VIP – Ground Breaking Infrastructure Syllabus

Vertically Integrated Projects, Section VZA, Variable Credits

Spring 2027

Thursdays, 9:30 – 10:20 AM, Mason 1132

Instructor Information

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Drop-in Hours & Location: Wednesday, 2:00 PM – 3:30 PM, or by appointment

General Course Information

Description

Underground infrastructure is responsible for the foundations of bridges and buildings and the construction of utilities, pavements and road tunnels. In this team, we combine rapid prototyping, electronics, and computational algorithms to create ground-breaking underground technologies to: (i) improve the way we burrow and excavate soils; (ii) create new methods to measure the characteristics of soils; and (iii) propose new types of anchors and foundations to build structures in challenging environments, from the deep sea to Mars.

Pre- &/or Co-Requisites

There are no prerequisites or co-requisites for this course.

Course Learning Outcomes

By the end of this course sequence, students will be able to:

1. Learn and practice research and analytical skills;
2. Make substantial contributions to the team project;
3. Experience different roles on a large, multidisciplinary team.

Required Course Materials

There are no required textbooks. Digital documentation will be kept using Notion, Overleaf (text), or GitHub (code). Please coordinate with your team leader to select the appropriate management platforms.

Peer evaluations are administered by the VIP Program. Access peer evaluations from off campus or access them from on campus. You will be prompted to sign in. Users can only log in from on campus or via VPN. Students can only access the peer evaluation portion of the system during active evaluation periods.

Grading Policy

VIP teams function like real-world project teams. Members work on different aspects of a shared project, ranging from sophomores to graduate students, and from first-time participants to those with multiple semesters of experience. Students may enroll for variable credit hours, which are considered in grading. Note: Zero-credit enrollment is reserved for paid participants and follows the same grading criteria.

Each student is evaluated across three core areas, with three mandatory requirements. Regardless of role or experience, students must demonstrate achievement in all three areas:

Documentation and Records (33%)

- Maintain individual documentation (required).
- Contribute to team documentation: VIP Wiki, blog.

Personal Contributions (33%)

- Quizzes, learning modules, essays, and reports required by your advisor(s);
- Engagement in project;
- Pursuit of knowledge necessary for project;
- Contributions to the technical progress of the team;
- For more experienced members of the team, contributions to the management of the project may be expected.

Teamwork and Interaction (33%)

- Participate in peer evaluations. Failure to submit results in a full letter grade deduction.
- Attend meetings on time.
- Collaborate toward team goals.
- Coordinate and assist teammates.
- Contribute to team presentations.

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

- A: 90–100%
- B: 80–89%
- C: 70–79%
- D: 60–69%
- F: 0–59%

Description of Graded Components

As part of the assessment of the above, each student is required to:

- **Maintain a VIP notebook.** Scans of well-maintained VIP notebooks are available on the VIP website. Each student must understand that if work is not documented in their VIP notebook, "Then you didn't do it" (i.e., work that is not documented in the notebook will not count toward your grade).
- **Complete the midterm peer evaluation.** This is a web-based form, and links are available on the VIP website. Failure to complete the peer evaluation will result in a full letter grade deduction. Late submissions are not accepted.
- **Complete the final peer evaluation,** which will be available for one week during the week preceding finals. Failure to complete the peer evaluation will result in a full letter grade deduction. Late submissions are not accepted.

Rubric. Please refer to the attached rubric document.

Course Policies

VIP is a collaborative, multidisciplinary, project-based learning and research experience. Your success in this course depends not only on your technical contributions but also on your active engagement with your team and the broader learning process.

Your Role in the Learning Process

As a VIP student, you are expected to:

- Take initiative in exploring and applying knowledge relevant to your project.
- Collaborate effectively with team members across disciplines and experience levels.
- Document your work thoroughly.
- Reflect on your learning and contributions throughout the semester.

This course is a real-world team environment, where learning is dynamic, self-directed, and collaborative. Your growth depends on your willingness to engage, contribute, and learn from others.

Team Meetings and Participation

Attendance and active participation in team meetings and sub-team meetings are required. These meetings are essential for:

- Coordinating project tasks and timelines.
- Sharing progress and receiving feedback.
- Learning from peers and mentors.
- Contributing to team decisions and direction.

Failure to attend meetings without valid reason may negatively impact your grade and your team's progress. If you anticipate missing a meeting, communicate with your team and advisor in advance.

Attendance and/or Participation

Attendance and active participation are essential to the success of this course. Students are expected to attend all class sessions and engage fully in course activities; two or more unjustified absences will result in a one-letter-grade reduction in the final course grade. Participation will be assessed based on peer evaluations and performance as defined in the attached participation rubric, and these measures will be used to determine each student's level of contribution, preparation, and engagement throughout the term.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

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 for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at

Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate 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.

