Fish Diversity and Ecology Course Syllabus – Fall 2026 **v. 08/17/26**
BIOL 4085.001+.301 / BIOL 5085.001+.301; 4 credit hrs.

Meeting times & places: Lecture:T/Th: 9:35-10:55; ENV 190
Lab: W 11:05-1:55; 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 The hard copy is a great field reference if you can find it at a reasonable price, but is out of print and thus outdated and expensive.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. Although bulk course communication will be sent via Canvas, please *contact me via email* instead.

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, and four "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	= 250
Final deep dive presentation	= 100
Group SciComm project	= 250
4 "Exams" @ 100 pts. ea.	= 400
10 lab assignments @ 50 pts. ea.	= 500
2 lab practical exams @ 250 pts. ea.	= 500

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.

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.

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 7. The last day to drop a course with a grade of W is November 6.

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.

Unauthorized aids during examinations and assessments: Students may use only those materials and resources that are expressly authorized by the instructor for a particular examination or assessment. Touching, holding, or accessing any unauthorized aid during the examination period constitutes a violation of the Student Code of Conduct, regardless of whether the aid is used. Any

item that may be considered an unauthorized aid must be kept out of view and in a closed container (e.g. zipped backpack, buttoned purse, etc.) during the entirety of the examination or assessment. Unless specifically authorized in writing by the instructor, prohibited aids include, but are not limited to:

- Mobile phones and smartphones
- Smartwatches and fitness trackers with communication, recording, or internet capabilities
- Tablets, laptops, and other computing devices
- Earbuds, headphones, and other audio devices
- Smart glasses, cameras, recording devices, and wearable technology
- Artificial intelligence (AI) tools, chatbots, and other generative AI technologies
- Notes, textbooks, study guides, formula sheets, or reference materials
- Any other device, material, or resource not expressly permitted by the instructor

Students are responsible for clarifying any questions about permitted materials before the examination begins.

Etiquette: We need to work together to ensure a high-quality teaching and learning environment. Disruptive and inconsiderate activities negatively affect the entire class and include talking, coming in late, leaving class for non-essential reasons, using cell phones, tablets or computers for reasons not related to class, and general inattentive behavior.

Academic support and student services: UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (https://studentaffairs.unt.edu/student-health-and-wellness-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- UNT Care Team (https://studentaffairs.unt.edu/care)
- UNT Psychiatric Services (https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry)
- Individual Counseling (https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)

Additional student support services:

- Registrar (https://registrar.unt.edu/registration)
- Financial Aid (https://financialaid.unt.edu/)
- Student Legal Services (https://studentaffairs.unt.edu/student-legal-services)
- Career Center (https://studentaffairs.unt.edu/career-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- UNT Food Pantry (https://deanofstudents.unt.edu/resources/food-pantry)

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 and area schools. Any such changes that affect all students will be communicated in advance and accompanied by an updated syllabus.

Week 1 (Aug 18/20): 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
*** SciComm groups determined on Thursday

Week 2 (Aug 25/27): External and internal anatomy; metabolism
Lecture: Chapters 3, 4, 5
Lab: External anatomy

Week 3 (Sept 1/3): No lecture – flex time for group projects and literature review
Lecture: group work time; literature review
Lab: Internal anatomy
*** Deep dive report topic and 3 articles due Monday, Sept 7 by 10:00 pm

Week 4 (Sept 8/10): Metabolism; Energetics and sensory systems
Lecture: Chapters 5 and 6
Lab: Stream field collections (rotating schedules)
*** Group project update during lecture Sept 8

Week 5 (Sept 15/17): Exam #1; Homeostasis; Reproduction
Lecture: Chapters 7 and 8
Lab: Reproduction

Week 6 (Sept 22/24): Reproduction; Early life history, age and growth
Lecture: Chapters 8 and 9
Lab: Ontogeny, age and growth
*** 8 articles for Deep Dive due Monday, September 21 by 10:00 pm
*** Group project update during lecture Sept 22

Week 7 (Sept 29/Oct 1): Special habitats/adaptations; History of fishes
Lecture: Chapters 10 and 11
Lab: Lab practical #1

Week 8 (Oct 6/8): Exam #2; Chondrichthys; Primitives
Lecture: Chapters 12 and 13
Lab: Chondrichthys and primitives

Week 9 (Oct 13/15): Primitives; Teleosts
Lecture: Chapters 13, 14 and 15
Lab: Teleosts

Week 10 (Oct 20/22): Fishes as predators and prey; Fishes as social animals
Lecture: Chapters 16 and 17
Lab: Teleosts
*** Deep dive annotated outline due Monday, October 19 by 10:00 pm

Week 11 (Oct 27/29): Exam #3; Cycles of activity
Lecture: Chapter 18
Lab: Species identification using dichotomous keys (common North Texas fishes)

Week 12 (Nov 3/5): Zoogeography and phylogeny; Populations
Lecture: Chapters 19 and 20
Lab: Species identification using dichotomous keys (common North Texas fishes)

Week 13 (Nov 10/12): Individuals to assemblages, Functional roles of fishes
Lecture: Chapters 20 and 21
Lab: Lab practical #2

Week 14 (Nov 17/19): Conservation; Exam #4
Lecture: Chapter 22
Lab: none
*** Deep dive final report due Monday, November 16 by 10:00 pm

Week 15 (Nov 24/26): No class – Fall break

Week 16 (Dec 1/3): Presentations week – amaze your colleagues and the panel of guest judges and win fishy prizes! Presentations will be scheduled during lecture and lab meetings (attendance at all presentations for full credit)

No final exam

The following activities will be added to the schedule as dates become more concrete:

- Stream field surveys (seining and backpack electrofishing)
- Reservoir field surveys (boat electrofishing with Cynthia Holt from TPWD)
- Science communication project meetings with instructors at local schools
- Science communication projects presentations