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

Course Description
This 3-credit course is for undergraduates seeking 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 SUS. There are no prerequisites. This course is a prerequisite for SUS 3250, Systems, Governance and Sustainability and the capstone project courses (SUS 3999 and SUS 4000).

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. Formal Student Learning Outcomes are provided near the end of this document.

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 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 a classic primer on systems and sustainability:

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. Students who do this reading build new thinking skills and get better grades on tests and HW. Other references may include:
- Other items from the growing literature on sustainability principles and applications.

**Grading** Final percentages may vary slightly based on how the semester proceeds.
25% Homework
45% Test 1 and Test 2
30% Final Exam

**Classroom Protocol**
- The reading and written assignments are reasonably short with much potential for compelling learning. **Enter class ready to turn in and demonstrate knowledge of any assignment.**
- In-class participation is expected and important. All students should measurably contribute to classroom discussions.
- During lectures and discussions, focus on the materials being presented and how you will retain this information. **Good notetaking is essential** to excel in class.
- Therefore, **cell phones are not to be used for any reason or at any time in class. Please turn your phone off before entering class and put phones away during class time.** If there is an extraordinary need to briefly use your phone in a class, see me before.
- Plan your lunch or snack accordingly. Please do not bring food into class.
- **Avoid being late for class. Unexcused absences or repeat unexcused tardies will directly affect your course grade.** Attendance, on-time is expected and only fair to the others. Please consult with me, early, if there is an issue.

Fyi, I’ve taught classroom science since 1990. This protocol is fair, time-tested, and essential for everyone to get their money’s worth out of the in-class time we have per week. If there is a repeated violation of above (= the second time it occurs without solid justification), the matter may be referred to the Dean of Students.

**Plagiarism**
- Do not do this for many reasons. Know the academic policy in your Student Handbook: https://www.fit.edu/policies/student-handbook/standards-and-policies/academic-honesty/. Stay free and clear of these avoidable mistakes; they are usually pretty obvious, even before using TurnItIn. These matters can or will involve the Dept. Head and the Dean of Students.

**Course Schedule**
Wk 1
- Introduction: Fundamental Terms and Concepts; Our Social Capital
- Sustainability Concepts and Terms II; Governance and Scales of Decision-Making
Wk 2
- Systems Science Tools for Decomposing Complexity: Challenges and Opportunities
- Human Populations and Recent Growth: Past and Future Trends
Wk 3
- The Arrival of Mass-Consumerism: Below the Surface
- Feedback Loops, Consumption Patterns and Ecological Footprints
  Wk 4
- Climate and Energy: Intro to Geophysics, Greenhouse Gases, Data-based Interpretations
- Climate and Energy: Deeper into the Data: Past, Present, Future
  Wk 5
- Energy and Climate: Fossil Fuels
- Energy and Climate: Alternative Energy Options and Business as Usual
  Wk 6
- Energy and Climate: Market Alternatives and Future Governance
- Test 1
  Wk 7
- Test Review; Climate and Economics; The Stern Report and Other Business Literature
- Systems Science continued: Why Systems Surprise Us
  Wk 8
- Economics: Externalities, Ecosystem Services, and Total Valuation
- Supply-Side Sustainability Tools
  Wk 9
- Fall Break – No Class on Tue.
- Demand-Side Sustainability Tools, incl. Certifications
  Wk 10
- Measuring Sustainability: Indicators and Certifications
- Systems Tools and the Springing of System Traps
  Wk 11
- Communication and the Realities of Processing Complex Information
- Messaging: Sustainability and Climate Science Examples
  Wk 12
- Springing Systems Traps: The Paradox of Growth
- Test 2
  Wk 13
- Test Review; Systems Interconnectivity among Primary Sustainability Challenges
- The Consumerism-Climate-Governance Nexus
  Wk 14
- Topics Determined by Student Interest
- Sustainability Solutions: U.S. Examples
  Wk 15
- Sustainability Messaging: Using Relational Frames when Decomposing Complexity
- Class Discussion
  Wk 16
- Review for Final
- No Class - Final Prep.
  Wk 17  Finals Week
- Final Exam

Schedule may be subject to minor re-arrangement according to breaking issues and opportunities.

**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.

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.