# ENGR 102: Engineering Freshman Academy
# Fall 2020

**Time & Place:**     §28516:     Wednesdays 10:00 – 11:50 am
                      §28517:     Wednesdays 12:00 – 1:50 pm

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**Coaches:**          §28516:     Piril Negris, ECE, nergis@usc.edu
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## Course Introduction

The primary purpose of Freshman Engineering Academy (ENGR 102) is to introduce first-year students to the "Viterbi Experience."  The faculty and staff at the Viterbi School understand that entering engineering and computer and materials science students are highly qualified to pursue undergraduate studies at Viterbi; and, that the identity of each student relative to any given major is important. Viterbi is an extremely high-performance and demanding environment that will stretch most students. Thus, a major focus of the course is to expose each student to a variety of subject matter, contexts, skills, experiences, faculty, upper-class students, and staff that can help.

## Goals and Objectives

One overarching context for exploring various aspects of one's identity and skills at Viterbi will be the National Academy of Engineering (NAE) Grand Challenges.  These Grand Challenges will be threaded throughout the course.  Upon completion of the Academy, first-year Viterbi students should be able to:

- *Demonstrate* a better understanding of their ability to think like an engineer, computer scientist, or material scientist:  Viterbi students are problem-solvers using multiple problem-solving techniques and strategies to identify not only problems and solutions, but also families and spaces of problems and solutions.
- *Identify* the societal and historical context of the research and practice of engineering, computer science, and materials science.  Complex disciplines of research and practice are influenced by, and thus not independent of, people and organizations that determine their evolutions.
- *Reflect* upon the skills and experiences that shape the thinking and pursuit of a Viterbi degree via an inventory of one's own palette of unique offerings to the Viterbi School and USC.
- *Explore* the Engineering Habits of Mind that help frame the study, research, and practice within the domains of study at the Viterbi School.
- *Demonstrate* a general understanding of engineering, computer science, or materials science and its potential by understanding the NAE Grand Challenges.

## Textbook and Assigned Readings & Materials

There is no textbook for the course; however, comprehensive reading, viewings, and other course resources will be made available via posts on Blackboard or Slack, through email, or during Class Time. Blackboard will also be used for general announcements and posting course documents and information.

**Class Requirements, Structure & Grading Policy**

This course includes one lecture/discussion per week. The course may also include readings, videos, podcasts, team or group and whole class discussions, team activities or projects, and lectures by experts and other guest speakers. The course will be graded according to the following:

1. Active Participation & Class Attendance (**30%**)
   Students are required to participate in discussions, respond to email requests, and act as responsible and respectful team members and colleagues to others in the class. Completion of all in-class assignments is mandatory. If you anticipate missing a class meeting or activity, please provide advance notice to your course instructor and Coaches. You are responsible for any information covered in a class you do not attend.

2. Outside-the-Class Activities (**30%**)
   Students are required to attend at least 2 USC/Viterbi related virtual events throughout the semester and submit a 1-2 sentence summary of their learnings on BlackBoard. Students are required to attend 2 out of 3 All Academy Lectures (more info to come). Students are required to attend 2 one-on-one meetings with the coaches throughout the course of the semester.

3. Project(s) and Homework (**40%**)
   A limited number of Project, project-related, and/or homework assignments will be required, due via submission on Blackboard or other means. Please follow USC's guidelines on academic integrity across the entire content of the class (from homework assignments to exams). Individual and collaborative (i.e. team-oriented) Project assignments will be completed during the semester that are aligned with one of the 14 NAE Grand Challenges. This project will be determined by the class/group in discussion with one another and in consultation with the course instructor and the Coaches.

4. Replacement for ONE Outside-the-Class Activity
   One-on-one meetings with coaches are mandatory. However, students may substitute ONE of the remaining Outside-the-Class Activity with participation in ONE or more career-related events sponsored by the office of Student Engagement and Career Connections. Please visit RTH 218 for a list of events. Students choosing this option will be required to submit a 2-3-page, double-spaced, American Psychological Association (APA)-style reflective paper OR a four-to-six-minute color video describing the career-focused event, and have it signed off by the appropriate Career Connections staff. Check with your Coaches for recommendations and the instructor for hints on APA formatting requirements for papers.

