

Environmental Resources Management

ENV 4601 – Spring 2021

Instructor: Dr. David Kaplan, Environmental Engineering Sciences
dkaplan@ufl.edu
www.watershedecology.org

Graders: Lacey Lancaster and Noelle Chin-Vance

Contact: **Class website (UF e-Learning):** <https://lss.at.ufl.edu>
Course e-mail: Please use e-Learning for **all** correspondence
DK Office Hours: TBD
TA Office Hours: TBD

Time & Location: Monday/Wednesday – Period 3 (9:35 - 10:25 AM); online

Pre-requisites: ENV 3040C, Computational Methods in Environmental Engineering

Catalogue Description: Theory and application of engineering economics and systems analysis to the design of environmental management systems; 2 credit hours.



Course Objectives:

- To understand concepts associated with the **time value of money**
- To be able to conduct an **economic analysis** of engineering projects
- To be able to **make decisions** about an engineering project based on an economic analysis, taking into account other relevant social and environmental factors
- To understand concepts of **natural capital** and **environmental economics**
- To identify and evaluate alternative **environmental policy instruments**
- To develop **written and verbal skills** in communicating environmental economics topics

Contribution of course to meeting the ABET professional component: This is a 2 credit course. It provides 2 credits towards engineering sciences.

Relationship of course to program outcomes: 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

Reading Material and Software: *Engineering Economy – Applying theory to Practice* (3rd Edition), Ted G. Eschenbach. This text is available to free for students at <https://app.knovel.com/web/>. **You must be logged into the UF network or using the UF VPN to access the book.** Additional readings will come from scientific literature, case studies, and agency reports and will be made available as PDFs.

This course will utilize Canvas as an electronic course management system. The course website has a detailed course schedule and will list your grades on assignments as they become available. All students are required to access the course site regularly. The site can be accessed from <http://lss.at.ufl.edu/>.

Grading Scheme and Assignments:

In-class quizzes (~weekly, drop lowest 2):	25%
Homework (6):	25%
Exams (2):	50% (25% each)

Grading Scale: A (≥ 93), A⁻ (≥ 90 & < 93), B⁺ (≥ 87 & < 90), B (≥ 83 & < 87), B⁻ (≥ 80 & < 83), C⁺ (≥ 77 & < 80), C (≥ 73 & < 77), C⁻ (≥ 70 & < 73), D⁺ (≥ 67 & < 70), D (≥ 63 & < 67), D⁻ (≥ 60 & < 63), E (< 60). GPA information can be found: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Attendance Policy, Class Expectations, and Make-Up Policy: Live “attendance” to streaming lectures is not required and will not be monitored or graded. I understand that not all students have the ability to login live, and no preference will be given to students who chose to do so. However, as an instructor who hopes to be as engaging as possible via the online format, I **STRONGLY** encourage any students who are able to attend to do so.

Late homework will be penalized by a reduction of one full letter grade per business day. Exams will be un-proctored and taken using the honor system. Exams will be released at 00:01 AM on exam days, taken individually during any continuous 1-hour period during the day (self-timed), and due on Canvas by 23:59. Make-up exams will not be given except in the case of an excused absence. Excused absences must be in compliance with university policies in the Graduate Catalog and require appropriate documentation: <http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>).

Quizzes: There will be *approximately* 12 quizzes covering material from the lectures and readings.

Quizzes are CLOSED BOOK, INDIVIDUAL assignments and will be due weekly at 11:59 PM on Sundays. There will be no makeups for late or missed quizzes, however you may drop your two lowest quizzes.

Homework: Six homework assignments will be **assigned on Wednesdays and submitted in via Canvas two weeks later**. Homework should be submitted individually unless otherwise indicated, however working together with your classmates on homework sets is allowed & encouraged.

Exams: Two exams will be given over the semester. A formula sheet will be provided, and calculators are allowed. You may take the exam at any time/place you wish during the day of the exam, but you may only spend one hour on it. Exams will focus mostly on recent course material but may cover all previous topics. There is no “final” exam during finals week. Strict adherence to exam instructions is expected. Any deviations from the instructions will be construed as a willful breach of the student honor code and will be reported to the Dean of Students Office for consideration of disciplinary action.

Course Topics and Schedule: This schedule is tentative and subject to change.

Week of	Monday	Wednesday	Readings/videos*	HW
1/10	Course overview; syllabus review	Engineering vs. environmental vs. ecological economics	---	HW 1 Assigned
1/17	No Class: MLK Jr. Day	Making economic and ethical decisions: the basics	Eschenbach Ch. 1, Fleddermann	---
1/24	Economics of environmental quality – who pays for a clean environment? <i>How</i> clean? <i>Who</i> pays?		Harris 1996, Video 1	HW 1 Due (1/27) HW 2 Assigned
1/31	Time value of money: understanding interest	Cash flow diagrams and equivalence	Eschenbach Ch. 2	---
2/7	Valuation of “natural capital” and ecosystem services (ES) – what is the environment worth? How can it be measured?		Guerry et al. 2015, Video 2	HW 2 Due (2/10) HW 3 Assigned
2/14	Engineering economy factors I	Engineering economy factors II	Eschenbach Ch. 3	---
2/21	Engineering economy factors III	Catch-up and exam review	---	HW 3 Due (2/24)
2/28	Exam 1	Digging deeper: can markets protect the environment?	Stavins 1989, Grist 2011	HW 4 Assigned
3/7	Present worth I	Present worth II	Eschenbach Ch. 5.1-5.6	---
3/14	Equivalent Annual Cost I	Equivalent Annual Cost II	Eschenbach Ch. 6.1-6.7	HW 4 Due (3/17) HW 5 Assigned
3/21	Internal rate of return I	Internal rate of return II	Eschenbach Ch. 7.1-7.6	---
3/28	Benefit-cost ratios (BCRs)	PW indices, payback period	Eschenbach Ch. 8	HW 5 Due (3/31) HW 6 Assigned
4/4	Choosing alternatives	Environmental and economic policy analysis	Eschenbach Ch. 9.1-9.8; EPA 2001 (Exec. Summary)	---
4/11	Economics of US air and water pollution control policies	Catch-up and exam review	EPA 1997 (Abs. & Exec. Summary)	HW 6 Due (4/14) (solution posted)
4/18	Exam 2	Reading Days - No Class	*** THERE IS NO “FINAL” ***	

*Read/watch **before attending class on Monday** of the week they are assigned.

Online Course Recording: Our class sessions will be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to “attend” live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Students Requiring Accommodations: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.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.

Course Evaluation: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

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/policies/student-honor-code-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 HWCOE 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
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.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: <http://www.counseling.ufl.edu/cwc>, 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://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.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://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.