Course Change Request

New Course Proposal

Date Submitted: 08/31/23 11:01 am

Viewing: EVPP 435 : The Diversity of Fishes

Last edit: 08/31/23 12:54 pm

Changes proposed by: jbazaz

In Workflow

1. **ESP UG Committee**
2. **ESP Chair**
3. SC Curriculum Committee
4. SC Assistant Dean
5. Assoc Provost-Undergraduate
6. Registrar-Courses
7. Banner

Approval Path

1. 08/31/23 11:52 am Younsung Kim (ykih): Approved for ESP UG Committee

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Thomas Reid Nelson	4480	tnelso3@gmu.edu

Effective Term: Fall 2023

Subject Code: EVPP - Environmental Science & Policy **Course Number:** 435

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses: BIOL 480 - The Diversity of Fishes

Catalog Title: The Diversity of Fishes

Banner Title: The Diversity of Fishes

Will section titles vary by semester? No

Credits: 4

Schedule Type: Lecture w/Lab

Hours of Lecture or Seminar per week: 3

Hours of Lab or Studio per week: 1

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 12

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

BIOL 300 and BIOL 350 or EVPP 350

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:

This course delves into the biology and ecology of fishes. Subjects of this class include fish anatomy, taxonomy, evolution, habitat adaptations, community dynamics, and ecosystem interactions. The course will also touch on human impacts on fishes, and conservation.

Justification:

What: Creating a new course.

Why: To provide undergraduate EVPP students with this course's content.

Does this course cover material which crosses into another department? Yes

Impacted Departments:

Department
BIOL - Biology

Learning Outcomes:

Will this course be scheduled as a cross-level cross listed section? Yes

Please use the Additional Attachments button to attach two syllabi for review, one undergraduate and one graduate, preferably as separate documents. These should be provided in order to demonstrate the difference in expectations and assessments for undergraduates and graduates taking the course.

Attach Syllabus

EVPP435Syllabus.pdf

Additional Attachments

EVPP536syllabus.pdf

Staffing:

Thomas Reid Nelson, PhD

Relationship to Existing Programs:

Course will be added into the Environmental Science, BS.

Relationship to Existing Courses:

Equivalent to BIOL 480.

Will be cross listed with EVPP 536 in accordance with University Policy 3002.

Specialized Course Categories:

Additional Comments:

Reviewer Comments

Key: 18275

The Diversity of Fishes, EVPP 435: Syllabus Spring 2023

Lecture Meeting Time: Monday 3:30 - 6:15 PM
Location: Potomac Science Center 3102

Lab Meeting Time: Tuesday 3:30 – 6:15 PM
Location: Potomac Science Center L005

Instructors: **Dr. T. Reid Nelson,** tnelso3@gmu.edu
Assistant Professor, Environmental Science and Policy
Phone: (703) 993-4480
Office: Potomac Science Center 3115
Office hours: Monday 1:00 – 3:00 pm and by appointment

Course Web Site: Go to **http://mymason.gmu.edu,** log in with your email name and your GMU email password, select Blackboard, and then select Diversity of Fishes EVPP-441 (Spring 2023). All information will be in this location.

Note: The course takes place at an off-campus location: The Potomac Science Center, 650 Mason Ferry Ave, Woodbridge, VA.

Course Description and Goals: With over 30,000 species, fishes represent the most diverse group of vertebrates, and our course will be a deep dive into the diversity, biology, and ecology of these enigmatic species. Given this vast number of species, fishes have a complex phylogenetic tree and you will become familiar with fish taxonomy, phylogenetics, and evolutionary history. During our course you will gain familiarity with the anatomy and physiology of fishes and understand adaptations that allow them to thrive in multiple aquatic environments. You will also gain an appreciation for the zoogeography of fishes, given that they can be found throughout all global latitudes, freshwater, saltwater, estuaries, deep oceans, caves, and even deserts! Finally, we will investigate the life history, behavior, and ecology of these species covering varying reproductive strategies, age and growth, predator-prey interactions, community dynamics and more. This course will also strengthen your critical reading, critical thinking, and discussion skills which are essential assets to anyone entering a career in the sciences.

