Fish Diversity and Ecology Course Syllabus – Fall 2025 **v. 08/18/25**
BIOL 4085.001+.301 / BIOL 5085.001+.301; 4 credit hrs.

Meeting times & places: Lecture:T/Th: 9:30-10:50; ENV 391
Lab: W 1:00-3:50; ENV 358

Instructor: Dr. David Hoeinghaus; David.Hoeinghaus@unt.edu
Teaching assistant: Ms. Kasey Pruett; KaseyPruett@my.unt.edu
Office hours: by appointment for both Dr. Hoeinghaus and Ms. Pruett

Description: This course will explore fish diversity and ecology. Among the topics covered will be evolution and taxonomic diversity of major lineages, form and function, behavior, ecology, fisheries and conservation. The lab component will reinforce lecture material and provide hands-on experience with fish diversity and field collection, preservation and identification of fishes.

Required and optional texts:
Lecture: Facey et al. 2022. The Diversity of Fishes: Biology, Evolution and Ecology, 3rd Ed.
Lab: Thomas et al. 2007. Freshwater Fishes of Texas. Texas A&M University Press.
The web version is appropriate and up to date. The hard copy is a great field reference if you can find it at a reasonable price, but is out of print and thus outdated and expensive.

Course structure: I expect this class to be highly interactive and engaging, and have formatted our schedule to facilitate that goal as much as possible. General concepts/theory will be presented and discussed during lecture and hands-on activities that complement lecture themes will be covered in lab. *I highly recommend that you read the assigned material prior to each lecture.* We will cover a large amount of material relatively quickly, and your success at later stages of the course will depend on developing a strong foundation early on. Attendance is required. Contact me as soon as possible, preferably before an absence, in the event that you will miss a lecture or lab meeting. Lab activities will provide hands-on experiences that accompany lecture topics. Be prepared to handle fish, perform dissections, etc., and for variable field conditions during field collecting trips. Field collection trips will be scheduled with consideration of student schedules and weather conditions.

Canvas: Get familiar with Canvas – it is the portal through which course materials will be provided. Check Canvas regularly for course updates and materials. *Students are responsible for checking for announcements*; I recommend that you select notifications 'on' in your Canvas settings. That said, please *contact me via email* rather than through Canvas.

Assessment and grading: The final course grade will be comprised by combining assessments from lecture and lab activities. Assessment for the *lecture* component will be comprised by a 'deep dive' report and final presentation, a group science communication project, almost biweekly exams. 'Deep dive' reports are meant to allow students to tailor the course to their own interests while also learning from current research on various topics. Student presentations of their 'deep dive' reports will take place during the final week of classes. *Reports and the final presentation should be of high technical quality for a scientific audience.* Assessment for *lab* components will be determined based on completion of weekly lab assignments and two lab practical exams. Graduate students have additional expectations for full credit on the 'deep dive' reports and presentation, as well as on the two lab practical exams, and will lead the group projects, but the point distribution below is consistent across student levels.

'Deep dive' report	= 500
Final 'deep dive' presentation	= 200
Group SciComm project	= 200
6 'exams' @ 50 pts. ea.	= 300
10 lab assignments @ 50 pts. ea.	= 500
2 lab practical exams @ 200 pts. ea.	= 400

Letter-grades will be assigned based on percentage of possible points attained, with A = 90-100%, B = 80-89%, C = 70-79%, and so on. Excessive absences will detract from the final grade simply because you won't do well in the class if you don't attend and participate – that's just how it works. Late assignments will not be accepted, and no additional extra credit assignments will be available. If you will have a university-excused absence, please tell the instructor ahead of time. If you need help with the material, please contact me or your TA – we're always happy to help you learn. That said, if you are struggling, don't wait until the end of the semester when there are no opportunities left to improve your grade.

Make-up exams: Lecture exams and lab practical exams are to be taken when scheduled. Students will not be allowed to take any examination on a date or time other than scheduled *unless you have a university excused absence (e.g. verifiable medical excuse or official UNT activity)*. The time and place for make-up examinations will be determined by the instructor. All assignments are due by the date indicated and late work will not be accepted in most cases.

Incomplete and drop: An incomplete (I) grade is given only during the last one-fourth of a semester and only if a student is: (1) passing the course; (2) has a justifiable reason why the class cannot be completed on schedule; and (3) arranges with the instructor to finish the course at a later date. All work must be completed within the time specified by the instructor (not to exceed one year after taking the course). An incomplete may be requested by qualified students beginning on November 8. The last day to drop a course with a grade of W is November 7.

Attendance: Attendance is expected – students who do not attend regularly do not do well in this course. It is difficult to process all of the information presented during the semester unless you get it "first hand" and have some frame of reference (i.e. read the required materials ahead of time). I cannot stress enough the importance of attending lectures, asking questions and taking notes during class meetings. Please take time to read the material on the "Succeed at UNT" website: www.succeed.unt.edu.

