

## **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:*** Larson 310

***Academic Term:*** Fall 2023

### ***Instructor:***

Sara Behdad

[sarabehdad@ufl.edu](mailto:sarabehdad@ufl.edu)

(352) 294-7547

**Office Hours:** Thursday, 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: Hao-yu Liao, [haoyuliao@ufl.edu](mailto:haoyuliao@ufl.edu)

Please contact the instructor for any assistance.

### ***Course Description***

Catalog Description: Theory and application of engineering economics and systems analysis to the design of environmental management systems; 3 credit hours.

The objective of the course is to educate students on the basic principles of *engineering economy*. The course covers topics related to economic analysis and decision-making processes in engineering projects. The goal is to help environmental engineering students and professionals understand the financial aspects of projects and how to make informed choices based on cost-benefit considerations. Further, the course provides students with the systematic knowledge necessary for assessing the economic feasibility of projects dedicated to the preservation and sustainable management of environmental resources. The course covers a wide range of topics, including the fundamental principles of the Time Value of Money, Economic Factors, Cash Flow Analysis techniques, and various Economic Evaluation methods such as Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period, and Benefit-Cost Ratio (BCR) to enable make informed decisions about the economic viability of engineering projects.

***Course Pre-Requisites / Co-Requisites:*** ENV 3040C, Computational Methods in Environmental Engineering

### ***Course Objectives***

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

- Understand the time value of money and its application in engineering project analysis.
- Conduct comprehensive economic analyses for informed decision-making.
- Consider environmental, and economic factors in engineering project decisions.
- Learn the importance of natural capital and environmental economics for sustainable development.
- Enhance their communication skills for discussing environmental economics concepts.

**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):

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
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
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
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

**Required Textbooks and Software**

No required textbooks.

**Recommended Materials**

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

**Course Schedule**

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

Week 1:	Foundation of Engineering Economy; (Assignment 1)
Week 2:	Foundation of Engineering Economy; (Assignment 2)
Week 3:	Engineering Economy Factors; (Assignment 3)
Week 4:	Engineering Economy Factors;
Week 5:	Combining Factors and Spreadsheet Functions; Exam Review (Exam 1)
Week 6:	Combining Factors and Spreadsheet Functions; (Assignment 4)
Week 7:	Combining Factors and Spreadsheet Functions; (Assignment 5)
Week 8:	Nominal and Effective Interest Rate;
Week 9:	Nominal and Effective Interest Rate; Exam Review (Exam 2)
Week 10:	Effective Interest Rate and Compounding Approaches; (Assignment 6)
Week 11:	Present Worth (PW) Analysis of Equal-Life Alternatives; (Assignment 7)
Week 12:	Future Worth (FW) Analysis and Capitalized Cost (CC) analysis;
Week 13:	Rate of Return (ROR); Exam Review, (Exam 3)
Week 14:	Rate of Return (ROR); (Assignment 8)
Week 15:	External Rate of Return; (Assignment 9)
Week 17:	Benefit/Cost Analysis; (Assignment 10)

### ***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 make-up assignments are consistent with the university policies. Excused absences must be consistent with university policies in the Undergraduate Catalog (<https://catalog.ufl.edu/UGRD/academic-regulations/>) and require appropriate documentation.

### ***Evaluation of Grades***

Assignment	Total Points	Percentage of Final Grade
Homework Assignments (weekly/bi-weekly)	100 each	40%
Exam 1 (Tentative Date: Sept 21)	100	15%
Exam 2 (Tentative Date: Oct 19)	100	15%
Exam 3 (Tentative Date: Nov 16)	100	15%
Attendance and In-class Assignments	100 each	15%
		100%

### ***Grading Policy***

Percent	Grade	Grade Points
95.0 - 100	A	4.00
90.0 - 94.9	A-	3.67
85.0 - 89.9	B+	3.33
80.0 - 84.9	B	3.00
75.0 - 79.9	B-	2.67
70.0 - 74.9	C+	2.33
65.0 - 69.9	C	2.00
60.0 - 64.9	C-	1.67
55.0 - 59.9	D+	1.33
50.0 - 54.9	D	1.00
45.0 - 49.9	D-	0.67
0 - 44.9	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>  
[UF Undergraduate Catalog](#)  
[Grades and Grading Policies](#)

**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 21, Oct 19, and Nov 16, 2023.
- 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.bluer.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 broad diversity within our community and is 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.

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 Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, [jpennacc@ufl.edu](mailto:jpennacc@ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto: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:***

*See page 6.*

### 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](mailto: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](mailto: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://lss.at.ufl.edu/help.shtml>.

**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/state-authorization-status/#student-complaint>.