**Diversity Statement**

We are committed to creating an inclusive environment in which all students are respected and valued. We will not tolerate disrespectful language or behavior on the basis of age, ability, color/ethnicity/race, gender identity/expression, marital/parental status, military/veteran's status, national origin, political affiliation, religious/spiritual beliefs, sex, sexual orientation, socioeconomic status or other visible or non-visible differences. I expect the same from you.

You are here to learn the course content, and we am here to teach it, but we are all here to grow as people and learn from one another. It is each of our responsibility to ensure that the classroom, and the university as a whole, is a safe and inclusive environment that facilitates learning.

**Grade Scale**

The final grade for this course will be awarded using the following point scale:

| A 95–100 | B+ 86–89 | C+ 76–79 | D+ 66–69 |
|---|---|---|---|
| A- 90–94 | B   83–85 | C   73–75 | D   63–65 |
|  | B- 80–82 | C- 70–72 | D-  60–62 |

**Grading**

The final course grade will be computed from the assignments listed in table below. Late assignments will receive a reduction of 5 points per day past the due date.

| Assignment | Due dates | Points |
|---|---|---|
| Participation and Attendance | Weeks 1-15 class time | 30 |
| All-Academy lectures | TBD | 30 |
| Outside-the-class activities | TBD |  |
| Projects | TBD | 40 |
| | TOTAL: | 100 |

**Assessment of Active Participation**

Your active participation will help create a meaningful learning experience for your, your peers, and your instructor. Active participation enhances your ability to learn new concepts and to demonstrate your learning in ways that will support your success on graded assignments. The following rubric summarizes the behaviors to employ in order to exhibit active participation.

| | Active Participation | Moderate Participation | Low Participation |
|---|---|---|---|
| Preparation | Exhibits evidence of having completed all reading/viewing assignments and activities according to guidelines that were assigned | Attempts to participate but sometimes inhibited due to apparent lack of completion of reading assignments and activities | Exhibits lack of preparation and non-completion of required assignments |
| Initiative | Initiates discussion and supports points using specific references to readings or other materials | Sometimes initiates discussion but may use more general references to readings | Rarely initiates discussion and unable to reference required readings or other materials |
| Engagement | Furthers the discussion and builds on the ideas of others; comments and questions reflect having thought deeply about the material | Sometimes builds on the ideas of others but more opinion based and limited references to course materials | Comments do not further the discussion, do not exhibit careful reflection on the material, or have an arbitrary quality |

**Assessment of Assignment Quality**

The following rubric provides a guide as to how the quality of completed assignments will be evaluated.

|  | Excellent | Acceptable | Unsatisfactory |
|---|---|---|---|
| Depth of thought | Shows evidence of depth of thought in preparation, intellectual curiosity, adequately supported arguments, and clarity of presentation | Evidence that thought and attention given were insufficient; evidence in support of argument may be lacking to make persuasive presentation | Not evident that serious thought went into preparation |
| Connection to readings | Assignment demonstrates knowledge of concepts course readings and integrates course content in an appropriate manner | Some parts neglect important concepts presented in the course readings or discussion, or the concepts are integrated in an inaccurate manner | Fails to relate to course materials or demonstrate knowledge of course content |
| Completeness | All parts of the assignment are done completely and according to guidelines provided for the assignment | All parts done completely, however, lacks adherence to guidelines in some areas | Assignment is not entirely complete and/or shows marked lack of adherence to guidelines |
| Growth | Highly responsive to feedback from peers and instructors. Substantive revisions in content and format demonstrate willingness to rework ideas and presentation. | Modest revisions in content and format, or revisions don't have a substantive impact on the overall communication of ideas in the document. | Little to no evidence of integration of changes in content or format in response to feedback. |

**Academic Integrity**

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others and to avoid using another's work as one's own. All students are expected to understand and abide by these principles.

