Syllabus

Prerequisite: None
Course: 3 Hours; 1 hour lecture and 4 hours lab per week
Meeting: Tuesday/Thursday, 2:00 -4:45 PM, Denmark 1st Floor Studio
Faculty: R. Sawhill 404 Caldwell 706.542.0062 sawhill@uga.edu

Course Description

Landscape engineering is an essential component of landscape architectural training, the professional licensure exam, and professional practice. Landscape engineering is distinguished by its relatively quantitative content. Grading – the manipulation of earth forms, and drainage – the movement of water in the landscape, are the two major components of landscape engineering. Drainage is a primary flow pathway in the landscape and must be accommodated by responsible grading. Grading is a tool to structurally fit landscape elements to the site. Earthwork and road alignment are given form and reality by grading. Manipulating the earth results in changes that are both quantitative and qualitative; implications of landscape engineering choices will be addressed. Landscape forms have both functional and aesthetic properties; while this course focuses upon the functional aspects, landscape aesthetics are presented and discussed for further application in the design studio.

Guiding Thoughts

"Recognizing that the whole system represents the greatest value, not just some of the components, is the most important concept in land management." *(65)* "The object is to recreate and sustain historic natural processes to the extent feasible." *(90)* "We must restore the patterns of water that have shaped the landscape if we wish to restore the forest." *(132)* "Once the problem has reached the stream, it is too late. The solutions lie throughout the watershed, and entail actions that range from protecting and reforesting stream corridors to eliminating lawn and replacing it with meadow or woodland." *(134)* *Leslie Sauer. The Once and Future Forest.*

"Urban infiltration constitutes the restoration of a site's hydrologic process. It restores groundwater to the earth and balanced flow regimes to streams. In addition to addressing flooding and erosion, which are targeted by conveyance and detention systems, infiltration supports groundwater recharge, stream base flows, water quality, aquatic life, and water supplies. Because it turns the hazard of storm flows into the resource of base flows, it is environmentally the most complete solution to the problem of urban stormwater. You should try to infiltrate as much as you can; turn to other approaches only to treat the remaining runoff that cannot be infiltrated. Water belongs in the soil; returning it there is a basic task for urban design." *(191)* *B.K.Ferguson, Introduction to stormwater management. 3rd Ed.*

"A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true: A complex system designed from scratch never works and cannot be made to work. You have to start over beginning with a working simple system". *John Gall.*

"You have to roll up your sleeves and be a stonecutter before you can become a sculptor – command of craft always precedes art: apprentice, journeyman, master." *Philip Gerard*

"What works good is better than what looks good. Because what works good lasts".
Ray Eames, Architect, Graphic and Industrial Designer, Filmmaker

"Form follows function-that has been misunderstood. Form and function should be one, joined in a spiritual union." - *Frank Lloyd Wright*

This course strives to present the essential skills and understanding necessary for the landscape architect to begin to shape the landscape. Sustainable design is the product of careful and practiced application of these skills and understanding.

Objectives

At the conclusion of this course, through testing and applied projects, students with a passing grade will demonstrate:

Knowledge

- an understanding of hydrologic cycle implications for landscape engineering.
- an understanding of the relationships between landscape forms and flows.
- an understanding of stormwater management models and techniques, and their implications for site sustainability.
- an understanding of watershed dynamics and implications for sustainable site design.
- an understanding of site grading standards for human health, safety and welfare.
- an understanding of grading concepts for pavements and structures.
- a clear understanding of graphic standards for grading and drainage plans.

Skills:

- the ability to correctly interpret contour maps, to identify typical landscape features on contour maps, and to correctly define watershed boundaries.
- the ability to accurately interpret contour map information into scaled section and profile images.
- the ability to model site water balance changes due to development.
- the ability to correctly determine watershed pre/post development runoff rates and volumes.
- the ability to grade earth surfaces and pavements to achieve appropriate slopes for drainage and to satisfy required site development criteria and health, safety and welfare criteria.
- the ability to correctly size basins for stormwater storage and/or infiltration.
- the ability to communicate grading and drainage information using standard graphic conventions.
- the ability to design alternate solutions for a site development to satisfy sustainability goals.
- the ability to calculate earthwork for a site grading project.

Values:

- Promote "environmentally positive, financially sound, and sustainable solutions"[1] in landscape engineering.

Projects: This course requires the preparation of site plans and some simple models. Many of these will be in the form of un-graded assignments for learning purposes, but there will be several graded projects as indicated in the class schedule.

Field Trips:

We will take a series of local walks during class and one or two off-campus site visits; if any field trips should require time outside of the standard class time you will be informed in advance. Information viewed or discussed on field trips may be incorporated into exam questions or have assignment applications. **IMPORTANT:** Because this class deals with the relationship between the land and water, **be prepared** (wear appropriate clothing) to walk and observe the landscape, **ESPECIALLY *when rain is forecast or when it is raining*.**

Importance of the Studio experience

Most class sessions will contain exercises to prepare students for exams or designs that will be

graded. Homework that consists of similarly important exercises will be assigned. Students are advised to do all work in the Denmark Hall studio where they can learn from other students.

