11:550:241 Construction I: Site Engineering **Fall 2023**
Rutgers the State University of New Jersey
School of Environmental and Biological Sciences
Department of Landscape Architecture

COURSE CREDITS:

Four (4)

SCHEDULE:

Monday	10:20 AM - 1:20 PM
Wednesday	10:20 AM -1:20 PM

LOCATION:

Room 246 Blake Hall (Sophomore Studio)

INSTRUCTOR:

Brian Conway
Office hours 30 Minutes before class & zoom by appointment
b.conway@.rutgers.edu

TEACHING ASSISTANT:

Dani Daboll
dad366@rutgers.edu

QUANTITATIVE & FORMAL REASONING (QR):

Apply effective and efficient mathematical and site engineering processes to reason and to solve problems related to site topography, site grading storm water runoff and roadway alignment.

LEARNING OBJECTIVES:

- Identify setting and site conditions that describe, quantify and represent area, volume, slope, material coverage and rates of water runoff.
- Structure and analyze proposed solutions using site engineering (geometric, trigonometric and algebraic) calculations, processes and procedures.
- The ability to draw conclusions, present and document proposed improvements and solutions in standard site engineering format(s).

REQUIRED TEXT/WORKBOOKS:

Site Engineering for Landscape Architects, Strom, Nathan, and Woland,
ISBN-13: 978-1118090862

Site Engineering for Landscape Architects Workbook, Jake Woland, Second Edition
ISBN-13: 978-1118090855

OPTIONAL:

Landscape Grading: A study Guide for the LARE Grading Examination, Valerie Aymer
ISBN-13: 978-0367439071

These textbooks are available through the Blake Hall library (please email Gail for access) or through the Rutgers Library network.

COURSE DESCRIPTION:

Site engineering is a functional and creative endeavor. This course will cover the fundamentals of land measurement and mapping techniques in addition to the principles and basic mechanics of site engineering and grading. Course work will assist student understanding of basic site design principles, assist them in developing innovative grading, and storm water management solutions. Lectures and assignments will cover basic principles; field and studio exercises will take on problems involving elevation measurement, site grading, earthwork and stormwater management design. Design solutions will include associated calculations, roadway design and layout dimensioning procedures. Exercises become increasingly complex as the course progresses. Students completing the course will be prepared to successfully complete the site engineering and grading portion of the national landscape architecture licensing exam and will

have developed the ability take on the multifaceted design of landscapes by assessing and shaping sites from the ground up.

WEEKLY OUTLINE OF TOPICS:

(SELA: Site Engineering Textbook , SELAW: Site Engineering Workbook, LG: Landscape Grading Workbook)

09-06-2023 **Introduction; Topographic Measurement & Field Work**
Differential Leveling: Introduce Equipment
Homework: *Read Chapters 1 & 2*
Bring Cardboard minimum two 10" x 10" pieces and cutting tools to next class

09-11-2023 **Measuring Elevation Change (Chapter 1)**
Start Cardboard Model
Homework: *Cardboard Model Due 09-13*

09-13-2023 **Topographic Measurement and Mapping Field Work;**
Differential Leveling From Martin Hall To Passion Puddle
Homework: *Read chapter 3 & 4 (SELA)*

09-18-2023 **Contour Signatures, Site Grading (Chapters 2 & 3 SELA, Chapter 2 LG) & Interpolation and Slope (Chapter 4 SELA, Chapter 1 LG)**

09-20-2023 **Topographic Measurement and Mapping Field Work;**
200' x 200' Grid @ 50' increments for interpolation
Homework: *Interpolate 200' x 200' grid from field work*
Read chapter 5 (SELA)

09-25-2023 **Grading of Simple Design Elements- Path & Road Grading (Chapter 5, pages 77-93 SELA)**
Class/Homework: *Interpolate 200' x 200' grid from field work*

09-27-2023 **Topographic Measurement & Mapping Field Work;**
Station Red Oak Lane From Corner By Bus Stop Towards Blake Hall
Class/Homework: 3 cross sections - vertical scale 1" = 1', horizontal scale 1" = 10'.
Profile – horizontal scale 1" = 50', vertical scale 1" = 5'. Draft on 8½" x 11" graph paper.
Homework: *Read chapters 9 &10 (SELA), Sections & Profiles*

10-02-2023 **Grading for Surface Drainage (Ch. 5, pages 93-99, Ch. 9, & Ch. 10 SELAW), Storm Water Management System Components (Ch. 10)**
Homework: *Assign Rain Garden Project, Due 10-18*

10-04-2023 **Grading Exercises Lab**
Homework: *Read chapter 6 (SELA), Work on Rain Garden*

10-09-2023 **Terrace Grading-Grading Process (Chapter 6)**
Class/Homework: *TBD, Rain Garden Crits, Work On Rain Garden*

10-11-2023 **Grading Exercises Lab**
Class/Homework: *TBD, Rain Garden Crits, Work On Rain Garden*
Read Chapter 15 (SELA)

10-16-2023 **Layout & Dimensioning: (Chapter 15 SELA)**
Homework:

10-18-2023 **Mid-Term Review**
Rain Garden Project Due

10-23-2023 **Mid-Term Exam**

10-25-2023 **Measurement of Direction/Transit: Angle Measurement**
Class/Homework: *Read Chapter 7, 8, & 11 (SELA)*

