DEPARTMENT: BIOLOGICAL SCIENCES
COLLEGE: COLLEGE OF SCIENCE

RECOMMENDED COURSE IDENTIFICATION:
PREFIX PCB  COURSE NUMBER _6776_  LAB CODE (L or C) ___

(TO OBTAIN A COURSE NUMBER, CONTACT MJENNINCG@FAULU)

COMPLETE COURSE TITLE: Histology of Fishes and Aquatic Invertebrates

CREDITS : 4


GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR X Satisfactory/Unsatisfactory

COURSE DESCRIPTION, NO MORE THAN THREE LINES: An introduction to basic histology techniques and interpretation of normal and disease states of marine fish and invertebrates.

PREREQUISITES*: Graduate Status

COREQUISITES*

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*

*PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PH.D. IN THE RELEVANT FIELD

Faculty contact, email and complete phone number:
Dr. Susan Laramore
slaram01@hbci.fau.edu
(772) 242-2525

Please consult and list departments that might be affected by the new course and attach comments.

Approved by:
Department Chair: ____________________ Date: 09/25/2018
College Curriculum Chair: ____________________ 02/28/2018
College Dean: ____________________ 02/25/2018
UGPC Chair: ____________________ 02/28/2018
Graduate College Dean: ____________________ 03/2/2018
UFS President: ____________________
Provost: ____________________

FAUnewcrseGrad—Revised September 2013

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus_2011.pdf
3. Consent from affected departments (attach if necessary)
Course Syllabus for Histology of Fishes and Aquatic Invertebrates

1. Course title/number, number of credit hours

   Histology of Fishes andAquatic Invertebrates – PCB 6776 – 4 credit hours

2. Course prerequisites

   Graduate status

3. Course logistics

   a. Spring 2015
   b. Notation if online course – N/A
   c. Class location and time (if classroom-based course) – To be determined

4. Instructor contact information

   Lead Instructor:
   Dr. Susan Laramore (772-242-2525) slaramo1@hboi.fau.edu
   Lab II Building Room #104

   Instructor Office Hours:
   Laramore: Mon 11-12 am, Fri 11-12 am; and by appointment
   All other instructors by appointment

5. TA contact information (if applicable)

   N/A

6. Course description

   This course teaches basic histological techniques and will involve interpretation of the normal histology of fish, bivalves, and crustaceans, as well as the morphological and functional changes that occur in tissues during disease. The course will consist of both lecture and lab. The lab portion of the class will consist of training in routine paraffin histology and histochemistry.

7. Course objectives/student learning outcomes

   This course aims to introduce students to the fundamentals of histopathology and how it can be used to identify common pathological (disease) issues in fish and aquatic invertebrates.

   Students will be able to identify organs, tissues and cell types in normal histological specimens, identify common pathological conditions in fish and aquatic invertebrates, understanding paraffin tissue processing methods and the relevance of histopathology for research and diagnostics. At the end of this course students will be able to process tissues and produce slides for histological examination of fish and shellfish.

8. Course evaluation method
There will be a midterm exam, accounting for 30% of the student's cumulative performance, a final exam that accounts for 30% of the cumulative performance, a student produced slide portfolio that accounts for 20% of the cumulative performance and the remaining 20% will be based on class presentations and laboratory participation. The overall grade in the course is derived from the cumulative performance according to the following table.

9. Course grading scale

<table>
<thead>
<tr>
<th>Cumulative Performance</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;94%</td>
<td>A</td>
</tr>
<tr>
<td>&gt;90% - 94%</td>
<td>A-</td>
</tr>
<tr>
<td>&gt;87% - 90%</td>
<td>B+</td>
</tr>
<tr>
<td>&gt;83% - 87%</td>
<td>B</td>
</tr>
<tr>
<td>&gt;80% - 83%</td>
<td>B-</td>
</tr>
<tr>
<td>&gt;75% - 80%</td>
<td>C+</td>
</tr>
<tr>
<td>&gt;65% - 75%</td>
<td>C</td>
</tr>
<tr>
<td>&gt;60% - 65%</td>
<td>C-</td>
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<tr>
<td>&gt;57% - 60%</td>
<td>D+</td>
</tr>
<tr>
<td>&gt;53% - 57%</td>
<td>D</td>
</tr>
<tr>
<td>&gt;50% - 53%</td>
<td>D-</td>
</tr>
<tr>
<td>&lt;50%</td>
<td>F</td>
</tr>
</tbody>
</table>

