SYLLABUS

Construction Tech I, Tuesday – 12:30pm – 3:15pm, Howey Physics S105A.
Friday 11:00 am - 12:55 pm East Architecture 309, BC 2610, 3 credit hours

Instructor's Information

Instructor	Email	Office Hours & Location
Dr. Omobolanle (Bola) Ogunseiju	omobolanle@gatech.edu	Room 233 Caddell building, Fridays 1-2 pm or by appointment.

General Information

Course Description, Objective, and Motivation

Welcome to your Construction Tech I class!

As you progress through your education and experience, you will gain (or may have gained) knowledge from the different concepts and processes that relate to construction operations and construction management. However, there are several technologies and tools that support those processes, and this is a great opportunity to get familiar with them and how they fit within the practice of construction. This class will introduce you to the conventional technologies used for construction and coordination and will start the exploration of the Construction 4.0 framework, which will be expanded during the second part of this class (Construction Tech II). In this class, you will achieve the ACCE student learning outcome 11: apply basic surveying techniques for construction layout and control. This course also significantly contributes to your ACCE learning outcome 10, where you will be able to apply electronic-based technology to manage construction processes.

Your Student Learning Outcomes (SLO)

By successfully completing the class, you will be able to:

1. **Understand** the purpose of the main construction technologies and the role they play within the planning, construction, and operating lifecycle.
2. **Develop** as-built scans of existing buildings using laser scanning techniques
3. **Apply** electronic-based technology to manage construction processes**. ACCE SLO 10**
4. **Apply** basic surveying techniques for construction layout and control**. ACCE SLO 11**

Teaching Methodology and Class Structure

This class will have in-person meetings, asynchronous content, site visit, and Lab sessions, some of which will be coordinated with you. During the in-person classes and site visit, students and the instructor must adhere to the host organization's guidelines. All assignments will be uploaded to Canvas on the dates specified in the course schedule.

I encourage you to bring any challenges and questions to the class, and I will always do my best to address them or research how such a challenge might be solved. This is a practice-based class, which means there is a continuous active learning experience. To assist you through this experience we will have lessons from the instructor, active construction site visit, and individual practice assignments to get a hands-on experience in the technologies and the concepts.

Pre-requisites

There are no prerequisites for this class, only great energy, motivation, and disposition to learn and participate.

Resources and readings

Required resources

Windows-based laptop capable of running software used in class (check requirements on software maker websites below)

Supplemental resources

Here are some resources that may be helpful to you if you want to expand your knowledge on the class topics:

Textbook

- Surveying, 6th Edition; Jack McCormac, Wayne Sarasua, and William Davis; John Wiley & Sons, Inc. ISBN: 978-0-470-49661-9

Software providers

- Surveying software (TBD)
- Bluebeam https://www.oncenter.com/products/on-screen-takeoff/
- As-built:
  - FARO Scene https://www.faro.com/en/Products/Software/SCENE-Software

Equipment manufacturers: FARO Laser Scanner

- https://www.faro.com

Grading Structure

This course consists of attendance and in-class exercises (10%), individual and group assignments (60%), and semester project (30%). Below is a table with the percentage distribution and a short description of each item evaluated.

Classes	**10%**	
Attendance and In-class exercises	10%	Attendance to the sessions and visits, and participation during class discussions. In-class activities to give you guidance on usage and applications.
Concept Map		**15%**
Concept Map	15%	Throughout the semester, you will develop a concept map that helps you visualize how technologies can address different problems in the industry.
Practice assignments	**45%**	
Laser Scanning	15%	Individual practice assignments and projects on the main technologies introduced during the class, so you can get familiar with the use and processes on your own.
Surveying	15%	
Digital Construction	15%	
Semester Project	**30%**	
Semester project	30%	This project assesses your semester's learning through building performance analysis and issue identification using laser scanners, infrared cameras, and Bluebeam Revu.

