Landscape Architecture Construction II – Materials and Structures

Co-Instructors:
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Class Hours:  Monday, 9:15-12:15
              Thursday, 9:15 – 12:15
Locations:   Rm. 246 (Sophomore Studio), Green Lab (Behind Old Blake), Off Campus Sites

Course Description
Materials, for the landscape architect, are everything. Air, trees, space, people and surfaces – everything can be said to be an element in the design of landscape architectural space. But while we are learning to be spatial designers, we do not design space in itself. We work on its edges, surfaces, frames, containers, and forms that define the clearings where we work, live, gather and debate. It is in the material construction of these containers that we are able to make the physical choices that both function and express. In the construction sequence, the installation of landscape materials follows broader site preparations, and in a sense, develops out of the general design into specific expressions of function, use and appearance. This course forms a critical link between conceptual design and construction documentation, as it will develop the skills needed to translate idea into successfully built and evocative spaces for living.

Course Format
Lecture /Lab
Course Objectives

- Introduce students to the fundamental landscape architectural materials and their physical, chemical and aesthetic properties.
- Instill an understanding of how the landscape architectural assembly of materials interacts with physical forces of the environment.
- Develop students’ understanding of the forces acting on structures and the reaction of materials to these forces.
- Introduce and develop methods for the communication of material information to clients and contractors, and to develop an understanding of the ways in which clients and contractor communicate about materials with the Landscape Architect.

Folio, Binder or Journal (referred to in Syllabus as “Folio”)

This container should be the creative repository for all work in this class. It may be a folder/folio or binder into which loose papers, drawings and photographs may be placed. Or, it may be a journal/sketchbook into which other loose materials may be pasted, stapled or taped. This Folio will be collected 2 times during the semester for commentary, suggestions and evaluations. Among other prescribed assignments the journal should contain observations of materials, constructs and assemblies – How materials look, how they are put together, how they relate to one another, how they begin to tell a story. Be exploratory, curious, and creative.

1. Draw
   - a. Realistic depictions
   - b. Maps/Schematics of relationships between materials
   - c. Maps/Schematics of extraction, manufacture and building processes
   - d. Sketches of use of materials/assemblies
   - e. other

2. Describe verbally
   - a. Same as above

3. Collect Images – and Annotate/Describe
   - a. Materials
   - b. Assemblies
   - c. Sites
   - d. People using things – i.e. their interactions with materials: both as makers and users

4. Collect Material Samples (do not steal or destroy)
Purchases:
Folio Folder or Binder (for collecting loose papers) or Unlined Drawing Journal, 8.5” x 11” min. into which other materials may be pasted or otherwise affixed

Books:
Calkins, Meg, *Materials for Sustainable Sites*, John Wiley & Sons, Hoboken, NJ. (Amazon)

*Recommended purchase:*
*Timesaver Standards for Landscape Architecture*

Other reading materials will be provided.

Readings for each week are to be completed (and summarized/described/ responded to in Folios) before the scheduled lecture. This is a required component of the graded folio.

Note on Clothing and Gear:
When an outside Lab activity is scheduled, students should wear boots, long pants and long shirts. Hair should be tied back. Provided safety gear shall be worn when working with tools.

Class Schedule:
Schedule may change due to coordination with Field Work and Projects

Thursday January 24:
- Review Syllabus
- Discuss Journal/Folio
- **Folio Assignment**: Draw schematic/map of materials cycle

Monday January 28:
**meet at Rutgers Gardens’ Log Cabin**
- **Lab**: Rutgers Gardens: Making construction materials and temporary constructions from natural and other found materials
- **Folio Assignment**: Document Activity with: 1 Plan, 1 Section, 3 Photographs, 1 Paragraph Description

*Reading Weeks 1-2: Calkins, Chapters 1-4, pp. 1 – 102.*
Thursday January 31:

- **Lecture**: Basic Engineering for Landscape Structures (Walls, Paving, Ramps, Steps, Freestanding Structures)
- **Lab**: Experiment with forces using materials behind Old Blake (posts & beams, etc.)
- **Lab**: Photographic Survey of Campus/City Structural Problems and Failures
- **Folio**: Include at least 10 images of at least 5 Structural issues observed in your daily life (Also save images on thumb drive to share with class on February 9)

Monday February 4:

- **Lecture**: Stone (Gravel to Boulders, Bulk to Dimensional)
- **Presentation**: Include at least 10 images of at least 5 Structural issues (engineering failures) observed in your daily life (Place images in folder on Coursework drive, jpg format)
- **Folio**: Draw section detail of stone wall. Draw common stone wall patterns. “Collect” stone surface textures by rubbing transfer.


