

CEE 101: Introduction to Civil Engineering (4 CR)

Instructor:

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Course:

CEE 101, Intro. To Civil Engineering
Class Hours: M/W, 10:45 am – 12:00 pm
Classroom: Lewis Lab 316
TA: Spencer Smith (sts422@lehigh.edu)
Grader: Ollie Copeland (olc428@lehigh.edu)

Course Description:

Fundamentals of site usage and land development to address project specific requirements and constraints. Fundamentals of surveying to develop topographical information and maps within the context of a project. Introduction to design requirements such as slopes, earthwork, access, water management, and other design requirements. Laboratory for various methods of surveying measurements, field work, and computer-aided drawing.

References:

- Elementary Surveying, An Introduction to Geomatics, 13th Ed. by C.D. Ghilani & P.R. Wolf, Prentice Hall, ISBN# 978-013-255434-3.
- [Surveying and Geomatics Engineering: Principles, Technologies, and Applications](#) Gillins, Dennis, and Ng, 2022
- [Advanced surveying : total station, GPS, GIS, remote sensing, drone, and hydrographic surveying](#), Gopi, 2025
- [Land Development Handbook: A Practical Guide to Planning, Engineering, and Surveying, 4th Edition](#), Drewberry & Davis, McGraw-Hill 2019, ISBN-13 978-1260440751 and ISBN-10 126044075
- [AUTODESK CIVIL 3D 2025 UNLEASHED : elevate your civil engineering designs and careers with Autodesk Civil 3D](#) Walz and Sabat, 2024
- [Autodesk Civil 3D from start to finish a practical guide to civil infrastructure design, modeling, and analysis](#) Walz and Sabat, 2023

Software:

Autodesk suite:
AutoCAD, and Civil 3D

Tentative Grading:

Homework	15%
Field and Lab Work	10%
Project	10%
Mid-term Exam	35%
Final Exam	25%
Attendance & Participation	5%

Important Dates:

- First day of class: August 24, 2026
- Add/Drop deadline: September 4, 2026
- Pacing Break (no classes): October 12, 2026
- Course withdrawal deadline: November 6, 2026
- Course Project Presentation (Last week of classes): Week of November 30, 2026
- Midterm Exam Dates: September 25, and November 18.
- Final Exam Period: December 8 – 16 2026

Course Conduct:

- **Attendance Policy:** The content of the course builds on itself so consistent and engaged attendance is crucial to your success. Attendance will be taken during each class session. Excused absences are limited to those due to participation in university-sanctioned events or those accompanied by written confirmation from a doctor, the Dean of Students, etc. If you are sick, you must obtain a doctor's note. If you are absent or late (for excused or unexcused reasons), you will be responsible for any material covered and any announcements that were made in class that day.
- **Examinations:** Two Midterm exams and a final exam will be scheduled. **An unexcused absence on the day of an exam will result in a grade of zero for that test.** In the case of a university-sanctioned event, please schedule a makeup exam with the instructor in advance of the exam date. If you miss an exam due to a certifiable emergency or illness, please notify the instructor as soon as possible, **providing appropriate documentation**; in these cases, a makeup exam will be arranged. All midterm exam dates are set as indicated on the syllabus. Any grade review you see justified should be brought to my attention within the first week of receiving the grade.
- **Assignments:**
 - Homework will be assigned on an approximately weekly basis. **Students will upload their work as a single pdf file on Coursesite at the assigned time/date.** Assignments submitted after the deadline will incur a 10% deduction for each 24-hour period (or portion thereof) beyond the due time.
 - Homework solutions must conform to the standards of good engineering practice:
 - Your name, assignment no., date, and page number **should appear on each page.**
 - Work should be done in dark colored pencil, **clearly legible.**
 - Solution to each problem **should consist of: 1- given data, 2- statement of what is to be found, 3- the solution, and 4- the answer**
 - Work should be **organized and presented neatly.** Assumptions should be clearly stated, units should be noted on answers and key intermediate results, and answers should be **clearly identified.**
- **Academic integrity.** It has been my experience in the past that when students study in groups and communicate they perform better. Obviously, this is a generalization, and I am sure there are many exceptions. However, please note that *your submitted work for this course should be conducted individually.* Academic Integrity is expected from all students in all matters related to this course. In particular, a student assumes responsibility for every assignment, project or exam that he/she submits. It is expected that all students will abide by [these standards](#) throughout the course. Violations of academic integrity standards will not be tolerated and will be handled according to the guidelines in the University's Student Conduct System.
- **Accommodations for Students with Disabilities:** Lehigh University is committed to maintaining an equitable and inclusive community and 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 Disability Support Services (DSS), provide documentation, and participate in an interactive review process. If the documentation supports a request for reasonable accommodations, DSS will provide students with a Letter of Accommodations. Students who are approved for accommodations at Lehigh should share this

letter and discuss their accommodations and learning needs with instructors as early in the semester as possible. For more information or to request services, please contact Disability Support Services in person in Williams Hall, Suite 301, via phone at 610-758-4152, via email at indss@lehigh.edu, or online at <https://studentaffairs.lehigh.edu/disabilities>.

- **Principles of Equitable Community:** Lehigh University endorses [The Principles of Our Equitable Community](#). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.
- **Harassment and Non-Discrimination:** Lehigh University upholds the *Principles of Our Equitable Community* and is committed to an educational, working, co-curricular, social, and living environment for faculty, staff, and students. The University does not discriminate in its admissions practices, employment practices, or educational programs or activities on the basis of age, color, disability, ethnicity, familial status, gender expression, gender identity, genetic information, marital status, national origin (including shared ancestry), pregnancy or related conditions, race, religion, sex, sexual orientation, and veteran or military status. Harassment or discrimination is unacceptable behavior and will not be tolerated. The University strongly encourages (and, depending upon the circumstances, may require) students, faculty, or staff who experience or witness harassment or discrimination, or have information about harassment or discrimination in university programs or activities, to immediately report such conduct.

Tentative Schedule:

No	Topics	Read
1	Module I – Understanding and Representing Land: Topo maps, Contours, Coordinates, Plan/Profile/section, Engineering graphics	
2	Module II – Measuring Land: Surveying fundamentals, Errors, Leveling, Angles, Distance, Total Station	
	Exam 1, Friday September 25	
3	Module III – Digitizing Land: AutoCAD, coordinates, layers, polylines, 3D elevations, breaklines	
4	Module IV – Modeling Land: Civil 3D, COGO points, surfaces, TIN, contours, surface editing, profiles	
5	Module V – Planning and Changing Land: Site constraints, site suitability, slopes, access, grading, water management, proposed surfaces, earthwork	
6	Module VI – Integrated Field-to-Design Project: GNSS, Robotic Total Station, Drone, QA/QC. Topo map, site selection, grading, access, drainage, earthwork, and stakeout.	
	Exam 2, Wednesday November 18	
7	Course Project Presentations	
	Final Exam	