Grading Scale

Final average grades will be rounded to the nearest whole percentage point. Curving grades is rare and should not be expected. The grade is defined as follows:

A (89.5%-100%) B (79.5%-89.4%) C (69.9%-79.4%) D (59.5%-69.4%) F (<59.5%)

Attendance and In-class participation (10%)

This considers your attendance to the class sessions, in-class exercises, and site visits. It also accounts for your active participation during the lessons and discussions. The idea of the in-class exercises is to give you an opportunity to practice the concepts and processes discussed during the instruction sessions, with supervision and guidance from me. During these activities, we will work on small examples and exercises that will help you better understand the technologies covered and prepare to apply them on the individual practice assignments, quizzes, and further professional career. During these practice activities, you will have to submit your work during class in the time and space provided, which will be either in person or in Canvas

Concept Map (15%)

Throughout the semester, you will develop a concept map that helps you visualize how technologies can address different problems in the industry.

Practice assignments (45%)

There are three practice assignments throughout the class. The assignments will include theoretical questions and practical problems for you to practice the concepts and processes on your own and demonstrate your ability and understanding of them. Beyond merely providing a grade, the goal of these assignments is for you to challenge yourself by truly learning and mastering the concepts, so that you can apply them in future classes and in your professional career. Practice assignments are due by midnight on the week indicated in the course schedule. You will upload your assignment to the designated space in Canvas.

Semester project (30%)

This project assesses your semester's learning through building performance analysis and issue identification using laser scanners, infrared cameras, and Bluebeam Revu, with a focus on delivering data-driven solutions in a professional context.

Classroom rules, preparation, and policies

Accommodations for Students with Disabilities: If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also email me as soon as possible to set up a time to discuss your learning needs.

Respectfulness and Communication: It is important that we maintain a very respectful space for teaching and learning. I appreciate when you contribute in class, but let's do this respectfully. Please communicate with me professionally. You can call me Dr. Ogunseiju, Dr. O, Professor, but not Hey! Hi, Hello. Please, I wear many hats and will appreciate if emails are kept to office hours, and not late in the night or weekends. If you do, please expect a response during regular office hours.

Punctuality: It is okay to run late for class sometimes, but please do not make it a habit. If you are late, make sure you are not disruptive to the activities taking place, and close the door behind you. Also, do not use the front door if you are running late, as this distracts both your colleagues and myself.

Cellphones and Computers: The use of cell phones and computers for any purpose other than class activities is not allowed.

Attendance: This class is designed to provide you with an active and collaborative learning experience

where you can learn from the content, from me, and from your peers. Therefore, attendance is required for meetings, some practices, and site visit. Agreements for these visits and practices will be made on the first day of class.

Late work: All students shall submit their assignments and exercises by the date and time indicated in this syllabus. Each practice assignment and in-class exercise can be submitted for half the credit until 10:00 am of the following day of the deadline.

Participation: As mentioned previously, this is an active learning environment. Please feel encouraged to ask questions and challenge all the ideas in the class. Do not be afraid to ask any question; probably the person next to you has the same doubt. The only way for me to know if there is something we can be clearer about or need to review is if you ask.

Communications: The website for the course is https://canvas.gatech.edu. Please check regularly for announcements and for material posted before and after class. Emails will be sent via canvas to the email on record, so check your e-mail regularly as well. Here I will upload all the contents related to the class.

Food and Drink in the Classroom: Students are not allowed to bring food or drinks into the classroom unless approved by the instructor for special circumstances.

Class Discussions: Your active and productive participation in class discussions is encouraged. Various viewpoints and opinions are encouraged and welcome. Questioning the ideas of others, including mine, is similarly welcome. However, I will exercise my responsibility to manage the discussions so that ideas and arguments can proceed in an orderly fashion. If your conduct during class discussions seriously disrupts the atmosphere of mutual respect, you will not be permitted to participate further.

Make-up Exams: There will be no make-up exams under any circumstances, except for medical reasons. Provide me with a letter from your medical doctor to schedule a make-up exam. No makeup will be given for a test missed without prior approval and for a comprehensive final examination.

