

Introduction to Sustainability - SUS 1500 Syllabus - Florida Institute of Technology

Course Description

This 3-credit course is available as an elective to undergraduates wishing to learn the theory and practice of sustainability within their specific areas of interest. Emphasis is also on applications across differing disciplines. This is the gateway course for the [Undergraduate Major and Minor Program in Sustainability](#). There are no prerequisites. Undergraduates from any college are eligible for this course whether majoring/minoring in Sustainability or not.

We examine the scientific and policy efforts to optimize the management of environmental, economic, and social resources. One of the most common sustainability definitions is from the The Brundtland Commission (1987): "... meeting the needs of the present generation without compromising the ability of future generations to meet their own needs." This cuts across almost all human endeavors and is applicable to programs in all of the Florida Tech Colleges.

Through lectures, readings, and class discussions, the course will examine issues essential to learning best practices in sustainability. Prominent issues include:

- the decomposition of complexity using systems thinking tools;
- human population trends and associated resource demands;
- energy use trends, including status quo and alternative production approaches;
- regional and global climate trends and implications, including policy alternatives;
- ocean and land ecosystems: trends and management alternatives;
- economic and social drivers, including triple bottom line business practices;
- market-based incentives; best practices for building design; community planning;
- communication and behavior: challenges and opportunities for sustainability advances.

Indicators to measure sustainability within differing disciplines will be examined. The roles of private, public, nonprofit, and other sectors will be comparatively examined across linked topics.

Paths to applied solutions are emphasized - focusing on student interests.

When, Where, Instructor

Days and Time: **Tue and Thur, 12:30-1:45**

Location: Crawford Bldg., Rm 404. Canvas will be the web portal for registered students.

[Dr. K. Lindeman](#), Professor, Dept. of Education and Interdisciplinary Studies

Office: Shepard Bldg. Room 103

Office Hours: **Tue: 2:00-3:30; Wed: 11:00-2:00 and 4:00-5:00; Thu: 2:00-3:30.** Other times easily arranged by appointment: lindeman@fit.edu

Reading Materials and Course Schedule

There are many books on diverse sustainability issues; very few are organized as introductory textbooks. The primary book for this course is:

- Meadows, D. 2008. ***Thinking in Systems: A Primer***. Publisher: Chelsea Green. Get this book, it is <\$30 and can be very valuable.

Course readings will also include technical journal articles, government and non-profit reports, and significant current articles from print and web media. These readings and assigned chapters from the books will be posted on Canvas. Once familiar with the diverse primary issues, the semester can include additional readings from these and other books:

- Rogers, P.P., K. F. Jalal, and J.A. Boyd. 2007. *An Introduction to Sustainable Development*. Earthscan Publishers, 416 pp.
- Brown, L. 2009. *Plan B 4.0*. Norton Publishers, New York. (The entire book is available in pdf form at: http://www.earth-policy.org/images/uploads/book_files/pb4book.pdf)
- WECD (The Brundtland Report). 1987. *Our Common Future: The Report of the World Commission on Environment & Development*. Oxford Press, 400 pp.
- Schor, J. and B. Taylor, eds, 2002. *Sustainable Planet: Solutions for the Twenty-first Century*. Beacon Press, Boston, 273 pp.
- Many other items from a growing interdisciplinary literature on sustainability principles and applications.

Student Learning Outcomes

- Increased knowledge of the conceptual history and logic of sustainability practices.
- Increased understanding of systems thinking tools and the decomposition of complexity.
- Increased understanding of real-world applications of current sustainability principles.
- Recognition of uncertainty envelopes and constraints on predictive knowledge.
- Ability to discuss common sustainability issues from multiple perspectives.
- Experience with the measurement of sustainability: utilizing indicators and other tools.
- Ability to apply best practices in sustainability to one's specific field of interest.
- Ability to apply interdisciplinary approaches to sustainability outside of one's field.
- Experience with the challenges and opportunities of applying science to governance.
- Improved critical reading and writing skills within both scientific and policy documents.
- Messaging skills needed to deliver scientific information to popular audiences.
- Experience in abstract theoretical evaluation of sustainability challenges and solutions.