Learning Outcomes:

- Knowledge of fish taxonomy and phylogeny
- Familiarity with fish anatomy and physiology
- Knowledge of feeding, locomotion and predator-prey interactions
- Knowledge of fish ecology and diversity in age, size, maturation, parental care, and longevity
- Familiarity with local fishes, including order, family, genus, species, and common names
- Ability to use a dichotomous key
- Experience with fish collection, preservation, and museum curation

Lecture Content and Instructional Methods: Our course will consist of my lectures and presentations from graduate students, followed by literature discussions. Below is a list of the lecture topics I hope to cover each week. My syllabus is a guideline and not set in stone, as the semester progresses we will see how much material we cover and adjust exams and lectures accordingly. I encourage questions and in

class discussions, if this leads to less material being covered throughout the semester that is perfectly fine. I would rather that you have a good understanding of the material instead of being bombarded or overwhelmed with too many topics. My lectures will consist of PowerPoint presentations that I will post to our course on the day of the lecture. During the course of the semester, graduate students will present scientific papers and each of you will be required to bring 2 questions to help facilitate the paper discussion. Reading and interpreting scientific papers is part of the course; your participation grade will be based on reading the assigned material and participating in the discussions as well as lectures when appropriate. Check the course web site every week for readings that are part of the course material.

Lab Content and Instructional Methods: Our course will consist of laboratory exercises that complement the material presented in lecture. We will rely heavily on the GMU fish collection for anatomy investigations and to familiarize ourselves with the common orders and families of fishes. The first part of our course will focus on anatomy, morphometric and meristic characteristics, common families, and orders. You will gain hands on experience with the internal and external anatomy of fishes through fresh specimen dissection in addition to GMU collection investigations. You will be tested on this knowledge during a mid-term lab practical. The second part of our course will get you into the field collecting fishes from 3 different locations to highlight the vast diversity that exists within VA. From these collecting trips, we will retain a voucher specimen of each species that we collect and you will be responsible for its preservation and storage in your own fish collection throughout the semester. After each trip we will work together to identify each species using dichotomous keys and you will keep a detailed record of each species, with the defining characteristics of your identification. You will also label each specimen with the appropriate, collection information ensuring proper fish collection procedures are followed. Your collection and species identification information will be due at the end of the semester and constitute a large portion of your lab grade. Your final lab practical will be based on the fishes we collect during class. A single specimen of each species collected, which you will know in advance, will be laid out and you must identify the order, family, genus, species, and common name.

Grading: In lecture, your grade will come from two mid-term exams, a cumulative final, and participation in the discussions. In lab, your grade will come from the mid-term lab practical, a final lab practical, your fish collection project, and participation in lab and field activities. The below table is the percentage breakdown for each assignment, which will be graded out of a score of 100 and the course will be graded on the standard university scale for undergraduate students.

Percentage Breakdown		**Undergraduate Scale**	
Assignment	**Percentage**	**Grade**	**Score**
Lecture		A+	97 - 100
Mid-Term Exam 1	10 %	A	93 - 96
Mid-Term Exam 2	10 %	A-	90 - 92
Cumulative Final	20 %	B+	87 - 89
Participation	10 %	B	83 - 86
		B-	80 - 82
Lab		C+	77 - 79
Mid-Term Practical	10 %	C	73 - 76
Final Practical	20 %	C-	70 - 72
Participation	10 %	D	60 - 69

Collection Project	10 %	F	< 60

Lecture Topics and Assignments Schedule

Week	Date	Topic	Readings
Part 1 – Anatomy, Physiology, and Taxonomy			
1	1/23	Introduction to Class, Fishes, and Systematics	1, 2
2	1/30	Anatomy	3, 4, Hastings
3	2/6	Physiology	5, 6, 7, **Bb**
4	2/13	Taxonomy (Extinct, Primitive, and Chondrichthyes)	11, 12, 13, Hastings
5	2/20	Taxonomy (Teleosts [bony fishes], I and II)	14, 15, Hastings
6	2/27	**EXAM**	
7	3/6	Fish Collection Day (final prep for mid-term lab practical)	
8	3/13	Spring Recess (no class)	
Part 2 – Behavior, Ecology, and Adaptations			
9	3/20	Zoogeography, Genetics, and Adaptations	16, 17, 18, **Bb**
10	3/27	Early Life History, Ontogeny, Age and Growth	9, 10, **Bb**
11	4/3	Locomotion, Feeding, Predators, and Prey	8, 19, 20, **Bb**
12	4/10	Social Interactions in Fishes	21, 22, **Bb**
13	4/17	Cycles of Activity, Behavior, and Migrations	23, **Bb**
14	4/24	Populations, Communities, Ecosystems and Fishes	24, 25, **Bb**
15	5/1	Human Impact and the Future of Fishes	26, **Bb**

Cumulative Final Exam (Study everything offered in this class): Date: 5/15 **Time:** 3:30-6:15 PM