Thursday February 7:

Quiz #1 (5 short answer questions from previous readings, lectures and assignments)

- 9:15am Meet at North Brunswick Construction Materials, to visit landscape materials yard
- 10:30am **Lecture**: Concrete (Cast in Place and Precast)
- **Folio**: Record visit to Materials Yard – for example, diagram layout and how materials are sorted, stored and accessed by customers.

Readings: Timesaver Standards (TSS): 840-6.3 (Concrete Masonry) to 840-13
  Calkins, Chapter 5, Concrete, pp. 103 – 141, Kirkwood, pp. 11 – 43.

Monday February 11 (NJASLA Atlantic City – Excused from Class if Attending Conference):

- **Observe Construction of Stone, Concrete and Wood structures at Rutgers Gardens**
- **Folio**: Document in Folio using Plan, Section and Perspective. Write a description of the work, including a sequence of actions performed on materials to construction a portion of the work.

Thursday February 14:

- **Lab**: Concrete: Build forms and cast objects, paving, and slabs in concrete
Quiz #2 (5 short answer questions from previous readings, lectures and assignments)

Monday February 18:
- **Lab**: Build forms and cast objects, paving, and slabs in concrete
- **Folio**: Draw section and plan of concrete Lab work.

Thursday February 21:
- **Lecture**: Wood, part 1
- **Lab**: Build Structures with Wood
- **Folio**: Draw section, plan and elevation of selected wood structures to be explored in Lab.

Monday February 25
Quiz #3 (5 short answer questions from previous readings, lectures and assignments)
- **Lecture**: Wood, part 2
- **Lab**: Build Structures with Wood
- **Folio**: Draw section, plan and elevation of selected wood structures to be explored in Lab.

Reading: TSS 840-13 to 840-19 (provided)

Thursday February 28:
- **Lecture**: Brick and Paving Patterns
- **Lab**: Experiment outside with unit paving patterns
- **Folio Assignment**: Dimensionally draw most common brick paver patterns. Draw section of brick/unit masonry dry paving installation

Reading: Calkins, Chapter 7, Brick Masonry, pp. 179 – 197. TSS 840-2 (Clay Masonry) to 840-7.

Monday March 4:
- **Lecture**: Asphalt: Mixes, Application, Unit Pavers
- **Lab**: Visit DEP Edison, site of Porous Asphalt Research Installation
- **Folio Assignment**: Document Site Visit with: 1 Plan, 1 Section, 3 Photographs, 1 Paragraph Description. Draw section of asphalt paving.

Reading: Calkins, Chapter 8, Asphalt Paving, pp. 199 – 233.
Thursday March 7:
Quiz #4 (5 short answer questions from previous readings, lectures and assignments)

- **Lecture**: Metals
- **Lab**: Photographic Survey: Take at least 10 photos of at least 5 examples of landscape features fabricated (at least in part) with metal (Save in jpg format on thumb drive to share with class)
- **Folio**: Photographs and 2 detail drawing of connections in metal work (from the above photographic survey).

Monday March 11:

- **Presentation**: Photographic Examples of Metals in Landscape Architecture from our campus/city
- **Midterm Exam Review**

Thursday March 14:

- **Midterm Exam**

Saturday March 16 – Sunday March 24: Spring Break

Monday March 25:

- **Lecture**: Lighting Vendor
- **Lecture**: Part 2: other lighting issues
- **Lab**: Lighting Plan (Drawing)
- **Folio**: Lighting Plan

Thursday March 28:
Quiz #5 (5 short answer questions from previous readings, lectures and assignments)

- **Lecture**: Glass, Plastics and uncommon materials/assemblies
- **Lab**: Explore material properties and uses of glass and plastics
- **Folio**: Draw a detail of a structure that utilizes glass or plastics.

