This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 465 – Diversity and Evolution of Fishes

General Course Syllabus (as of May 2019)

About the Course:

Course Description: Introduction to fish diversity, with a focus on their phylogenetic interrelationships and the evolutionary, ecological, and biogeographic processes involved in generating patterns of fish biodiversity.

Course Format: Lecture and Laboratory
Credits: 3
Prerequisites: BIOL 204

Course Learning Objectives:

By the end of this course, students will be able to:

- Gain a basic understanding of the diversity of fishes, their place in the tree of life, and how they illustrate basic concepts in biodiversity and evolution (especially form and function, adaptation).
- Gain a basic understanding of fishes as a model system for asking and answering fundamental questions in evolution and ecology, often with relevance to conservation, i.e. fishes as a portal to "a way of knowing."
- Access, synthesize, and evaluate primary literature in fishes-related science.
- Articulate ideas succinctly orally (during tutorials) and, most importantly, in written fashion through short essays and a term paper.
- Learn to love fish and NEVER (NEVER) call them "ugly"!!

Textbooks and Additional Resources:

No textbook, information on course website (www.zoology.ubc.ca/~etaylor/426outl.html) and assignment submissions on Canvas.

Grading Scheme:

Assessment	Weight
Lab/tutorial	15%
Term paper	25%
Lab exam	20%
Mid-term	10%
Final exam	30%

Schedule of Topics:

1 Introduction, or why study fishes???

2 What, if anything, is a "fish"?
(i) The philosophy and practice of evolutionary classification
(ii) Vertebrate ancestry

3 Agnathans:
(i) Definition and inter-relationships
(ii) Agnathan biology: life history and paired species
(iii) Sea lamprey and the invasion of the Great Lakes

4 Jaws Version 1: Early Gnathostomes

5 Chondrichthyan fishes:
(i) Definition and extinct lineages
(ii) Diversity of living groups
(iii) Osmoregulation and freshwater elasmobranchs
(iv) Evolution of Potamotrygonidae: how, from where, and when?

6 Osteichthyes:
(i) Origins and characteristics
(ii) The amazing story of the discovery of living coelacanth(s)
(iii) Dipnoi and tetrapod ancestry

7 The Actinopterygii: early ray-finned fishes

8 Teleosts:
(i) Definition and major lineages
(ii) Euteleostei
(iii) Explosion of fish diversity

9 Fish feeding mechanisms: "Jaws Version 2.0" - key innovations in jaw structure and protrusion

10 Drivers of diversification in fishes:
(i) Ecological speciation
(ii) Genome duplications and hybridization

11 *Fish Jeopardy!*

Field Trip: Sampling in the Fraser Valley third Saturday in October.

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students ae expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website.