Collaboration, Group Work, and Use of Generative AI

You are encouraged to consult external sources to support your learning and project work. However:

- Do not present someone else's work as your own.
- Always cite and reference external materials used in your notebook, code, presentations, or other deliverables.
- Proper attribution is essential to maintain transparency and integrity in a collaborative research environment.

Using appropriate tools effectively is part of engineering, whether it is a slide rule, a computer, or ChatGPT. In the classroom, AI tools can help you to identify errors and direct you in the right way; however, they should not replace thinking and the 'productive struggle of learning'. To borrow an analogy, think of AI like an e-bike. If our goal is to only get somewhere faster, an e-bike might do the job. If our goal is to become a better cyclist, an e-bike can interfere with that happening. In your goal to become a great engineer, you need to develop your own 'engineering muscle', where you understand the task, think about the way of solving the problem on your own, and start doing so.

Using your tools effectively means three things: (1) using them thoughtfully, (2) using them ethically, and (3) retaining responsibility for their outputs. Remember, you are responsible

for the work you submit, and you must disclose the use of AI, with the details of how you used it.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams or Presentations

Well-justified absences will be provided reasonable opportunities to make up missed work, while unjustified absences or late submissions will incur a 10% deduction for the first 24 hours past the deadline, after which no work will be accepted.

Inclement Weather and Digital Learning Days

For classes affected by inclement weather or designated Digital Learning Days, reasonable accommodations will be made to allow students to make up missed work, participate in required activities, and remain in good academic standing without penalty.

Student Use of Mobile Devices in the Classroom

To support learning, focus, and respect for others, mobile devices—including phones, smartwatches, earbuds, and tablets—are not permitted for use during class time unless explicitly authorized by the instructor. All devices must be silenced and kept out of sight, and students may not text, call, record, take photos, browse the internet, use apps, or access social media during class, exams, or independent work unless instructed. Violations will be addressed through academic or conduct measures in accordance with college policy.

Additional Course Policies: VIP Room and Equipment Use

VIP rooms and equipment are shared resources used by multiple teams. To ensure a productive and respectful working environment, the following rules apply.

Room Usage Priorities

Room use is prioritized as follows:

1. Scheduled team meetings, lectures, and learning modules
2. Weekly sub-team meetings (multiple groups may share the space)
3. Video conferences or special meetings with VIP stakeholders
4. Other project-related work (multiple groups may share the space)

Room schedules are available on the VIP website. A “good neighbor” policy applies: students may use rooms during other activities as long as they do not cause disruption. Quiet individual work or studying is allowed when it does not interfere with scheduled uses. Similarly, multiple groups may use a VIP room at the same time.

Cleanliness and Conduct

- Everyone is responsible for keeping rooms clean.
- Food is allowed, but spills must be cleaned immediately.
- Gum must be disposed of properly—do not stick it under desks or on carpets.
- Rooms are monitored by cameras; violations may be reviewed via video.

Equipment Use

- Equipment may be designated for general use or assigned to specific teams.
    - General use examples: Projector in Klaus 1440, monitors in VL 465 and VL 463B.
    - Equipment assignments may change each semester.
- If unsure about equipment access, contact vip-request@ece.gatech.edu.
- Use equipment only for its intended purpose. Misuse may pose safety risks.

Important equipment rules:

- Equipment may not be removed from VIP rooms without a signed loan agreement approved by a VIP Director.
- You are financially responsible for any equipment not returned in good condition.
- You must know how to operate equipment safely. Approval to use equipment does not imply safety training has been provided.

Computer Accounts

- Accounts are for individual use only—do not share with others.
- All usage must comply with Georgia Tech, USG Board of Regents, and State of Georgia policies.
- Respect privacy and data integrity. Having access to a file does not mean you are authorized to read or modify it.

BuzzCard Access

- Access is a privilege and is logged.
- Rooms are under video surveillance. In cases of theft, vandalism, or messes, logs and footage will be reviewed.
- Do not allow unauthorized individuals into VIP spaces.
- Always secure the room (close the door) when leaving.

Course schedule. The Spring 2027 meeting schedule and VIP deadlines are provided in the separate VIP Course Themes and Schedule document.

Campus Resources for Students

Undergraduate Student Academic Success Resources

A list of resources for undergraduate students' academic success and information about advising can be found at Success at Tech.

- 1:1 Tutoring: Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Georgia Institute of Technology has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit gatech.joinknack.com and sign in with your student account.

Graduate Student Academic and Professional Success Resources

A list of resources for graduate students is given on the Office of Graduate and Postdoctoral Education website. Specific information for current graduate students includes:

- Academic Resources such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- Student Resources such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- Professional Development such as the programming from the Career Center and other professional development resources and events.

Student Well-Being

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness-related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being.