ME 4330 – Advanced Topics in Mechanical Engineering Course Syllabus

Time and Location

Time is listed on attached schedule below. Location is TBA. The syllabus is adjusted to reflect special circumstances related to the international experience. The tabular schedule is a guideline; we will try to follow it closely, but be prepared to adjust to changes in pace dictated by our collective experience.

Instructor

Theodore G. Cleveland, Ph.D., P.E., M. ASCE, F. EWRI
Civil Engineering 203F (Texas Tech Office)
Office Location TBA
Cell Phone: 001-832-722-4185 (The 001 is USA Country Code)
Email: ted.cleveland @gmail.com

Office Hours

Open door – we can meet after each day for questions.

Catalog Description and Prerequisites

CE 4333. Special Problems in Water Resources (3). Individual studies in water resources. May be repeated for credit.

Textbook

Readings on class server
`http:\\www.rtfmps.com\university-courses\ce4333-CostaRica`

Purpose

The course introduces engineering students to the business of eco-tourism, habitat engineering, and green infrastructure, in the context of using habitat construction in urban development/re-development to attract features common to and eco-tourist site.

Objectives

Upon completion of this course, students should be able to:

1. Identify concepts of green infrastructure for application in urban development/re-development.
2. Apply concepts of habitat engineering to design habitat replicants in an urban environment.
3. Identify erosion control features that facilitate the creation of specific habitat(s).
4. Visually identify bird species with eco-tourist economic value.
5. Identify habitat features that attract eco-tourist species.
6. Construct theme maps in software using sparse data sets.
7. Construct screening-level data sets for mapping/analysis using a reduced accuracy toolset.
8. Synthesize weakly related concepts into an integrated enviornmental-economic-engineering themed paper

Course Schedule

Table 1: CE 4333 Schedule (Tentative) – Intersession 2016-2017

ID: Activity code; $\approx$ 3.5 hours of contact time;
DATE : Date of scheduled activity;
TOPIC: Content synopsis;
READING: Relevant Readings.

ID	DATE	TOPIC	READING
1	02JAN17 (Mon)	Travel Day	
2	03JAN17 (Tue)	Green Infrastructure; Urban Habitats (classroom)	
3	04JAN17 (Wed)	Explore San Jose; Identify Urban Habitats (walking)	
4	05JAN17 (Thur)	Field Trip to Llanos-Cortez Falls	
5	06JAN17 (Fri)	Document Observations (classroom)	
6	07JAN17 (Sat)	Revisit Urban Habitats (walking)	
7	08JAN17 (Sun)	Explore San Jose (unstructured)	
7	09JAN17 (Mon)	Mapping Potential Urban Sites (classroom)	
8	10JAN17 (Tue)	Field Trip to LaFortuna Falls	
9	11JAN17 (Wed)	Document Observations (classroom)	
10	12JAN17 (Thur)	Erosion Control using GI (classroom)	
11	13JAN17 (Fri)	Field Trip to Plantation (coffee, banana, pineapple)	
12	14JAN17 (Sat)	Document Observations (classroom)	
13	15JAN17 (Sun)	Explore San Jose (context for design report)	
14	16JAN17 (Mon)	Document Observations (classroom)	
15	17JAN17 (Tue)	First Draft (classroom)	
16	18JAN17 (Wed)	Travel Day	
17	23JAN17 (Wed)	Final Report Due	

Assessment Instruments

Field Trip Reports

Three field trips are scheduled. Students are to write a trip report; the report is to be in memorandum format no longer than two pages of text. Photographs are encouraged. The reports will be evaluated for content, insight, spelling, and grammar.

Class Report

An engineering reconnaissance and conceptual design report will be prepared as the major product for the class. Students will write the report to include maps of locations that already are "urban habitat" as defined by the class, and locations that are amenable to retrofit into "urban habitat." The retrofits are to be discussed in the narrative of the report, to include suggested locations and conceptual layout (detail drawings are not expected). Performance estimates based on existing literature and on-line data are to be included in the designs. Cost estimates are to be created using Costa Rica labor prices (if known) and locally available materials and technologies.

A draft report is due, by e-mail, on January 17.
The final report is due, by email, on January 23.

Grading Policy

Final grades are determined based on performance during the course. Letter grades will be assigned using University standards. The **approximate** weighting of graded material in determining the final grade is as follows[1]:

Item	Percent of Grade
Participation	20%
Field Trip Reports	30%
Draft Report	20%
Final Report	30%

[1]Graded materials with fewer than 100 points will have raw scores normalized to 100 points for calculating the final grade.

ABET Program Outcomes

A subset of the ABET Program Outcomes are addressed in CE 3305, these outcomes are listed below:[2]

- `3[a].` Ability to apply knowledge of mathematics, science, and engineering.
- `3[b].` Ability to design and conduct experiments, as well as to analyze and interpret data.
- `3[e].` Ability to identify, formulate, and solve engineering problems.
- `3[i].` Recognition of need for life-long learning.
- `3[k].` Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- `8[d].` Proficiency in water resources engineering.

Academic Misconduct

Refer to the Texas Tech University Catalog and operating policies (OP 34.12) regarding academic integrity, cheating, and plagiarism. Academic dishonesty will not be tolerated.

Disability Policy

"Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructors office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806- 742-2405."

[2]Item 3[b] below is only partially fulfilled – in this course students will analyze and interpret data, design of experiments is beyond the scope of the class.