Lab Topics and Schedule

Week	Date	Topic	Readings
Part 1 – Anatomy, Orders, and Families			
1	1/24	Class Introduction External Anatomy, Morphometric and Meristic Characters	
2	1/31	Internal Anatomy (Dissections and Structure Identification)	
3	2/7	Fish Collection Day 1 (Order and Families)	
4	2/14	Fish Collection Day 2 (Order and Families)	
5	2/21	Age and Growth Lab 1 (Scale/Otolith Extraction)	
6	2/28	Age and Growth Lab 2 (sectioning and reading)	
7	3/7	Mid-Term Lab Practical (Anatomy, Orders & Families)	
8	3/14	Spring Recess (no class)	
Part 2 – Fish Collection, Species Identification, and Preservation			
9	3/21	IACUC Training (Off week)	
10	3/28	Field Trip Creeks/Streams/River TBD	
11	4/5	Identification of Collected Species	

12 4/12 Field Trip Tidal Freshwater
13 4/19 Identification of Collected Species
13.5 4/21 – 4/23 VIMS Eastern Shore Field Trip
14 4/26 Further Identification of Coastal Species
15 5/3 Final Student Collection & Identification Sheet Due

Final Lab Practical Date: 5/16 **Time:** 3:30-6:15 PM

Readings:

Recommended textbooks:

Helfman, G., B. B. Collette, D. E. Facey, and B. W. Bowen. 2009. The Diversity of Fishes: Biology, Evolution, and Ecology. John Wiley & Sons.

Philip A. Hastings. 2014. Fishes: A Guide to Their Diversity. University of California Press, Oakland, California.

YOU CAN ACCESS BOTH BOOKS FOR FREE THROUGH THE GMU LIBRARY
Once logged in with your account, search the title, and then select online resources. This will take you to the ProQuest E-book central where you can read the book online, download limited chapters, or download entire book to read on Adobe E-Book reader for 21 days.

Other readings will be posted to blackboard on the indicated weeks

Recommended Field Guides:

Kells, V., & Carpenter, K. (2011). A Field Guide to Coastal Fishes: From Maine to Texas.

Page, L.M., & Burr, B. M. (2011). Peterson Field Guide to Freshwater Fishes, Second Edition.

Robins, C.R., Ray, G.C., and Douglass, R.R. (1986). A Field Guide to Atlantic Coast Fishes (Peterson Field Guide)

Honor Code: Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process (see below for the student pledge). In this course the honor code applies as follows, when you are responsible for a task, you will perform that task. When you rely on someone else's work in presentations or papers, you will give proper citation to that work.

Student Pledge: To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University Community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set for this Honor Code: Student Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

Gender identity and pronoun use: If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use he/him/his for myself and you may address me as Reid or Dr. Nelson in email and verbally.

Safe Return to Campus Statement: First of all, I want to address that these are new and uncertain times for everyone. Over the course of the pandemic, I have dealt with my own anxiety and stress management issues and strongly encourage everyone to practice good self-care and try to consciously maintain a healthy mental state. For anyone that is feeling anxious or overwhelmed by the return to campus, the state of the world in general, or any other issues, please reach out to the Counseling and Psychological Services (CAPS) center and seek help as needed https://caps.gmu.edu/covid19/. Speaking from personal experience, talking to someone and getting strategies to maintain good mental health can be paramount to our well-being, happiness, and intellectual pursuits.

All students taking courses with a face-to-face component are required to follow the university's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (https://www2.gmu.edu/safe-return-campus). Similarly, all students in face-to-face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system and students will receive either a Green, Yellow, or Red email response. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class. Students are required to follow Mason's current policy about facemask-wearing. As of August 11, 2021, all community members are required to wear a facemask in all indoor settings, including classrooms. An appropriate facemask must cover your nose and mouth at all times in our classroom. If this policy changes, you will be informed; however, students who prefer to wear masks either temporarily or consistently will always be welcome in the classroom.

Absenteeism Policy: I believe that being in the classroom is a valuable experience where a free exchange of ideas and healthy academic debate can flourish. In person presentations and discussions are also paramount to the learning process and building a sense of community. Hands on lab and field experiences also enhance the learning experience and cannot be replaced in missed. Therefore, I hope that everyone can make plans to be in class as frequently as possible. However, I understand that personal issues arise and will try to accommodate absences if they are discussed with me prior to class, or when unforeseen illnesses occur.

Disability Accommodations: Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit http://ds.gmu.edu/ for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474.

Sexual Harassment, Sexual Misconduct, and Interpersonal Violence: George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote

community well-being and student success. We encourage students and employees who believe that they have been sexually harassed, sexually assaulted or subjected to sexual or interpersonal misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason's process, the resources, and the options available to students and employees.

Notice of mandatory reporting of sexual or interpersonal misconduct: As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, stalking, sexual exploitation, complicity, and retaliation to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-993-3686 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu. Unforeseen personal issues may arise and if these occur please contact me as soon as possible and we will work together to accommodate absences as needed.