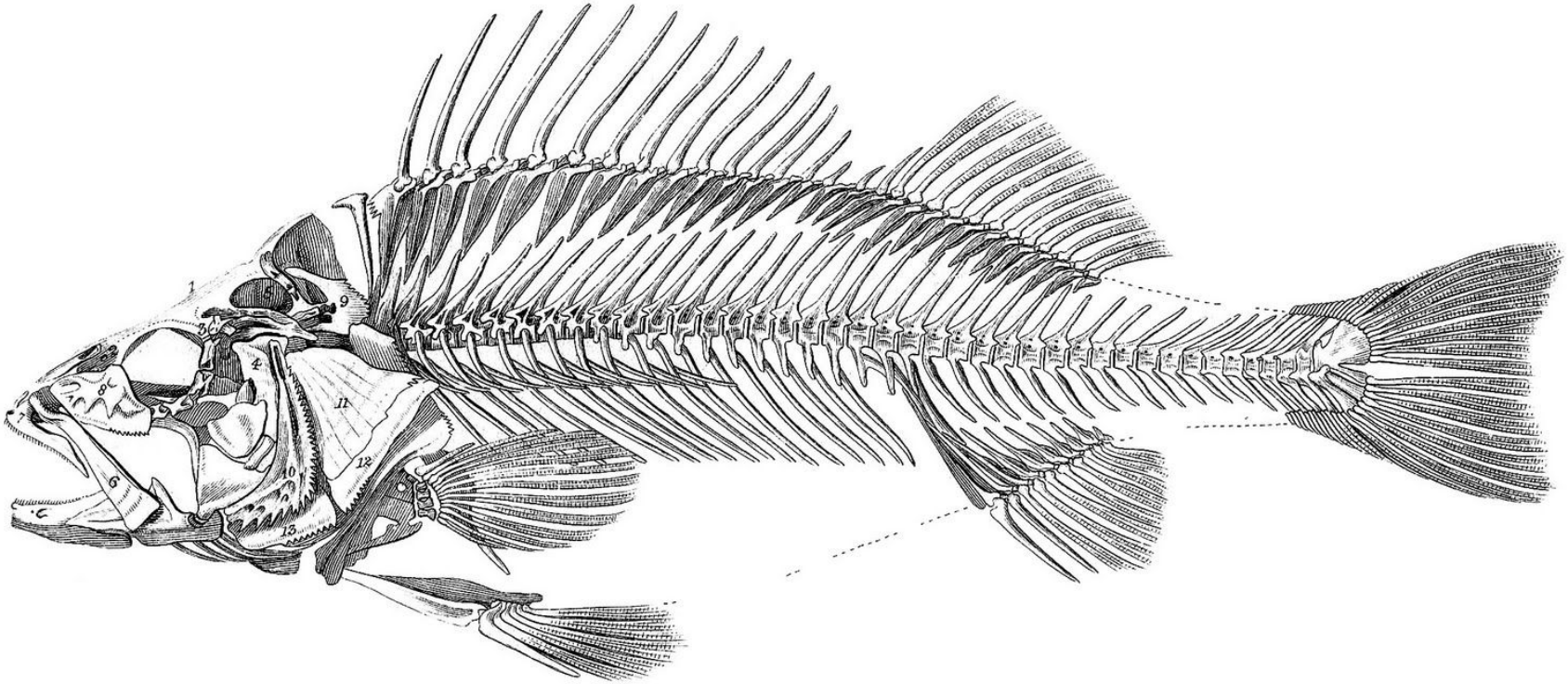
SC/BIOL 4340 - 3.0 [WINTER 2019]



PEOPLE

Course Director: Dr. Scott P. Kelly

Location: Farq. Room 021 (basement)

Telephone: 416 736 2100 Ext. 77830

Email: spk@yorku.ca

Office Hours: Thursdays 2-3 PM OR by appointment

Guest Lecturer/s

Locations & contact information will be provided in each case

COURSE GOALS

An appraisal of the largest and most diverse vertebrate group

- The provision of factual and conceptual information about fishes
- Examine far-reaching interests from classical ichthyology to recent developments and rapidly growing fields
- Provide an opportunity to develop writing, presentation and critical thinking skills