Reading (provided): Manufacturing Processes for Design Professionals, 424 -427.

Monday April 1:
• Lecture: Site Furnishings
• Lab: Photographic, drawn and descriptive survey of campus/New Brunswick furnishings
• Folio: Document survey activities with at least 10 photographs of at least 5 furnishings.

Reading: On selection and specification of site furnishings

Thursday: April 4
Quiz #6 (5 short answer questions from previous readings, lectures and assignments)
• Lecture: Water as Material and Stormwater Management as Design
• Lab: Revisit Cylinder particle water test: Results and Observations
• Folio: Draw diagram of water cycle or stormwater management system

Monday April 8:
*** bring glass container – a large jar, for example to this class***
• Soil Lecture
• And, Guest Lecture
• Lab: Particle Size Analysis (Hydrometer Method)
• Lab: Soil Compaction Exercise
• Folio Assignment: Document Activity with: 1 Plan, 1 Section, 3 Photographs, 1 Paragraph Description

Thursday April 11:
Quiz #7 (5 short answer questions from previous readings, lectures and assignments)
• Lecture: Putting it Together: The Landscape of Assemblies, Systems and Technologies: Reuse, Green Roofs, Stormwater Systems, and others
• Assign and Discuss Final Project to be presented May 1: Materials Board
• Lab: Rain Garden Design/Build at Rutgers Gardens
• Folio: Document site analysis and design of Rain Garden

Monday April 15:
• Rain Garden Design/Build at Rutgers Gardens

Thursday April 18:
Quiz #8 (5 short answer questions from previous readings, lectures and assignments)

- **Lab:** Complete Build: Structures with Wood, Stone and Concrete
- **Folio:** Draw section, plan and elevation of selected wood/composite structures to be explored in Lab.

Monday April 22:

- **Lecture:** Irrigation Basics
- **Lab:** Irrigation Plan (Drawing)
- **Folio:** Irrigation Plan

Thursday April 25:

Quiz #9 (5 short answer questions from previous readings, lectures and assignments)

- **Lecture:** Communicating Materials: to Clients and Contractors
- **Lab:** Bring in an Illustrative Plan (will be discussed in class) –
  1. Identify all of the precedent images and material samples needed to communicate intentions to the client
  2. Identify all of the details needed to communicate intentions to the contractor
- **Lab:** Introduce Final Project: Materials Boards
  
  Reading: Calkins, Chapters 10 and 11, pp. 271-372.

Monday April 29:

- **Lecture:** Construction Details and Specifications
- **Folio:** Mock-up the layout of a full sheet of details that you have drawn during the semester.
- **Lab:** Materials Boards
- **Lab:** Complete any remaining Lab work, including Concrete, Wood, Composite structures

Thursday May 2:

Quiz #10 (5 short answer questions from previous readings, lectures and assignments)

- **Lab:** Materials Boards

Monday May 6:

**Presentation:** Materials Boards

**Review for Final Exam**
Exam Period: Final Exam

Grading Practices

10%: Quizzes
20%: Lab Work: Quality and Completion of Work
30%: Folio: Quality and Completion of Work
20%: Midterm Exam
20%: Final Exam

The final course grades are given as letters A, B+, B, C+, C, D, and F.
See explanation of letter grades below.

A- Outstanding- This not only means fulfilling requirements, but impressing and going beyond the initial expectations of the project. The student has demonstrated a superior grasp of the subject matter coupled with a high degree of creative or logical expression, and a strong ability to present these ideas in an organized and analytical manner.

B- Very good- The student has demonstrated a solid grasp of the material with an ability to organize and examine the material in an organized, critical, and constructive manner. The projects and in-class performance reveal a solid understanding of the issues and related theories or literature.

C- Acceptable- The student has shown a moderate ability to grasp concepts and theories for the class, producing work that, while basically adequate, is not in any way exceptional. The student displays a basic familiarity with the relevant literature and techniques.

D- Unacceptable- The work demonstrates a minimal understanding of the fundamental nature of the material or the assignment with a performance that does not adequately examine the course material critically or constructively. Students cannot graduate from the Landscape Architecture program with 2 D's in required 550 classes.