10-30-2023 **Soil in Construction (Chapter 7), Earthwork (Chapter 8), Soil Erosion and Sediment Control (Chapter 11)**

11-01-2023 **Soils, Earthwork, Soil Erosion Lab**
Class/Homework: *Soils Lab, Read Chapter 12*

11-06-2023 **Determining Rates and Volumes of Storm Runoff-Rational Method (Chapter 12)**
Class/Homework: *TBD*

11-08-2023 **Modified Rational Method (Chapter 12)**
Class/Homework: *TBD*

11-13-2023 **Rates, Volumes, Rational Method, Modified Rational Method Lab**
Homework: *Read Chapter 14 (SELA)*

11-15-2023 **Designing/Sizing Storm Water Management Systems (Chapter 14)**
Class/Homework: TBD

11-20-2023 **Golf Course Design**
Golf Course Project Introduction
Class/Homework: *TBD, Read Chapter 16 (SELA)*

11-22-2023 **Thanksgiving Recess (No Class)**

11-27-2023 **Horizontal Road Alignment (Chapter 16)**
Class/Homework: *TBD, Crits, Work On Project*

11-29-2023 **Golf Course Project:**
In-class Critique/review
Homework: *Read Chapter 17 (SELA), Work On Project*

12-04-2023 **Vertical Road Alignment (Chapter 17)**
Class/Homework: *TBD, Crits, Work On Project*

12-06-2023 **Golf Course Project:**
Class/Homework: *TBD, Crits, Work On Project*

12-11-2023 **Golf Course Project Due:**
Presentations

12-13-2023 **Review For Final Exam**

12-18-2023 **Tentative Date Final Exam:**

COURSE FORMAT:

Class time will combine both lecture, field work and studio time and will vary through the semester due to the course topics. Lectures will present an overview of the site engineering topic of the week and will be followed up with fieldwork and/or assignments that will emphasize the lecture material. Students may, on occasion, work in groups during the lab session. However, each student will be required to complete all assignments and submit their own work. Students are expected to participate in class discussions and attend the class and outdoor exercises scheduled throughout the semester.

SUPPLIES:

Cardboard and cutting tools for constructing model. Drafting pencils 'B', 'H', & '4H'. Standard drafting equipment including: Engineer's scale, straight edge/triangle, a rolling ruler, and at least one roll of tracing paper. Graph paper will be provided as a PDF for printing.

GRADING PRACTICES:

Homework assignments and outdoor exercises will be due one week after the assignment date unless otherwise noted. Work will be accepted up to a maximum of one week after due date. Half credit will be given up to one week after being due and zero credit afterward. The grades for the course will be distributed according to the following percentages.

- Weekly Assignments 40%
- Mid Term Exam 15%
- Projects 20%
- Final Exam 25%

Note: Department policy allows only one D in the required major courses. If a student receives a second D in a 550 course, they cannot proceed in the program until one of the D grades is improved (course retaken).

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 going beyond the initial expectations. 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 present the material in an organized, critical, and constructive manner. The assignments and in-class performance reveal a solid understanding of the issues.

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

D- Unacceptable- The student demonstrates a minimal understanding of the fundamental nature of the material and the assignments with a performance that does not adequately present 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.

Semester grades will be based on the accumulated assignment and test grades. The following numerical grades correspond to letter grades.

A ≥ 90

B+ ≥ 85

B ≥ 80

C+ ≥ 75

C ≥ 70

D ≥ 60

F < 60

ATTENDANCE:

The Department of Landscape Architecture requires attendance in all 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 assignments and the development of problem-solving skills.

The Rutgers Landscape Architecture curriculum is designed to develop both areas. Attendance and participation in all lectures and field assignments is essential if the student is to achieve his/her maximum potential. **Four absences will result in a letter grade reduction in your semester grade** (A to B, B to C, etc.). **Each additional three absences will result in another letter reduction.**

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 attend all required classes and all personal plans should be made in accordance with the schedule. Students on academic probation have **NO ALLOWABLE UNEXCUSED ABSENCES**.

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 the student has received prior permission from the instructor or if a note from a doctor is submitted upon return to class.
- 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.

USE OF FACILITIES:

Landscape Architecture courses cannot be taught without reliable facilities. Your use of the facilities is dependent upon responsible use with regard to the clearly established rules about their use as specified in the student handbook:

http://landarch.rutgers.edu/documents/StudentHandbook_web.pdf

These rules cover access to the computer lab and vandalism, personalization of workspace, 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/Student Handbook 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 work and presenting it as your own is in direct violation of the University Integrity Policy:

As a result, any copying and/or "sharing" of exercise assignments work 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/academic-integrity-policy/

STUDENT WELLNESS SERVICES:

Just In Case Web App http://codu.co/cee05e
Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)
(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/
CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)
(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/
The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932- 1181.

Disability Services
(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / https://ods.rutgers.edu/
Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: https://ods.rutgers.edu/students/documentation-guidelines. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: https://ods.rutgers.edu/students/registration-form.

Scarlet Listeners
(732) 247-5555 / http://www.scarletlisteners.com/

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.