ADA Policy: The University of North Texas complies with the Americans with Disabilities Act of 1990 in making reasonable accommodation for qualified students with disabilities. If you have a qualifying disability as defined in the ADA and would like to request accommodation, please contact the Office of Disability Accommodation at (940) 565-4323. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda.

Academic integrity: According to UNT Policy 06.003 on Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. Visit University of North Texas' Student Academic Integrity Policy: https://policy.unt.edu/policy/06-003 to obtain additional information and refer to the UNT Student Conduct and Community Standards (https://studentaffairs.unt.edu/dean-of-students/conduct/index.html) for information on how any cases of academic dishonesty will be handled.

Tentative schedule
I reserve the right to change the schedule, including dates for exams, lab practical exams, project reports or presentations, and field collections and other outdoor activities as I see fit to accommodate the broader goals of the course. Schedule changes are expected because course activities depend

on the weather and/or engagement with community partners such as Texas Parks and Wildlife Department. Any such changes that affect all students will be communicated in advance and accompanied by an updated syllabus.

Week 1 (Aug 19/20): Welcome and introductions; What is a fish? Phylogenetic procedures
Lecture: Chapters 1 and 2
Lab: Lab safety; Explore FishBase and Fishes of Texas; Common counts and measurements; Field collection and preservation methods

Week 2 (Aug 26/28): External and internal anatomy
Lecture: Chapters 3 and 4
Lab: External anatomy

Week 3 (Sept 2/4): Metabolism, energetics and sensory systems; Exam #1
Lecture: Chapters 5 and 6
Lab: Internal anatomy
*** Deep dive report topic and 3 articles due Monday, Sept 8 by 10:00 pm

Week 4 (Sept 9/11): Field collections and flex work time for group projects and literature review
Lecture: group work time; literature review
Lab: Stream field collections (rotating schedules)

Week 5 (Sept 16/18): Homeostasis, reproduction; Exam #2
Lecture: Chapters 7 and 8
Lab: Reproduction

Week 6 (Sept 23/25): Early life history, age and growth; special habitats/adaptations
Lecture: Chapters 9 and 10
Lab: Ontogeny, age and growth
*** Boat electrofishing with Cynthia Holt from TPWD on Saturday, September 27
*** 15 articles for Deep Dive due Monday, September 29 by 10:00 pm

Week 7 (Sept 30/Oct 2): History of fishes; Chondrichthys; Exam #3
Lecture: Chapters 11 and 12
Lab: Lab practical #1

Week 8 (Oct 7/9): Chondrichthys and primitives
Lecture: Chapters 12 and 13
Lab: Chondrichthys and primitives
*** Group project update during lecture Oct 9

Week 9 (Oct 14/16): Teleosts; Exam #4
Lecture: Chapters 14 and 15
Lab: Teleosts

Week 10 (Oct 21/23): Teleosts; Fishes as predators and prey
Lecture: Chapters 15 and 16
Lab: Teleosts
*** Day of the Dead Coffin Races and SciComm projects, Saturday 10/25

Week 11 (Oct 28/30): Fishes as social animals, cycles of activity; Exam #5
Lecture: Chapters 17 and 18
Lab: Species identification using dichotomous keys (common North Texas fishes)

Week 12 (Nov 4/6): Zoogeography and phylogeny; Populations

Lecture: Chapters 19 and 20
Lab: Species identification using dichotomous keys (common North Texas fishes)

Week 13 (Nov 11/13): Individuals to assemblages, Functional roles of fishes
Lecture: Chapters 20 and 21
Lab: Lab practical #2
*** Deep dive final report due Monday, November 17 by 10:00 pm

Week 14 (Nov 18/20): Conservation; Exam #6
Lecture: Chapter 22
Lab: none

Week 15 (Nov 25/27): No class – Fall break

Week 16 (Dec 2/4): Presentations week! Presentations scheduled during lecture and lab times (attendance at all presentations for full credit)

No final exam

Important dates to add to your calendars

September 4 – Exam #1
September 8 – Deep dive report topic and 3 articles due by 10:00 pm
September 18 – Exam #2
September 27 – Boat electrofishing with TPWD
September 29 – 15 articles for Deep Dive due by 10:00 pm
October 1 – Lab practical #1
October 2 – Exam #3
October 9 – Group project update
October 16 – Exam #4
October 25 – Day of the Dead Coffin Races and SciComm projects
October 30 – Exam #5
November 12 – Lab practical #2
November 17 – Deep dive final report due by 10:00 pm
November 20 – Exam #6
December 2/3/4 – Presentations week!