Plagiarism: You are expected to do your work in this course. To use another writer's or speaker's ideas without giving proper credit through standard documentation is plagiarism. All course papers, notes, homework, and projects submitted to the instructor are subject to textual similarity review for the detection of plagiarism. All submitted papers will be included as source documents in the reference database to detect plagiarism of such papers. I will follow the Institute's policy for plagiarism.

Policy Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Academic Integrity

For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty.

Universal Design for Learning

Most of the classes make use of videos, images, and presentations to achieve the outcomes of the session. This provides multiple means of representation and expression, to ensure all of you follow the class in the way that suits you the most or in a combination of them. **If you feel like you need any special assistance or accommodation** The Georgia Institute of Technology has policies which are administered through The

Office of Disability Services. http://disabilityservices.gatech.edu/. Please contact this office immediately to request classroom accommodations if you have a disability or require special accommodations.

"College of Design Statement on Diversity, Equity, and Inclusion"

"The College of Design (COD) community of faculty, staff, and students aspires to create and nurture an environment that is supportive of all backgrounds where different views and ideas are respected and encouraged. In all our pursuits, we commit to justice, diversity, equity, and inclusion with regard to race, national origin, language, age, sexual orientation, gender, religion, and ability. Moreover, we will encourage intellectual inquiry and respectful exchange that cements our dedication to these principles."

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. Work with me to create a positive, respectful, and engaged academic environment inside and outside of the classroom. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

How can I succeed in this Class?

This is a fun class where you get exposed to major technologies for surveying and visual data capture in the construction industry. To succeed in this class, it is important to participate in class activities. I will work with you on the majority of the assignments and have them completed in class. This means that when you come to class, you will be able to complete most of your assignments successfully. You will also be better equipped to implement technologies on construction sites, which will help you complete your semester project successfully.

Dates and Schedule

The Course Instructor reserves the right to modify the course schedule to better serve the needs of students. Assignments and their due dates will be provided as material is covered to allow for maximum flexibility.

Wks	Session	Topic	Assignments Due
1	Tues	**Introductions, Class Outline, and Administration Matters**	**Intro slide/ Knowledge probe**
	Fri	**No Lab**	
2	Tues	**Surveying** – Theory and foundations	
	Fri	**TBD**	
3	Tues	**Laser Scanning** -Theory & Planning	3-2-1 reflections
	Fri	**Laser Scanning** - Planning	
4	Tues	**Laser Scanning Collection** (In-class exercise)	
	Fri	**Creating As-built models** – Processing and registration	
5	Tues	**Creating As-built models** – Point clouds Analysis	**Laser Scanning assignment**
	Fri	**Point clouds Analysis** – Office hours	
6	Tues	**Career Fair Day**	
	Fri	**Cameras: 360 and Infrared cameras**	
7	Tues	**GPR in Construction: Guest Lecture**	3-2-1 reflections
	Fri	**TBD**	
8	Tues	**Fall break**	
	Fri	**TBD**	
9	Tues	**Surveying -** Layout and Control (Theory)	
	Fri	**No Lab**	
10	Tues	**Levelling in Surveying**– Guest speakers	
	Fri	**TBD**	
11	Tues	**Surveying** – **Layout and control:** Guest speakers	
	Fri	**Robots for** Surveying **Layout Guest Lecture**	
12	Tues	**Digital Technologies** – for Construction Management and *Project Intro*	Surveying activities **(ACCE SLO11-DA)**
	Fri	**Bluebeam Practices**	
13	Tues	**Drones in the Construction Industry: Guest speaker**	
	Fri	**Semester Project Check-in 1**	
14	Tues	**Guest speaker – Digital Technologies for pre-construction management**	**Ediphi - Cons**
	Fri	**Semester Project Check-in 2**	
		No Lab: Thanksgiving Break	
16	Tues	**Project presentations**	**Semester project**