**Ichthyology (11:628:321)** **Syllabus**

3 credits, Fall (odd years only)

**Instructor**: Dr. Thomas Grothues – [grothues@marine.rutgers.edu](mailto:grothues@marine.rutgers.edu)

**Physical Address:**             
Rutgers University Marine Field Station (RUMFS)  
800 c/o 132 Great Bay Blvd.  
Tuckerton, NJ 08087  
Cell: 609 618-6549

Website:  [https://rumfs.marine.rutgers.edu/](http://marine.rutgers.edu/rumfs/)

**Meeting Places: \*Check the Schedule Section Below. It changes!!!**

Marine Field Station in Tuckerton (lab and lectures first half of semester),

Alampi Room, Marine Sciences Bldg. (lecture, second half of semester)

Foran Hall 193 (lab, second half of semester)

**Office Hours:**

Immediately after lecture and laboratory, otherwise rarely possible to meet in person because professor’s office is off campus. Will do Zoom by appointment!

**Pre-requisites**: General biology is required and a course in ecology preferred.

**Summary**: This course provides an introduction to the study of fishes, including evolution, anatomy and physiology, systematics and taxonomy, life history, ecology/habitat, and the methods used to study them. The laboratory section will include collection of wild fish in freshwater of the pinelands, estuary, and coastal ocean through field experiences in the first half of the semester. In the second half of the semester, the labaroatory section will include dissections and a survey of diversity focused on local species but inclusive of and representative of species worldwide.

**Course Objectives:**

* Introduce students to the study of fishes as basal vertebrates.
* Develop basic skills in identifying fishes by inspection of internal and external characters using a dichotomous key.
* Develop basic skills in the collection of fishes for scientific purposes.
* Become familiar with the concepts of evolutionary selective pressures in the aqueous and marine world that lead to niche specialization and species diversity among fishes

**Learning Outcomes:**

At the end of this class, students will be able to

* read and understand relevant primary literature
* be able to identify and explain the function of external and internal anatomy
* describe the link between fish anatomy, life history, and physical environment
* understand the benefits and drawbacks of various fish collection methods
* be able to identify live and preserved specimens

**Format**:

In person meetings in the field, laboratory, and classroom. For the first several weeks, students will need to be prepared to get wet and muddy for a combined lecture/field session. A change of clothes and towels and a bag for wet clothes is suggested Changing spaces and hoses for wash down are available..

**Schedule:**

Classes are held all-day Friday. As a result, it will be impossible to take another class on Friday. The first and the following five classes, will start at the Marine Field Station in Tuckerton. On these dates, the class will depart ON YOUR OWN or in SELF-Organized Carpool from New Brunswick at 8:30 am to start at RMUFS at 10:00 AM and return at approximately 5:00 pm. From mid-October onward, class will be held in New Brunswick from 10-3 (lecture room: Alampi, laboratory in FOR-193).

**Evaluation**: homework (10%), quizzes, exams, and practicum (40%), in class discussions (20%), final project (30%)

**Required texts:**

Helfman, G., B. Collette and D. Facey.  2009.  The Diversity of Fishes.  Second Edition.  Wiley-Blackwell, West Sussex, UK.  ISBN: 978-1405124942

Caillet, G.M., M.S. Love and A.W. Ebeling.  1996.  Fishes:  A Field and Laboratory Manual on Their Structure, Identification and Natural History.  Waveland Press, Prospect Heights, Ill.  ISBN 978-0881339086

**Suggested field guide:**

Ray, C., Robins, C.R. and Peterson, R. T.  1999.  A Field Guide to Atlantic Coast Fishes of North America.  Peterson Field Guide Series.  Hougton Mifflin Co., Boston. ISBN: 978-0395975152

Page, L. R., B. M. Burr, E. C. Beckham, J. Sipiorski et al. 2011. Peterson Field Guide to Freshwater Fishes, Second Edition (Peterson Field Guides)

**Suggested reference texts:**

Able, K. W. and M. P. Fahay. 2010.  Ecology of Estuarine Fishes: Temperate Waters of the Western North Atlantic. Johns Hopkins University Press, Baltimore, MD. 566 p. ISBN: 978-0801894718

Nelson, J. F., T. C. Grande, and M. V. H. Wilson. 2016. Fishes of the World 5th Edition. http://sites.google.com/site/fotw5th/

Borro, D. J. 1988. Dictionary of Word Roots and Combining Forms. Mayfield Publishing Company

**Required supplies**:

Safety glasses or goggles and a dissecting kit – you will need forceps, scissors, scalpel and a probe.  Simple kits can be found online.  I usually buy these: [https://www.amazon.com/Advanced-Biology-Anatomy-Dissecting-Dissection/dp/B017XY1FQS/ref=sr\_1\_3?crid=16006KZABKY3V&keywords=dissection+kit&qid=1565113390&s=gateway&sprefix=dissect%2Cstripbooks%2C159&sr=8-3Links to an external site.](https://www.amazon.com/Advanced-Biology-Anatomy-Dissecting-Dissection/dp/B017XY1FQS/ref=sr_1_3?crid=16006KZABKY3V&keywords=dissection+kit&qid=1565113390&s=gateway&sprefix=dissect%2Cstripbooks%2C159&sr=8-3)