

Environmental Resources Management

ENV 4601 - Section 3CRE

Credit Hours: 3

Class Periods:

T | Period 4 (10:40 AM – 11:30 AM)

R | Period 4-5 (10:40 AM- 12:35 PM)

Location: FAC 0127 (T), and FAC 0120 (R)

Academic Term: Fall 2024

Instructor:

Sara Behdad

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(352) 294-7547

Office Hours: Tuesday, 5th Period (11:45-12:35 pm) or by appointment [[zoom link](#)]

<https://ufl.zoom.us/j/4711699763>

Office Location: 412 BLK Hall

Teaching Assistant/Peer Mentor/Supervised Teaching Student: N/A

Grader: Bianca Pineros, bianca.pineros@ufl.edu

Please contact the instructor for any assistance.

Course Description

The objective of this course is to equip students with the skills and knowledge to manage environmental resources through economic and engineering principles. The course is divided into two main parts: *engineering economy* and *environmental economics*.

In the engineering economy part, students will learn foundational concepts such as the Time Value of Money, Interest Rates, and Cash Flow Diagrams. The course covers economic measures such as Present, Future, and Annual Values, and explores engineering economic factors, including Single-amount Factors, Uniform Series Factors, and Gradient Factors. Practical application of these concepts through spreadsheet functions and the understanding of Nominal and Effective Interest Rates will also be discussed.

The environmental economics part discusses modeling and solving environmental problems using economic principles. Students will explore market processes, market failures, and both conventional and market-based solutions to environmental issues. Key topics include Environmental Risk Analysis, Benefit-Cost Analysis, and methods for assessing environmental benefits and costs. The course discusses the applications of these tools to real-world cases, such as air and water quality management, solid waste management, and global environmental challenges. Through describing these case studies, students will learn the processes for setting standards, the relevant regulatory frameworks, and the economic principles that inform environmental policies.

Course Pre-Requisites / Co-Requisites

ENV 3040C, Computational Methods in Environmental Engineering

Course Objectives

After completion of this course, students will be able to:

- Apply engineering economic principles to evaluate and optimize environmental projects, considering factors such as the time value of money and cash flow analysis.

- Utilize economic models to understand and address environmental challenges, including market processes and failures.
- Compare and contrast traditional regulatory approaches with market-based solutions for environmental management.
- Analyze environmental policies informed by economic analysis, using tools such as Benefit-Cost Analysis.
- Analyze and propose solutions to specific environmental issues, including air and water quality, solid waste management, and global sustainability challenges.

Materials and Supply Fees

No materials and supply fees.

Contribution of the course to meet the ABET professional component: This is a 3-credit course.

Relation to Program Outcomes (ABET): This course addresses the following EES Program outcomes (note: numbers refer to the list of EES Program outcomes):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Medium
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Medium
3. An ability to communicate effectively with a range of audiences	
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Medium
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Medium
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium

Required Textbooks and Software

No required textbooks.

Recommended Materials

- Leland Blank, A., & Anthony Tarquin, P. E. (2005). Engineering economy. McGraw-Hill.
- Callan, S. J., & Thomas, J. M. (2013). Environmental economics and management: Theory, policy, and applications. Cengage Learning.
- Engineering Economy – Applying Theory to Practice (3rd Edition), Ted G. Eschenbach

Required Computer

UF student computing requirement: <https://news.it.ufl.edu/education/student-computing-requirements-for-uf/>

Course Schedule

Notes: The schedule and topics are *tentative* as the pace dictates. The HW and assignment dates may change with advance notice on Canvas.

Week 1:	Foundation of Engineering Economy;
Week 2:	Effect of Time and Interest; (Assignment 1)
Week 3:	Engineering Economy Factors, Combining Factors and XLS Functions; (Assignment 2)
Week 4:	Nominal and Effective Interest Rates;
Week 5:	Economics and the Environment (Exam 1)
Week 6:	Modeling the Market and Environmental Problems; (Assignment 3)
Week 7:	Efficiency Criteria, Modeling Market Failure; (Assignment 4)
Week 8:	Conventional Solutions to Environmental Problems;
Week 9:	Economic Solutions to Environmental Problems; (Exam 2)
Week 10:	Assessing Environmental Benefits; (Assignment 5)
Week 11:	Assessing Benefits and Costs; (Assignment 6)
Week 12:	Standard Setting Process for Air Quality, Benefit-Cost Analysis of the Clean Water Act;
Week 13:	Controlling Air Quality for Mobile and Stationary Sources, (Assignment 7)
Week 14:	Ozon Depletion and The Standard Setting Process for Water Quality; (Exam 3)
Week 15:	Managing Hazardous Solid Waste; (Assignment 8)
Week 17:	Sustainable Development: International Agreements and Trade; (Assignment 9)

Important Dates

Exam 1	Tentative Date: Sept 19 th
Exam 2	Tentative Date: Oct 17 th
Exam 3	Tentative Date: Nov 21 st
No Final Exam	

Attendance Policy, Class Expectations, and Make-Up Policy

Attendance is required. The lectures will be offered face-to-face. To schedule a make-up for excused, missed assignments, please contact the instructor through email. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:

<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Assignments (weekly/bi-weekly)	100 each	40%
Exam 1 (Tentative Date: Sept 19)	100	15%
Exam 2 (Tentative Date: Oct 17)	100	15%
Exam 3 (Tentative Date: Nov 21)	100	15%
Attendance and In-class Assignments	100 each	15%
		100%

Grading Policy

Percent	Grade	Grade Points
90.0 - 100	A	4.00
85.0 - 89.9	A-	3.67
80.0 - 84.9	B+	3.33
75.0 - 79.9	B	3.00
70.0 - 74.9	B-	2.67
65.0 - 69.9	C+	2.33
60.0 - 64.9	C	2.00
55.0 - 59.9	C-	1.67
50.0 - 54.9	D+	1.33
45.0 - 49.9	D	1.00
25.0 - 49.9	D-	0.67
0 - 24.9	E	0.00

More information on UF grading policy may be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

In-class Assignment: Throughout the course, you can expect approximately 5-6 in-class assignments based on the lecture material and readings. You have the option to drop your lowest grade. In-class assignments mostly will be conducted at the beginning of class; please note that students arriving late will not receive credit.

Homework: Throughout the course, you will receive up to 10 homework assignments often assigned on Thursday on Canvas and are due in class one or two weeks later. Most assignments will be individual unless stated otherwise. Late submissions will incur a penalty of one letter grade per day

Exams: Three closed-book exams will be given in class (see course schedule). Exams will focus mostly on recent course material but may cover all previous topics. There is no “final” exam during finals week. Please ensure strict adherence to the exam instructions. Any deviations from the given instructions will be considered a violation of the student honor code and will be reported to the Dean of Students Office for possible disciplinary action.

Homework Assignment Policies

- The homework assignments will be posted on CANVAS, and they are often due before the next lecture starts the following week.
- Individual work
- Late assignments are not accepted—one letter grade per day late.
- Requests for correcting possible grading errors must be submitted to the instructor within one week after the work is returned with a written explanation of the correction request; no corrections are possible afterward.
- The tentative schedule for the three exams are Thursdays Sept 19, Oct 17, and Nov 21, 2024.
- Acknowledge all resources used. Plagiarism is not acceptable. Identical homework submissions receive zero. You should protect your own work, including homework assignments and exams all the time.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

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 <https://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 <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

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 (<https://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.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Undergraduate Coordinator
- HWC OE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://elearning.ufl.edu/>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.