F- Failure- The student has demonstrated a lack of understanding or familiarity with course concepts and materials. The student’s performance has been inadequate. Failure is often the result of limited effort and poor attendance which may indicate that the student is not in the proper field of study.

When an assignment or project is given a number out of 100 it corresponds to these letter grades.

A 90
B+ 85
B 80
C+ 75
C 70
Attendance
The Department of Landscape Architecture requires attendance in all of its classes. The individual student’s development as a landscape architect is largely dependent upon two aspects of education. First is the exposure to and assimilation of a body of information which relates to the field. Second is the application of this knowledge through studio projects and problem-solving skills developed through critiques, reviews and interactions during each project.

The Rutgers Landscape Architecture curriculum is designed to develop both areas. Attendance and participation in all lectures and studios are essential if the student is to achieve his/her maximum potential. Unless a more strict policy is in place by the individual instructor, more than three absences will result in a step reduction in your semester grade. Each additional three absences will result in another step reduction. Since the common lecture is part of the studio, missing that would count as an additional absence.

A minimum level of participation is defined as being in attendance for the entire duration of a class session. It is the student’s responsibility to be in attendance at all required classes and all personal plans should be made in accordance with the schedule.

Students on academic probation have NO ALLOWABLE UNEXCUSED ABSENCES.

Your attendance at juries or special seminars scheduled in your design course is mandatory for the entire duration of the session.

Absence and Lateness Policy (specific to this course)

- Students are expected to be in class at the time the class is scheduled to begin. Three instances of lateness of more than five minutes at the beginning of class, will count as one unexcused absence.

- An absence is excused only if it has received prior permission from the instructor. If a note or call is received after the class has met it will still be an unexcused absence. Three unexcused absences will result in the student failing the course.

- In the event of an absence, the student is responsible for making up any missed work, getting assignments, and submitting assigned work on time.

Work Becomes Department Property
Submitted drawings, models, photographs, or written papers for any project assigned in Landscape Architecture courses are considered the property of the Department and may be retained in its archives for exhibition and accreditation purposes.

All projects will be graded and returned to the student at a location designated by the instructor. Should your drawings be retained by the Department, you will be given the opportunity to obtain a print or photographic record of your work. Department files are OFF LIMITS to students.

Required Text

It is suggested that students purchase *Timesaver Standards for Landscape Architecture*, Harris and Dines and *Site Engineering for Landscape Architects*, Strom and Nathan. Each week a relevant text where students can find more information about the topic of the week will be suggested.

Supplies
Basic drafting supplies will be required.

Use of Facilities
Landscape Architecture courses cannot be taught without reliable facilities. Your use of the facilities is dependent upon responsible use with particular regard to the clearly established rules about their use as specified in the student handbook:
http://landarch.rutgers.edu/current students/students%20handbook/StudentHandbook web SectI.pdf
These rules cover access to the computer lab and vandalism, personalization of work space, smoking and drinking, use of lockers, access to the reference collection, and basic rules governing the use of computer lab. Failure to observe rules may result in loss of access.

Equipment
The student handbook also includes a section governing the use of equipment:
http://landarch.rutgers.edu/current students/students%20handbook/StudentHandbook web SectII.pdf
This section includes rules specifying use of department equipment including projection equipment, department cameras, computers, scanners, printers, and plotters.

Academic Integrity Policy
The intentional copying of another student’s file or portion of the file and presenting it as your own work is in direct violation of the University Integrity Policy:
- **Plagiarism**: Plagiarism is the representation of the words or ideas of another as one’s own in any academic work.

- **Facilitating Violations of Academic Integrity**: It is a violation of academic integrity for a student to aid others in violating academic integrity. A student who knowingly or negligently facilitates a violation of academic integrity is as culpable as the student who receives the impermissible aid, even if the former student does not benefit from the violation.

As a result, any copying and/or “sharing” of exercise, assignments and projects will be treated as Level 2 violations and subject to the sanctions as outlined in the Integrity Policy:

1. A failing grade on the assignment.
2. A failing grade for the course.
3. Disciplinary warning or probation.

Repeat violations will be treated as separable Level Three violations and referred to the AIF of the school for adjudication. Please refer to the complete Integrity Policy at:

http://academicintegrity.rutgers.edu/integrity.shtml.