

BIOLOGY 4304/5304 ICHTHYOLOGY/ADVANCED ICHTHYOLOGY

Fall 2009

Lectures: MW 10:45-11:35 a.m. – EDDC 2.224 Lab: Tuesday 1:10-3:50 p.m. – SCIE 2.260

Instructor: Dr. Robert J. Edwards

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Office Hours: By Appointment or M-F 0730-0845 a.m.

Text: *Ichthyology* by Moyle and Cech.

Laboratory Guides:

- a) *An Annotated checklist of the freshwater fishes of Texas, with keys to identification of species* by Hubbs, Edwards and Garrett—a free download of this may be obtained at:

<http://texasacademyofscience.org/>

- b) *Fishes of the Gulf of Mexico* by Hoese and Moore.

Bring your guides to laboratories (except for field trips).

FOR FIELD WORK YOU WILL NEED:

- a) tennis shoes that can get wet and dirty.
b) old clothes that can get wet and dirty.

FORMAT OF COURSE:

- a) 2 lectures per week on a variety of topics relating to:
1) Ichthyology in general--some practical, some esoteric
2) Texas fishes-- with emphasis on local forms
3) Endangered and Threatened fishes--especially in Texas
4) Selected current research topics
- b) 1 three hour laboratory per week:
1) Survey of Lower Rio Grande Valley Fishes
2) Tools and measurements for ecological (field) studies on fish populations.

Research Reports:

- a) **Review paper** -- 7-15 pages (typewritten); on any other subject related to a scientific aspect of fish, in the broadest sense. You can choose from the Topics list or pick a subject on your own. If you would like I can also give you suggestions. **See me first if you are in doubt about your topic.** (25% OF COURSE GRADE).

RESEARCH REPORTS ARE DUE WEDNESDAY NOVEMBER 25

- b) **Lab Report** -- "A Survey of Lower Rio Grande Valley Fishes"
Due December 9 (The Last Class Day) (10-15% OF GRADE)

EXAMS:

- a) Midterm exam - essay format (25% OF GRADE)
b) Final exam (2nd midterm) - essay format (25% OF GRADE)
c) Lab exam -- identification of local fishes (10-15% OF GRADE)

DATES TO REMEMBER:

- a) November 25—Research Paper Due
b) December 9—Lab Report Due
c) December 14—Final Exam, Monday—10:15 a.m.-12 noon

TYPICAL LECTURE TOPICS IN ICHTHYOLOGY

1. Hybridization in fishes
2. Morphological variation
3. Genetic interaction between species
4. Classification of fishes
5. Morphological adaptations
6. Reproductive strategies
7. Migrations--salmons
8. Migrations--eels
9. Marine fish distribution
10. Freshwater fish distribution
11. Texas fish distribution
12. Ancient Fishes -- the coelacanth story
13. Behavior--feeding, territories, schooling
14. Behavior--reproductive
15. Perturbations/Species Introductions
16. Coastal fishes
17. All female species (uniparental populations)
18. Parasitic fishes
19. Fecundity in fishes/Age and growth
20. Sound production/ Sensory physiology
21. Energy and ecology of aquatic environments
22. Community ecology of fishes
23. Salinity preferences
24. Reservoir fish biology/ Riverine fish biology
25. Endangered fishes

2009 Ichthyology Field Trips

September

- 8—UTPA Canal
- 15—Edinburg Municipal Park Canal and Pond
- 26—Falcon Reservoir/Rio Grande (SATURDAY)

October

- 17—South Padre Island (SATURDAY)

November

- 7—Port Mansfield (SATURDAY)
- 17—Rio Grande at Anzalduas County Park

- The University does not provide transportation to field trips. You must make your own arrangements to participate on field trips.

Biology Student Learning Outcomes (non-core curriculum courses):

- (1) The biology graduate knows the role of the cell in life and living systems, and understands the inter-relationships between sub-cellular structures that contribute to its functioning as a unit.
- (2) The biology graduate understands the role of DNA in inheritance and can explain how environmental conditions influence natural selection processes and contribute to adaptation.
- (3) The biology graduate is aware of the diversity of life, and understands inter-relationships among organs and organ systems within an organism, and inter-relationships between an organism and its environment.
- (4) The biology graduate is familiar with the tremendous diversity in structure (organellar, cellular, organismal) and how that relates to the organismal niche or habitat.
- (5) The biology graduate understands how the organization of a specific structure within an organism is related to a specific function, and how this function contributes to survival of the organism.
- (6) The biology graduate understands the Scientific Method, is able to analyze and interpret data, and communicate research findings in both oral and written form.
- (7) The biology graduate is prepared to accept employment in a variety of environmental and health related professions, enter medical and dental schools, pursue graduate degrees in the biological sciences, or teach in public or private schools.

Disability/ADA Statement:

If you have a documented disability which will make it difficult for you to carry out the work as outlined in the syllabus and / or if you need special accommodation / assistance due to a disability, please contact the Office of Services for Persons with Disabilities (OSPD), Emilia Ramirez-Schunior All, Room 1.101 immediately, or the Associate Director at maureen@utpa.edu, 316-7005. Appropriate arrangements / accommodation can be arranged.

Verification of disability and processing of special service required, such as note takers, extended test time, separate accommodations for testing, will be determined by the OSPD. Please do not assume adjustments / accommodations are impossible. Please consult with the Associate Director, OSPD at 316-7005