# Research Methods in Marine & Estuarine Ecology

## Course Information:
**Course Number:** EVS 4932
**Time**: 1:55pm – 4:55pm, Tuesdays
**Credits**: 3
**Instruction Mode:** In-person
**Meeting Location**: MCCB 3096
**Lab:** MCCA 2142

## Instructors:
Adam R. Searles, PhD Student, AdamRossS@ufl.edu
Laura K. Reynolds, Assistant Professor, lkreynolds@ufl.edu
Charles W. Martin, Assistant Professor, martin.charles.w@gmail.com

## Course Description:
This is a Classroom Undergraduate Research Experience (CURE) course and is intended for those considering a long-term career in marine and estuarine ecology. Thus, we will focus on equipping students with research skills relevant to this field of study. Eighty percent of class time (~2.5 hours per week) will be dedicated to processing benthic fauna samples and submerged aquatic vegetation cores collected from the Big Bend region of Florida. We will use the data collected from these samples to quantify relationships between habitats and ecological communities. The remaining twenty percent of class time will be dedicated to learning about the important components of the research world and other professional development activities to better prepare students for a future in graduate school or other related professional field.

## Student Learning Objectives:
Dedicated students will be able to:

1. Collect seagrass morphometric and biomass data
2. Identify the common coastal fishes and invertebrates of Florida
3. Expand CV and proposal development skills in preparation for internal UF scholarships
4. Find and critique relevant scientific articles
5. Formulate basic research questions

## Required Materials:
Access to a laptop for in-class discussions and scholarship material creation. Additional materials will be provided.

## Course Communication:
Please direct all inquiries and other communications to Adam Searles (AdamRossS@ufl.edu). Please use your UF email for all course communications.

## Grading:

| Assignment | Points |
|---|---|
| Class Participation | 50 |
| Discussion Lead | 10 |
| University Scholars Application Proposal | 20 |
| Skills Final | 10 |
| Taxonomic ID Final | 10 |
| **Total** | **100** |

## Grading Scale:

| Letter Grade | Points |
|---|---|
| A | ≥90 |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | ≤59 |

## Assignments:

**Discussion Lead:**
Each student will lead a class discussion on a scientific article relevant to the field of marine biology. Students will be expected to facilitate discussions on the merits and faults of each paper as well as display a thorough understanding of the contents. The papers will be chosen by the instructors unless students can produce excellent alternatives. Papers will cover a variety of pertinent and foundational topics in marine/estuarine ecology (e.g., contextual oceanographic processes, bottom-up control, foundation species, top-down control, habitat restoration, climate change, etc.). These exercises will encourage critical thinking, technical reading skills, and discussion for students and instructors. Papers can be accessed below.

| Date | Topic | Paper | Link |
|---|---|---|---|
| Jan. 23 | Abiotic Contexts | Sanford et al. 2006 | Download |
| Feb. 13 | Bottom-Up Control | Kelaher et al. 2013 | Download |
| Feb. 27 | Foundation Species | Silliman et al. 2011 | Download |

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|---|---|---|---|
| Mar. 19 | Top-Down Control | Heck et al. 2006 | Download |
| Apr. 2 | Habitat Restoration | Jud et al. 2020 | Download |
| Apr. 16 | Climate Change | Fowler et al. 2018 | Download |

**University Scholars Application:**
Students will develop proposals for the UF Center for Undergraduate Research's University Scholars Program. These proposals will be 1-page and length and a scientific questions and experimental approach they intend to use to answer the question. Those who are interested are encouraged to submit their proposals to the program. We will discuss the details of this assignment in class. This assignment will promote the professional development and career excellence of all class members.

**Final:**
The final exam will be a practical exam. During the final, students will be expected to perform skills practiced over the course of the semester including seagrass core workup and taxonomic identification of coastal fish and invertebrates. If all goes according to plan, we will be taking this exam out on the boat in Cedar Key, Florida.

*For information on current UF policies for assigning grade points, see
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

## Course Schedule:

| Week | Discussion Topic | HW Due | Important Notes |
|---|---|---|---|
| Jan. 9 | Introduction/What is Marine Science? | | |
| Jan. 16 | Questions & Hypotheses/Proposal Q&A | UF Lab Trainings Completed; Email Research Mentor | |
| Jan. 23 | Student-Led Paper Discussion 1 | USP Proposal Rough Draft | |
| Jan. 30 | Observation vs Experiment | | CLAS USP Due 2/2 |
| Feb. 6 | Randomization and Replication | | CALS/Eng. USP Due 2/9 |
| Feb. 13 | Student-Led Paper Discussion 2 | Turn in USP Proposal Before Class | NHM USP Due 2/16 |
| Feb. 20 | Data and Statistics Overview | | |
| Feb. 27 | Student-Led Paper Discussion 3 | | |

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|---|---|---|---|
| Mar. 5 | Writing and Publishing Papers | | |
| Mar. 12 | Spring Break | | |
| Mar. 19 | Student-Led Paper Discussion 4 | | |
| Mar. 26 | TBD | | |
| Apr. 2 | Student-Led Paper Discussion 5 | | |
| Apr. 9 | Graduate School and the Paths of Science | | |
| Apr. 16 | Student-Led Paper Discussion 6 | | |
| Apr. 23 | Final Exam | | |

## COVID Guidelines:

These are UF's COVID policies: https://policy.ufl.edu/keyword/covid-19/. Please refer to these if you have any questions about COVID or university standard operating procedure during the pandemic.

If you develop any symptoms of illness or test positive for COVID, do not come to class. Please notify the instructors immediately. We are understanding and accommodating in these situations and will help make sure you do not fall behind during this time.

## UF Policies:

**Online Course Evaluation Process:**
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/.

**Academic Honesty:**
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have

neither given nor received unauthorized aid in doing this assignment." The Honor Code (sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**University Policy on Academic Misconduct:**
Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at
http://www.dso.ufl.edu/students.php.
**Commitment to a Safe Learning Environment**
The instructors and the UF Center for Undergraduate Research (CUR) value broad diversity within our community and are committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

# Getting Help:

**Services for Students with Disabilities:**
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**E-Learning and Technical Support:**
For issues with technical difficulties for Canvas, please contact the UF Help Desk at:
- Learning-support@ufl.edu
- (352) 392-HELP
- https://lss.at.ufl.edu/help.shtml

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at http://www.distance.ufl.edu/getting-help for:
- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

**Health and Wellness Resources:**
U Matter, We Care: If you or someone you know is in distress, please contact mailto:umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu/.

University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; ufhealth.org/emergency-room-trauma-center.

**Academic Resources:**
E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at mailto:helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: cms.uflib.ufl.edu/ask various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring. teachingcenter.ufl.edu/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor- codestudent-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process/