Section 11.00 of SCampus, the USC Student Handbook, outlines behaviors that violate the USC Student Conduct Code: https://policy.usc.edu/files/2018/07/SCampus-2018-19.pdf

A list of recommended sanctions for a range of academic integrity violations are located in Appendix A of SCampus.

Should there be any suspicion of academic dishonesty, students are referred to the Office of Student Judicial Affairs and Community Standards (SJACS) for further review. Information about the SJACS review process can be found here: https://sjacs.usc.edu/students/academic-integrity/.

The SJACS website provides additional resources that you may find helpful, so see their website: https://sjacs.usc.edu/students/

**Incompletes**
An incomplete (IN) is given when work is not completed because of documented illness or some other emergency occurring after 80% of the course has been completed. Arrangements for the IN and its removal should be initiated by the student and agreed to by the instructor prior to the final exam. The University policy on IN is as follows (from the USC Catalogue):

Conditions for Removing a Grade of Incomplete: If an IN is assigned as the student's grade, the instructor will fill out the IN Completion form which will specify to the student and to the department the work remaining to be done, the procedures for its completion, the grade in the course to date, and the weight to be assigned to work remaining to be done when computing the final grade. A student may remove the IN by completing only the work not finished as a result of illness or emergency. Previously graded work may not be repeated for credit. It is not possible to remove an IN by re-registering for the course, even within the designated time.

Time Limit for Removal of an Incomplete: One calendar year is allowed to remove an IN. Individual academic units may have more stringent policies regarding these time limits. If the IN is not removed within the designated time limit, the course is considered "lapsed" and the grade is changed to an IX and it will be calculated into the grade point average as 0 points. Courses offered on a Credit/No Credit basis or taken on a Pass/No Pass basis for which a mark of IN is assigned will be lapsed with a mark of NC or NP and will not be calculated into the grade point average.

**Standards of Appropriate Online Behavior**
This course will be 100% online. The protocols defined by the USC Student Conduct Code will be upheld in online classes and meetings. Students are not allowed to post inappropriate material, spam to the class, use offensive language, or engage in online flaming.

**Emergencies and Course Continuity**
During an actual emergency USC will post emergency announcements on this website: https://emergency.usc.edu.  USC Safety also has guidelines for emergency preparedness for fire, earthquake or active shooter situations.  Please see https://safety.usc.edu/emergency-preparedness/.

**Academic Accommodations**
The University of Southern California is committed to full compliance with the Rehabilitation Act (Section 504) and the Americans with Disabilities Act (ADA). As part of the implementation of this law, the University will continue to provide reasonable accommodation for academically qualified candidates with disabilities so that they can participate fully in the University's educational programs and activities. Although USC is not required by law to change the "fundamental nature or essential curricular components of its programs in order to accommodate the needs of disabled candidates," the University will provide reasonable academic accommodation. It is the specific responsibility of the University administration and all faculty serving in a teaching capacity to ensure the University's compliance with this policy.

Any candidate requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP.  Please be sure deliver your letter to your instructor(s) as early in the semester as possible.  The DSP email address is ability@usc.edu. The website for DSP has additional information regarding accommodations and requests (https://dsp.usc.edu).

**NAE Grand Challenges for Engineering—Background and Context**

The National Academy of Engineering has identified 14 "Grand Challenges" for engineering in the 21$^{st}$ Century (http://www.engineeringchallenges.org/). These Grand Challenges are:

- Make solar energy economical
- Provide energy from fusion
- Develop carbon sequestration methods
- Manage the nitrogen cycle
- Provide access to clean water
- Restore and improve urban infrastructure
- Advance health informatics
- Engineer better medicines
- Reverse-engineer the brain
- Prevent nuclear terror
- Secure cyberspace
- Enhance virtual reality
- Advance personalized learning
- Engineer the tools of scientific discovery

These 14 Grand Challenges can be classified as belonging to four categories: sustainability, health, security, and enriching life. The Grand Challenges represent societally relevant engineering issues which, when addressed, will greatly improve global society. Although the Academy will briefly address the 14 Grand Challenges, each course section is primarily focused on one, possibly two, of the Grand Challenges. The course content will be centered on this Challenge to provide you with contemporary contexts.