BIOLOGY 335 (20356) Jan 2020 ICHTHYOLOGY
Biology of Fishes

- Lecturer: Dr. T. E. Reimchen, Office-Cunn 056, Phone 721-7101
- Lecture: 0830-0920, Tues, Wed, Fri; COR A125
- Laboratory Co-ordinator Dr. Rossi M. Marx (zoology@uvic.ca)
- Laboratory: Petch 110

Outline of Lecture Topics
- General morphology and anatomy of fishes
- Diversity - hagfish to tiger shark to manta ray
  - lungfish to moray to salmon to lanternfish
  - rockfish to seahorse to halibut to sunfish
- Swimming hydrodynamics - propulsion, drag, boundary layer, fin function
- Physiology - buoyancy, osmoregulation, thermoregulation, O2 uptake
- Sensory modes - chemoreception, mechanoreceptors, electrorception, vision,
  nociception, perception
- Behavioral ecology - reproduction, foraging, parasitism
- Natural selection and adaptation
- Fisheries science - principles, applications, limitations
- Global fishery crisis - major causes
- Conservation: marine - Law of the Sea, FAO Code of Conduct,
  no-take zones, marine protected areas, coral reefs
- Conservation: freshwater - habitat degradation and invasive species
- The future??
• Course reading material:
  • Text Books (Optional): *Fishes: An introduction to Ichthyology*
    Authors: Moyle and Cech, 2004. Cost- second hand copies will do
  • Texts in Reserve Reading Room (McPherson Library):
    Helfman, Collette and Facey, 1997, *The diversity of fishes*
    Moyle and Cech; *Fishes: An Introduction to Ichthyology*
  • Most powerpt images used in the lectures are available from the Biol 335
    CourseSpaces website after the lectures.

• Thought-provoking:
  • C. Roberts- *The Unnatural History of the Sea*
  • R Ellis 2003 -The Empty Ocean:
  • C. Safina 1998 -Song for the Blue Ocean
  • M. Harris 1998- Lament for an Ocean:
  • A. Mitchell 2009 - Sea Sick
  • S. Earle 2010 -The World is Blue
  • DVD: Suggested viewing: *Blue Planet and Blue Planet2* by
    Attenborough; Planet Earth; Deep Blue; Oceans; Sharkwater
  • Students are expected to browse ichthyological content relevant to lecture material of
  • *Web of Science, Google Scholar, Wikipedia,*

**Grades**

**Lectures (50%)**
  - Mid-term Exam(multiple choice) 20% (Feb 18,
  - Pop lecture quiz 5%( date- TBA)
  - Final Exam (multiple choice and essay) 25% (date-TBA)

**Laboratory (50%)**
# Biology 335 - Tentative Lab Schedule - Spring 2020

<table>
<thead>
<tr>
<th>Lab #</th>
<th>Date (week of)</th>
<th>Content</th>
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</thead>
</table>
| 1     | January 6      | ● Exercise: Fish Anatomy and Measurements  
       |                | ● Identification 1: Agnathans, Placoderms, and Chondrichthyes  
       |                | ● Ecological Techniques 1 |
| 2     | January 13     | ● Exercise: Functional Morphology  
       |                | ● Identification 2: Sturgeons to Herrings  
       |                | ● Ecological Techniques 2 |
| 3     | January 20     | ● Exercise: Measurement Bias Part 1  
       |                | ● Identification 3: Minnows, Salmon, and Trout-Perches  
       |                | ● Ecological Techniques 3 |
| 4     | January 27     | Lab Midterm Quiz: Ecological Techniques (1-3)  
       |                | ● Exercise: Measurement Bias Part 2  
       |                | ● Identification 4: Flying fish, Sticklebacks  
       |                | ● Ecological Techniques 4 |
| 5     | February 3     | Lab Midterm Exercise/ Identification Exam |
| 6     | February 10    | ● Exercise: Hydrodynamics  
       |                | ● Identification 5: Rockfish, Wolf-eels  
       |                | ● Ecological Techniques 5 |
|       | February 17    | READING BREAK – NO LABS |
| 7     | February 24    | ● Exercise: Freshwater Fishes and Open-source Fish Data  
       |                | ● Identification 6: Sandlances, Surgeonfishes  
       |                | ● Ecological Techniques 6 |
| 8     | March 2        | ● Exercise: Marine Fishes and Global Data Sets  
       |                | ● Identification 7: Fighting fish, Flatfishes, Triggerfishes, Sunfish  
       |                | ● Ecological Techniques 7 |
| 9     | March 9        | Lab Final Quiz: Ecological Techniques (4-7)  
       |                | ● Exercise: Emerging Techniques in Ichthyology  
       |                | ● Identification Review |
| 10    | March 16       | Lab Final Exercise/ Identification Exam |
|       | March 23       | NO LABS – Hand back final quiz and exam |

## Lab Mark Breakdown

Your lab mark is 50% of your final course grade and is divided as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Mark</th>
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<tbody>
<tr>
<td><strong>Field Trip Participation</strong></td>
<td>2%</td>
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<tr>
<td>There will be a series of 4-6 scheduled field trips. You are expected to participate in each, but are required to participate in 2 of these trips.</td>
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<tr>
<td><strong>Lab Participation</strong></td>
<td>5%</td>
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<tr>
<td>You will participate in weekly lab exercises, and will receive a participate mark for doing so. Your TA will outline what is expected during each lab.</td>
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<tr>
<td><strong>Midterm</strong></td>
<td>8%</td>
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<tr>
<td>Ecological Techniques – written exam</td>
<td></td>
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<tr>
<td><strong>Midterm</strong></td>
<td>12%</td>
</tr>
<tr>
<td>Identification/Exercise</td>
<td></td>
</tr>
<tr>
<td><strong>Final</strong></td>
<td>8%</td>
</tr>
<tr>
<td>Ecological Techniques – written exam</td>
<td></td>
</tr>
<tr>
<td><strong>Final</strong></td>
<td>15%</td>
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<tr>
<td>Identification/Exercise</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50%</td>
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**NOTE:**

The ecological techniques midterm and final quiz are closed book.

The ecological techniques final exam is not cumulative.

The Identification/Exercise midterm and final exam are open book - Your lab TA will say more about this.

The Identification/Exercise final exam is cumulative, however, the majority of the exam will be based on material presented after the midterm.
Note: Students not wanting their marks posted using ID# (last 5 digits) should notify me at the beginning of the term. It is the student’s responsibility to meet the ADD/DROP dates from the UVic calendar. Students are responsible for checking their own records and registration status (www.uvic.ca/reco). Deferred exams will be offered only for medical issues. Students receiving less than 45% on the final lecture exam receive a failing grade for the course.

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