

BIOLOGY OF FISHES: FISH/BIOL 311

<http://fish.washington.edu/classes/fish311>

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Organization and Scope

Fish 311 is an introductory course designed to provide an overview of the wonderful world of fishes, their kinds and ways. We'll discuss and conduct a hands-on examination of the biology and diversity of living fishes of the world—from ancient bottom-living hagfishes and lampreys to modern-day sharks, rays, and bony fishes; from the freshwaters of Amazonia and to mangrove swamps and coral reefs; and from shallow-water lakes and streams to the deepest parts of the world's oceans.

Schedule

Monday January 5	Introduction: organization and scope of the course; definitions; major themes: form, function, and biodiversity; major groups of fishes.	Chapter 1
Wednesday January 7	<u>1. Form: External anatomy; body shape and size; fins, spines, and scales; evolutionary trends in body form.</u>	Chapters 1, 3
Friday January 9	<u>2. Biodiversity: Numbers and kinds of fishes; diversity through time; taxonomy, systematics, and classification; major groups of fishes.</u>	Chapter 2
Monday January 12	<u>3. Form and function: Origin and kinds of bone; evolution of skeletal systems; functional units of the fish skeleton.</u>	Chapter 3

Wednesday January 14	<u>4. Function: Locomotory mechanisms: anguilliform versus carangiform swimming; non-swimming locomotion; the functions of fins.</u>	Chapter 8
Friday January 16	<u>5. Form and function: Airbladder evolution and structure; swimbladders and buoyancy; respiration and sound production.</u>	Chapter 4
Monday January 19	Holiday: Martin Luther King, Jr. Day	
Wednesday January 21	<u>6. Biodiversity: Methods and goals of systematics; phenetics, evolutionary systematics, and cladistics.</u>	Chapter 2
Friday January 23	<u>7. Biodiversity I: Jawless fishes; sharks and their allies; evolutionary successes and failures.</u>	Chapters 11, 12
Monday January 26	<u>8. Biodiversity II: Primitive bony fishes and the rise of modern teleosts.</u>	Chapter 13
Wednesday January 28	Lecture Examination I	
Friday January 30	<u>9. Form and function: Feeding modes and mechanisms; biomechanical considerations; upper jaw mobility and evolutionary success.</u>	Chapter 8
Monday February 2	Taxonomy, systematics, and fisheries management: North Pacific skates, rockfishes, and snailfishes as case studies.	
Wednesday February 4	<u>10. Form and function: Feeding modes and mechanisms continued: how fishes get their mouths open and closed.</u>	Chapter 8
Friday February 6	<u>11. Biodiversity III: Trends in teleost evolution; primitive teleosts and the rise of euteleost fishes.</u>	Chapter 8
Monday February 9	<u>12. Biodiversity IV: Primitive euteleosts and the rise of acanthomorph fishes.</u>	Chapter 14
Wednesday February 11	Holiday: President's Day	
Friday February 13	<u>13. Form and function: Modes of reproduction; functional anatomy; unique strategies and adaptations; parental care.</u>	Chapter 20
Monday February 16	<u>14. Form and function: Osmoregulation, water and ionic balance in diverse aquatic environments.</u>	Chapter 7

Wednesday February 18	<u>15. Function: Respiration; buccal and opercular pumps; structure and function of gills; air-breathing fishes.</u>	Chapter 5
Friday February 20	<u>16. Biodiversity V: Percomorph fishes and derivative orders; morphology, ecology, and co-evolution.</u>	Chapter 15
Monday February 23	<u>17. Form, function, and biodiversity: Early life history, eggs and larvae, techniques and approaches, ontogeny and phylogeny.</u>	Chapter 9
Wednesday February 25	Lecture Examination II	
Friday February 27	<u>18. Biodiversity VI: Sarcopterygian fishes; video on the story of <i>Latimeria</i>.</u>	Chapter 13
Monday March 2	<u>19. Biodiversity Deep-sea fishes: biodiversity and bioluminescence in Earth's largest ecosystem.</u>	Chapter 17
Wednesday March 4	<u>20. Form and function, sensory perception I: Smell and taste; hearing and the acoustico-lateralis system.</u>	Chapter 6
Friday March 6	Showing of "Jewels of the Rift," a film exploring the adaptive radiation of Lake Tanganyika's cichlids	
Monday March 9	<u>21. Form and function, sensory perception II: Eyes and vision; visual pigments and color vision.</u>	Chapter 6
Wednesday March 11	<u>22. Form and function, sensory perception III: Electric organs and electroreception; object location and identification; electrocommunication.</u>	Chapter 6
Friday March 13	<u>23. Biodiversity: Distribution and zoogeography; marine zoogeographic regions and barriers; dispersal versus vicariance.</u>	Chapter 16
Wednesday March 18	Comprehensive Final Examination 2:30-4:20 pm, FSH 102	