminar (1 cr.)
- FW 293 Undergraduate Seminar in Fisheries and Wildlife (1 cr.)
- FW 334 Human Dimensions of Fisheries and Wildlife Management (3 cr.)
- FW 364 Ecological Problem Solving (3 cr.)
- FW 497 Capstone: Conservation and Management Decision Making (W) (3 cr.)
- IBIO 355 Ecology (3 cr.)
- MMG 201 Fundamentals of Microbiology (3 cr.)

One of the following groups (6 or 9 cr):

- BS 161 Cell and Molecular Biology (3 cr.) **and** BS 162 Organismal and Population Biology (3 cr.)
- LB 144 Biology I: Organismal Biology (4 cr.) **and** LB 145 Biology II: Cellular and Molecular Biology (5 cr.)

One from each group (5 cr):

- CEM 141 General Chemistry (4 cr.) **or** LB 171 Principles of Chemistry (4 cr.)
- CEM 161 Chemistry Lab (1 cr.) **or** LB 171L Principles of Chemistry Lab I (1 cr.)

***One of the following courses (2 cr):**

- BS 171 Cell and Molecular Biology Lab (2 cr.)
- BS 172 Organismal and Population Biology Lab (2 cr.)

*This requirement is waived if student completes LB 144 or LB 145

One of the following courses (3 or 4 cr):

- LB 273 Physics I (4 cr.)
- PHY 221 Studio Physics for Life Scientists I (4 cr.)
- PHY 231 Introductory Physics I (3 cr.)

One of the following courses (3 or 4 cr):

- MTH 124 Survey of Calculus I (3 cr.)
- MTH 132 Calculus I (3 cr.)
- LB 118 Calculus I (4 cr.)

One of the following courses (3 or 4 cr):

- STT 201 Statistical Methods (4 cr.)
- STT 224 Introduction to Probability and Statistics for Ecologists (3 cr.)
- STT 231 Statistics for Scientists (3 cr.)
- STT 421 Statistics I (3 cr.)

One of the following courses (3 or 4 cr):

- CSUS 310 History of Environmental Thought and Sustainability (3 cr.)
- FW 439 Conservation Ethics (3 cr.)
- HST 391 Environmental History of North America (3 cr.)
- PHL 214 Indigenous Philosophy (3 cr.)
- PHL 340 Ethics (3 cr.)
- PHL 342 Environmental Ethics (3 cr.)
- PHL 380 Nature of Science (3 cr.)
- PHL 442 Ethics and Animals (3 cr.)
- PHL 480 Philosophy of Science (4 cr.)



Two of the following courses (6 or 7 cr):

- COM 100 Human Communication (3 cr.)
- COM 225 Intro to Interpersonal Communication (3 cr.)
- COM 240 Intro to Organizational Communication (4 cr.)
- COM 275 Effects of Mass Communication (3 cr.)
- CSUS 433 Grant Writing and Fund Development (3 cr.)
- JRN 472 Environmental, Science and Health Reporting (3 cr.)
- WRA 331 Writing in the Public Interest (W) (3 cr.)
- WRA 333 Writing in Corporate Contexts (3 cr.)
- WRA 335 Writing in Scientific Contexts (3 cr.)
- WRA 337 Writing and Public Policy (3 cr.)
- WRA 453 Grant and Proposal Writing (3 cr.)

Two of the following courses (6 or 7 cr):

- CSUS 354 Water Resources Management (3 cr.)
- FW 207 Great Lakes: Biology and Management (3 cr.)
- FW 416 Marine Ecology and Management (3 cr.)
- FW 417 **and** 417L Wetland Ecology and Management with Lab (4 cr.)

Two of the following courses (6 cr):

- FW 420 Stream Ecology (3 cr.)
- FW 472 Limnology (3 cr.)
- GLG 303 Oceanography (3 cr.)
- FW 353 Marine Biology (3 cr.)
- MMG 425 Microbial Ecology (3 cr.)

One of the following courses (3 or 4 cr):

- EPI 390 Disease in Society: Introduction to Epidemiology and Public Health (4 cr.)
- FW 423 Principles of Fish and Wildlife Disease (3 cr.)
- FW 431 Ecophysiology and Toxicology of Fishes (3 cr.)
- FW 463 Wildlife Disease Ecology (3 cr.)

One of the following courses (3 or 4 cr):

- FOR 419 Applications of Geographic Information Systems to Natural Resources Management (4 cr.)
- FW 474 Field and Laboratory Techniques for Aquatic Studies (3 cr.)
- FW 479 Fish Population Analysis and Management (3 cr.)
- GEO 221 Introduction to Geographic Information (3 cr.) **and** GEO 221L Introduction to Geographic Information Laboratory (1 cr.)
- GLG 446 Ecosystems Modeling, Water and Food Security (3 cr.)

One of the following courses (3 or 4 credits):

- CSS 455 Environmental Pollutants in Soil and Water (3 cr.)
- GEO 411 Stream Systems and Landforms (3 cr.)
- GLG 411 Hydrogeology (3 cr.)
- GLG 421 Environmental Geochemistry (4 cr.)

One of the following courses (3 cr):

- CSUS 464 Environmental and Natural Resource Policy in Michigan (3 cr.)
- CSUS 465 Environmental and Natural Law (3 cr.)
- FOR 466 Natural Resource Policy (3 cr.)
- FW 445 Biodiversity Conservation Policy and Practice (3 cr.)
- FW 481 Global Issues in Fisheries and Wildlife (3 cr.)
- IBIO 446 Environmental Issues in Public Policy (3 cr.)
- MC 450 International Environmental Law and Policy (3 cr.)

One of the following courses (3 credits):

- FOR 360 Forest Ecosystems, Carbon and Climate Change (3 cr.)
- GEO 409 Global Climate Change and Variability (3 cr.)
- IBIO 357 Global Change Biology (W) (3 cr.)
- SOC 478 Climate Change and Society (3 cr.)

Complete a minimum of 3 credits from the following courses:

- FW 480 International Studies in Fisheries and Wildlife (1 to 3 cr.)
- FW 490 Independent Study in Fisheries and Wildlife (1 to 3 cr.)
- FW 493 Professional Internship in Fisheries and Wildlife (1 to 3 cr.)
- FW 494 Marine Biology and Ecosystem Experience (1 to 3 cr.)
- FW 499 Senior Thesis in Fisheries and Wildlife (4 cr.)