GRADES

Final grades will be determined as follows:

Midterm Exam* **17% [Tuesday Feb 12th]**

***Short question and 'essay' format**

[midterm covers lecture material up to & including Feb 5th/7th]

Likely Midterm Exam format (held in class)

- **1 h 15 min long, 4 sections, 1 question(s)/section**
  - **section 1; 4 choices, 1 x 10 mark question**
  - **section 2; 3 choices, 1 x 15 mark question**
  - **section 3; 2 choices, 1 x 25 mark question**
  - **section 4; 1 choice, 5 mark question**

GRADES

Final grades will be determined as follows:

Midterm Exam*	**17% [Tuesday Feb 12th]**
Final Exam**	**40 %**

****Short question and 'essay' format**

[cumulative; DOES NOT INCLUDE presentation material]

Likely Final Exam format (held during exam period):

- **3 h exam, 5 sections, 1 OR 2 question(s)/section**
  - **section 1; 6 choices, 2 x 10 mark question**
  - **section 2; 3 choices, 1 x 15 mark question**
  - **section 3; 3 choices, 1 x 15 mark question**
  - **section 4; 2 choices, 1 x 25 mark question**
  - **section 5; 2 x 5 mark questions**

GRADES

Final grades will be determined as follows:

Midterm Exam*	17% [Tuesday Feb 12th]
Final Exam**	40 %
Assignment (Essay)†	25 %

† Essay topic to be chosen either **by yourself** OR from a list of topics provided.

1) **Literature Review**: review literature within a defined area and write a report that summarizes the topic ***in your own words***.

OR

2) **Research proposal**: background literature within a defined area followed by a proposal for research including specific methodology to be used and significance etc.

How to Choose/Develop a Topic:

1. Consider a subject area that resonates with YOU (i.e. a topic that aligns with YOUR interests)
   - are you interested in veterinary medicine?
   - are you interested in human medicine?
   - are you interested in the biology of a specific fish group?
   - are you ecologically minded?
   - are you passionate about conservation?

2. Briefly examine the literature (i.e. conduct a literature search), to determine whether you have enough (or too much) material to work with

3. If you need to adjust as you move forward, no worries. Just let me know so I can update the topic list and/or make sure that you don't intrude on another student's topic

Assignment Guidelines:

Essay

1. Length should be somewhere in the region of 10 - 12 pages including figures diagrams and references.

2. Use original research articles (i.e. scientific papers), literature reviews and book chapters for source material. Don’t use too few as it will restrict your discussion.

3. Don’t try to be too broad and cover everything unless you are prepared to cover a lot of material/literature and summarize important points with clarity.

4. Use subheadings to discuss specific areas within your chosen subject and then bring things together with a final discussion/perspective at the end.

Assignment topics for 4340 – 2019

General areas:

Behaviour / Toxicology / Pollution / Aquaculture / Fish Health, Disease, or Pathology etc. / Deep-Sea Fish Biology / Evolution / Conservation

1. Copper and Fishes 2. Zinc and Fishes 3. Aluminum and Fishes
4. Mitochondrion-rich cells in fish gills 5. Endocrine Disruptors and Fishes
6. Bony fishes that produce urea: how and why? 7. Fish Olfaction
8. Na^+-K^+-ATPase in fish gills 9. Cultured gill cells and their applications
10. Reproductive pheromones in fishes 11. Prolactin and fish osmoregulation
12. Cortisol and fish osmoregulation 13. Growth hormone and fishes
14. Fish endocrine research and medicine 15. Teleost pituitary gland
16. Fish thyroid hormones 17. Urotensins in fishes
18. Food deprivation in fishes 19. Migration strategies of diadromid fishes
20. Dietary protein requirements of fishes 21. Stress in fishes
22. Condition measures for larval fishes 23. Osmoregulation in larval fishes
24. Cultured larval marine fish nutrition 25. Air breathing organs in fishes
26. Air breathing fish respiration 27. The biology of the lungfish
28. The Biology of the Coelacanth 29. Strategies of Elasmobranch reproduction 30. Biology of Thunniform fishes + MORE……..