Testing

This course will include three tests and a final examination. All tests will require the use of a calculator and or a windows-based computer. Use of a cell phone or other electronic communications medium during testing is not permitted. Each test is cumulative. References for tests/exams include all class lectures, demonstrations, class handouts, desk critiques, red-lined drawings, required texts, and any materials in the class folder or on eLC. All tests/exams are open note and open book.

Course Grading

The final course grade will be equal to the precise course grade you earn in the course.

		B+	84.00-86.99	C+	74.00-76.99	D	60.00-66.99
A	90.00+	B	80.00-83.99	C	70.00-73.99	F	<60.00
A-	87.00 – 89.99	B-	77.00-79.99	C-	67.00-69.99		

The final course grade will be based upon the weighted average of the following:

Tests:	Test 1	10.0%
	Test 2	10.0%
	Test 3	10.0%
	Final Exam	20.0%
Assignments:	Scavenger Hunt	7.0%
	Applied Watershed Project 1	10.0%
	Applied Watershed Project 2	13.0%
	Applied Watershed Project 3	13.0%
	~~Applied Watershed Project 4~~	~~10.0%~~
Professionalism		7.0%
Total		100.0%*

*The professor reserves the right to adjust grade percentages based on actual time devoted to course components.

Grading Standards

A= **Distinguished Work:** Work reflecting superior design and graphic execution, with great attention to detail and accuracy; may exceed project requirements; changes/revisions are unnecessary or minor.

B= **Very Good Work:** Work which demonstrates a solid understanding of the concepts, forms, structures and their application in the project, but requires some changes/revisions to clearly and completely communicate or to do so with complete accuracy.

C= **Satisfactory Work:** Work which indicates a satisfactory understanding and execution of the project, but which needs moderate revisions to fully communicate and thoroughly demonstrate implementation of concepts and/or requires moderate revisions to achieve complete accuracy.

D= **Unsatisfactory Work:** Work which is partially incomplete and/or in which the process and/or project solution is poor, inconsistent or significantly inaccurate. The work would require extensive revisions.

F= **Failure:** Work which is substantially incomplete and/or demonstrates a failure to either comprehend or implement the subject matter

Policies

Code of Ethics: Professional ethics and conduct are essential parts of landscape architecture practice. Work habits, presentation qualities, team conduct, class participation, and fulfillment of class obligations are measures of professionalism. Because our profession is licensed to protect public health, safety and welfare, a code of professional ethics is extremely important. View the ASLA Code of Professional Ethics at http://www.asla.org/about/codepro.htm. While in school, students are required to fully comply with UGA ethics code for academic honesty. View the UGA code at http://www.uga.edu/honesty/. All portions of work submitted for class projects must be the personal creative work of each individual student. The copying of drawings from any source without proper attribution is plagiarism.

Attendance: Students are expected to attend and fully participate in all class meetings. A student with excessive unexcused absences may be administratively withdrawn from the course. Absences may be excused for family emergencies and for illness with a valid health service note. All class meetings will begin promptly at the scheduled times.

Project Deadlines: Projects are due at the assigned date and time. Any project turned in within 24 hours after the assigned date and time is automatically marked down a full letter grade. After 24 hours beyond the original due date and time, a project will not be accepted; the grade for the project is zero. Exceptions may be arranged with faculty before a project is due; after the assigned time, exceptions may be granted only with medical excuse. Incomplete grades will not be issued. Only in circumstances of personal illness or special emergency, will this policy be altered. It is the student's responsibility to bring any such emergency to the instructor's attention. The School reserves the right to select and retain possession of all written and graphic student work completed for academic credit. Access to archived works will be granted to students for reproduction or short-term display.

Texts & References

Required Text: No required Text

Electronic Texts & References:

Atlanta Regional Commission. 2001. Georgia Stormwater Management Manual Volume 2: Technical Handbook 1st Ed.

American Society of Landscape Architects, et al. 2008. Sustainable Sites Initiative Guidelines and Performance Benchmarks – 2009; located at: www.sustainablesites.org/report

Center for Watershed Protection. 2009. Georgia Coastal Stormwater Supplement to the Georgia Stormwater Management Manual. http://www.gaepd.org/Documents/CoastalStormwaterSupplement.html

Georgia Soil & Water Conservation Commission. 2000. Manual for Erosion and Sediment Control in Georgia. 5th Ed.

Natural Resources Conservation Service. 2002. Win-TR55 User Manual.

Sawhill. 2008. Landscape Engineering Workbook for LAND 6340.

Winogradoff, Derek A. et al. 2002. Prince George's County Bioretention Manual. Department of Environmental Resources Programs and Planning Division.

Recommended references in Owens Resource Library:

Carpenter, J., Ed. 1976. Handbook of Landscape Architectural Construction.

Ferguson, Bruce K. 1998. Introduction to Stormwater: Concept, Purpose, Design.

Hopper, Leonard J., Ed. 2007. Landscape Architectural Graphic Standards. Wiley.

Marsh. 2005. Landscape Planning: Environmental Applications. 4th edition.

Parker & MacGuire. 1997. Simplified Site Engineering.

Sauer, Leslie. 1998. The Once and Future Forest.

Strom, Nathan & Woland. 2004. Site Engineering for Landscape Architects. 4th edition.

[1] American Society of Landscape Architects Code of Environmental Ethics. Preamble. http://www.asla.org/about/codeenv.htm