

# CVEG 5863

## Sustainability in Civil Engineering

### Spring 2017 - Online

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#### Course Objectives:

- Examine the societal benefits of sustainability
- Quantify the economic benefits of sustainability
- Evaluate the environmental benefits of sustainability
- Justify the feasibility and benefits of sustainability in environmental, structural, geotechnical, and transportation engineering
- Organize and deliver effective verbal and written communications

#### Grading Policy

Assignments in this course will consist of presentations and reports. Presentations will be graded on the oral delivery, the slide layout, and the technical content. Reports will be graded on grammar, format, and technical content. The non-technical portion of grading will retain the same point value throughout the semester, and the technical content will slowly increase in value.

#### Grading Rubric Example

Societal Presentation & Report – 130 Points total		Points
<b>Presentation</b>		<b>65</b>
Oral delivery – speaker maintained eye content, proper volume, spoke clearly, and at a good pace		10
Slide layout – slides easy to read and understand, slides numbered, text brief and concise, tables/figures/graphs clear and easy to read		10
Technical content - introduction, two UN societal indicators described, indicators tied to Civil Engineering content, indicators qualified and quantified to Civil Engineering content, assumptions stated, conclusion		45
<b>Report</b>		<b>65</b>
Overall appearance – grammar, flows well, professional, matches required format, good use of table and graphs		20
Technical content – title page, executive summary, introduction, two UN societal indicators described, indicators tied to Civil Engineering content, indicators qualified and quantified to Civil Engineering content, assumptions stated, conclusion, five references		45

## Grading Point Distribution

Assignment	Points
Background Essay in Topic Area	70
Societal Report & Presentation in Topic Area	130
Economic Report & Presentation in Topic Area	200
Environmental Report & Presentation in Topic Area	250
Final Report & Presentation in NEW Topic Area	350

## Course Topics and Assignment Schedule

Unit	Assignment
<b>Introduction</b>	
<ol style="list-style-type: none"> <li>1. Modern Era – Three Pillars of Sustainability</li> <li>2. Role of the Civil Engineer</li> </ol>	Background Essay in Topic Area
<b>Social Metrics</b>	
<ol style="list-style-type: none"> <li>3. Introduction to Social Sustainability</li> <li>4. United Nation societal indicators</li> </ol>	Societal Report and Presentation utilizing United Nation societal indicators on Civil Engineering topic of student's choice
<b>Economic Metrics</b>	
<ol style="list-style-type: none"> <li>5. Importance of Economics – Traditional Sustainable Economics</li> <li>6. Life Cycle Cost Analysis</li> <li>7. Other economic quantification metrics</li> </ol>	Economic Report and Presentation utilizing Life Cycle Cost analysis on Civil Engineering topic of student's choice
<b>Environmental Metrics</b>	
<ol style="list-style-type: none"> <li>8. Importance of environment</li> <li>9. Life Cycle Analysis</li> <li>10. Ecological footprint</li> <li>11. Planet boundary</li> </ol>	Environmental Report and Presentation utilizing Life Cycle Analysis on Civil Engineering topic of student's choice
<b>Applications: Environmental Sustainability</b>	
<ol style="list-style-type: none"> <li>12. Low impact development</li> <li>13. Drinking water treatment</li> <li>14. Waste water treatment</li> </ol>	
<b>Applications: Structural Sustainability</b>	
<ol style="list-style-type: none"> <li>15. Fly ash in Portland Cement Concrete</li> <li>16. Bamboo structure design</li> <li>17. Steel diagrids versus conventional frame</li> </ol>	
<b>Applications: Geotechnical Sustainability</b>	
<ol style="list-style-type: none"> <li>18. Alternate granular fill materials</li> <li>19. Geofam fill</li> <li>20. Retaining wall design</li> </ol>	
<b>Applications: Transportation Sustainability</b>	
<ol style="list-style-type: none"> <li>21. Material reuse – RAP and RAS</li> <li>22. Multi-modal transportation</li> <li>23. Health and travel</li> </ol>	Final Report and Presentation utilizing a Civil Engineering topic not yet covered by student, including social, economic, and environmental metrics of sustainability

## Available Help

For technical assistance with Blackboard, contact the Blackboard Support at (479)575-6804.

The Student Development Center (479-575-3546) offers various workshops in test taking, time and stress management, as well as study skills.

The Writing Center (479-575-6747) offers assistance in essay and report writing as well as grammar and sentence structure (available for students who have courses on campus).

The Psychological Clinic (479-575-4258) offers counseling to students for \$5 per session.

## Academic Integrity

As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail.

Each University of Arkansas student is required to be familiar with and abide by the University's 'Academic Integrity Policy' which may be found at <http://honesty.uark.edu/>. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

[Read the complete University of Arkansas Academic Integrity Policy](#)

Read the [Sanction Rubric](#) to understand the sanctions assigned to particular violations.