To reserve a topic: email me (spk@yorku.ca) with 4 choices. Order choices from 1st to 4th. Topics assigned on a 1st come 1st serve basis.

GRADES

Final grades will be determined as follows:

Midterm Exam*	17% [Tuesday Feb 12th]
Final Exam*	40 %
Assignment (Essay)†	25 %
In-Class Presentation‡	17 %

‡ Give a 13 min in-class presentation <u>on assignment topic</u>, providing background and pertinent information.

<u>Format</u>

- ~ 10 min presentation followed by ~ 3 min of questions
- attend all but one of the lectures with talks (1%)
- participate by asking questions after talks (1%)
- grading by all (50% Class : 50% Course Director)

SC/BIOL 4340 – Winter 2019
In Class Presentation Evaluation
Speaker: _____ Date: _____
Title/Subject: _____

Criteria for Evaluation	**Weight (%)**	**Mark (0-100)**
Was the level of explanation appropriate (i.e. not too easy but not too confusing or difficult)?	15%	
Were the figures and diagrams on the slides explained clearly so that you could understand them?	10%	
Were the visual aids clear, readable and appropriate?	15%	
Did the speaker project enthusiasm for the subject and make it interesting?	10%	
Was the speaker loud enough and understandable?	5%	
Were questions answered well?	20%	
Overall, was the subject presented well and do you feel you have learned something new?	25%	

Additional Comments (use other side of page if space limiting):
Grades:

A+ = 90-100, A = 80-90
B+ = 75-79, B = 70-74
C+ = 65-69, C = 60-64
D+ = 55-59, D = 50-54
E = 40-49
F = 0-39

Presentation Guidelines/Suggestions:

1. PowerPoint is the easiest.

2. Make slides clear (e.g. font size big, figs clear etc.)

3. Know what you are going to say and DON’T go over time

4. Speak clearly and don’t turn your back to the audience

5. If you don’t know the answer to a question don’t be afraid to say so.
   (i.e. move on to the next question and leave a better impression)

LECTURE FORMAT

Organization and Coverage of Material

- Diversity, Classification, Evolution etc.
- Organismal Biology of Fishes

- Endocrine Systems
- Muscles, Locomotion, etc.
- Osmoregulation
- Circulation & Respiration
- Sensory Systems
- Vision
- Feeding, Nutrition & Growth
- Reproduction
- Excretion
- Behaviour

- Fundamentals plus specific research examples
- Place in context of environment, habitat and ecology

LECTURE FORMAT

Organization and Coverage of Material

- Diversity, Classification, Evolution etc.
- Organismic Biology of Fishes

Lecture notes will posted on-line
ASAP following class

web address: https://moodle.yorku.ca/

- Fundamentals plus specific research examples
- Place in context of environment, habitat and ecology

LECTURE SCHEDULE

JANUARY

- 8th - Introduction
- 10th - Diversity/General Morphology I
- 15th - General Morphology II
- 17th - Unique Habitats
- 22nd - Evolution/Classification/Agnatha I
- 24th - Agnatha II
- 29th - Endocrine Systems
- 31st - Endocrine Systems/Osmoregulation

FEBRUARY

- 5th - Osmoregulation
- 7th - Review
- 12th - Midterm
- 14th - Nitrogen Excretion
- 26th - Vision
- 28th - Locomotion