Working Course Schedule - Subject to change according to breaking issues and other opportunities.

Wk 1

- Introduction to the Class; Sustainability Basics; Our Social Capital
- Sustainability Concepts and Terms; Governance and Scales of Decision-Making

Wk 2

- Systems and Tools for Decomposing Complexity; Challenges and Opportunities
- Population Growth; Human Populations: Past and Future Trends

Wk 3

- Consumption Patterns; Ecological Footprints
- Food and Water Security: Status and Trends

Wk 4

- Climate and Energy: Past and Present; Status Quo, Alternatives, and Timing
- Energy and Climate: The Future; Roles of Technology and Markets

Wk 5

- Economics: Growth Trends; Ecosystem Services and Total Valuation
- Resources, Wealth Distribution and Quality of Life; Environmental Security

Wk 6

- The Five Guerillas and Springing System Traps; Discuss Term Papers
- Messaging: The Unavoidable Importance of Framing and Marketing Complex Ideas

Wk 7

- Review for Midterm
- Midterm Exam

Wk 8

- Fall Break – No Class on Tue.
- Review Midterm Exam Results

Wk 9

- Measuring Sustainability: Indicators and Certifications
- Demand-Side Tools incl. Certifications; Supply-Side Tools incl. Protected Areas

Wk 10

- Demand-Side and Supply-Side Tools

Wk 11

- Messaging: Going Deeper – Climate Science Examples
- Communication and Processing Complex Information

Wk 12

- Systems Interconnectivity among Primary Sustainability Challenges
- Springing Systems Traps: The Paradox of Growth

Wk 13

- Systems Interconnectivity: Economics-Climate-Governance
- Sustainability Solutions: Global Examples

Wk 14

- Topics Determined by Student Interest
- Sustainability Solutions: U.S. Examples

Wk 15

- Summary: The Dance of the Gorillas – Up-close system friction at the most profound policy scales.
- Class Discussion

Wk 16

- Review for Final
- No Class - Final Prep.

Wk 17 Finals Week

- Final Exam

Grading:

40% Homework and Quizzes

30% Midterm

30% Final exam

- Final percentages may vary slightly based on how the semester develops.

Classroom and Associated Protocol

- Students enter class prepared to demonstrate knowledge of the latest assigned reading.
- In-class participation is expected and important. All students should measurably contribute to classroom discussions.
- Policies regarding use of electronics in class will be discussed during the first week.
- Please do not bring food into class.
- On-time attendance at each class meeting is expected - **repetitive absences or tardies can indirectly and directly affect a course grade.** Please consult with the instructor early.
- *Please see F.I.T.'s policy statement on plagiarism, posted on Canvas.*
- Students can sharpen your writing skills with this tutorial:

http://www.bristol.ac.uk/arts/exercises/grammar/grammar_tutorial/index.htm

What is Title IX?

Title IX of the Educational Amendments Act of 1972 is the federal law prohibiting discrimination based on sex under any education program and/or activity operated by an institution receiving and/or benefiting from federal financial assistance. Behaviors that can be considered “sexual discrimination” include sexual assault, sexual harassment, stalking, relationship abuse (dating

violence and domestic violence), sexual misconduct, and gender discrimination. You are encouraged to report these behaviors. **Reporting:** Florida Tech can better support students in trouble if we know about what is happening. Reporting also helps us to identify patterns that might arise – for example, if more than one complainant reports having been assaulted or harassed by the same individual.

Florida Tech is committed to providing a safe and positive learning experience. To report a violation of sexual misconduct or gender discrimination, please contact Security at 321-674-8111. * **Please note that as your professor, I am required to report any incidences to Security or to the Title IX Coordinator (321-674-8700).** *Confidential support for students is available by contacting the Student Counseling Center at 321-674-8050.*