10. Policy on makeup tests, late work, and incompletes

If a student cannot attend an exam or hand in a homework project on time due to circumstances beyond their control then the instructor may assign appropriate make-up work. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student's final course grade. Reasonable accommodation will also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Special course requirements (if applicable): N/A

12. Classroom Etiquette Policy: University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions." You may be asked to leave the class session for noncompliance.

13. Student Honor Policy: Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University
community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/regulations/chapter4/Reg_4.001_5-26-10_FINAL.pdf

Cheating is a serious offense. If you are caught cheating, you will receive an F in the course. In addition, you will be referred to the Dean of Student Services and charged with an academic crime. Test procedures and rules will be stated at the beginning of each exam.

14. Disabilities Policy: In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585) and follow all OSD procedures.

15. Required texts/阅读s

2. 2. USFWS CD Rom (photomicrographs and text), Fish Histology and Histopathology Manual, Mumford et al. 2007, Version 4; also available online for download at: http://training.fws.gov/EC/Resources/Fish_Histology/histology.html

16. Supplementary/recommended readings (optional)

2. Systemic Pathology of Fish, Ferguson, 2nd edition, 2006
5. Fish Disease, Diagnosis and Treatment, 2nd edition, Noga 2010.

17. Course topical outline

Week 1: Lecture: Introduction to histopathology, microscopes
Assignments: Readings from 1.
Lab: Fixation procedures for routine histology, using the compound microscope

Week 2: Lecture: Tissue types
Assignments: Readings from 1.
Lab: Microscopic review of tissue types

Week 3: Lecture: Pathology and Immunology
Assignments: Readings TBD
Lab: Processing and embedding fish tissue

Week 4: Fish Anatomy and Physiology
Assignments: Readings from 2 and 3.
Lab: Normal fish histology, sectioning

Week 5: Fish gills and circulatory system
Assignments: Readings from 2 and 3.
Lab: Normal fish histology, sectioning

Week 6: Fish Nervous system
Assignments: Readings from 2 and 3.
Lab: Abnormal fish histology, standard H&E staining and mounting

Week 7: MidExam; Fish Digestive System
Assignments: Reading from 2 and 3.
Lab: Abnormal fish histology, special staining techniques

Week 8: Fish Reproductive System
Assignments: Readings from 2 and 3.
Lab: Processing and embedding bivalve tissue, special staining techniques

Week 9: Mollusks Anatomy and Physiology
Assignments: Readings from 4 and 5.
Lab: Microscopic examination of normal and abnormal bivalve tissues, sectioning

Week 10: Mollusks Abnormal Anatomy and Physiology
Assignments: Readings from 4 and 5.
Lab: Microscopic examination of normal and abnormal bivalve tissues, staining and mounting

Week 11: Crustacean Anatomy and Physiology
Assignments: Readings from 5 and 6.
Lab: Processing and embedding shrimp tissue, microscopic examination of normal and abnormal shrimp tissue

Week 12: Crustacean Abnormal Anatomy and Physiology
Assignments: Readings from 5 and 6.
Lab: Microscopic examination of normal and abnormal shrimp tissues, sectioning, histochemical stains

Week 13: Histochemistry
Assignments: Readings from 1.
Lab: Histochemical stains, in situ techniques

Week 14: In situ Fluorescent Technology
Assignments: TBD.
Lab: In situ techniques, using the fluorescent microscope

Week 15: Oral Presentations
Week 16: Portfolios due; Final Exam