MARCH

- 5th - Sensory Systems
- 7th - 28th - Presentations

APRIL

- 2nd - Presentations

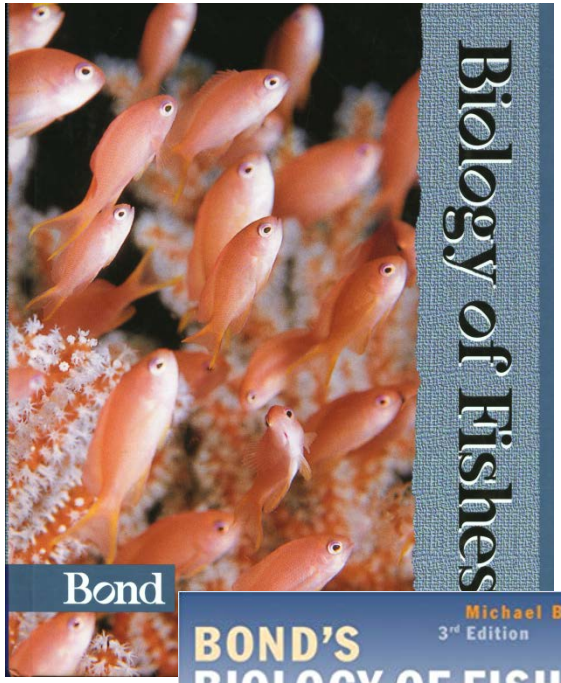
Jan 22nd – Deadline for Essay Topic

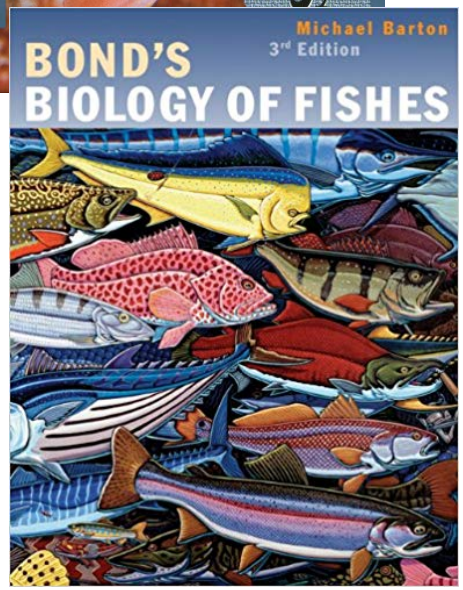
March 7th – Deadline for Essay

March 8th – Drop Deadline

- [red box] - Dr. Kelly
- [blue box] - Guest Lectures

BOOKS & READING MATERIAL





Biology of Fishes

Second Edition (OR Third Ed.)

Carl E. Bond

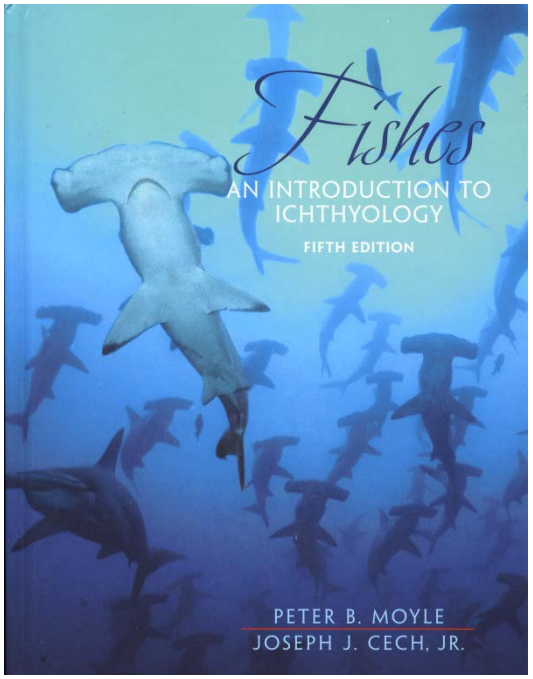
BROOKS/COLE - THOMSON LEARNING

ISBN: 0-03-070342-5

(COPY ON RESERVE IN LIBRARY)

Suggested Text

BOOKS & READING MATERIAL



Fishes - An Introduction to Ichthyology

Fifth Edition

Peter B. Moyle & Joseph J. Cech, Jr.

ISBN: 0-13-100847-1

PEARSON - Prentice Hall

(COPIES ON RESERVE IN LIBRARY)

Good supplemental reading

Selected Papers:

- additional reading on discoveries & detailed insights

- articles will be posted on Moodle