

**New York University Tandon School of Engineering**  
General Engineering  
*Syllabus EG 1004 Introduction to Engineering and Design (4 Credits)*  
**Spring 2023**

**Professor Jack Bringardner**

Lecture Monday 12:30 pm - 2:00 pm (Pfizer Auditorium)  
Weekly Labs (3hr) and Recitations (1.5hr) [Times](#) Vary by Section

To contact professors: **Contact the section [recitation professor](#) first.**

**For course wide issues contact Professor Bringardner**

[jack.bringardner@nyu.edu](mailto:jack.bringardner@nyu.edu)

RH 305A

Office hours: by appointment

**Course Prerequisites**

EG 1004 Introduction to Engineering & Design has no prerequisites.

**Course Description**

This course will provide an understanding of what professional engineers do. You will be exposed to experimental techniques, design skills, teamwork, and the tools of the trade in order to establish a foundation for further study. In this context, an emphasis will be placed on developing communication skills: oral and written.

EG 1004 is a survey course for engineering topics, including industry software and hardware associated with these topics. Design and project management skills are developed throughout a semester-long design project. Disciplines within engineering will be introduced during lecture, and explored through practice in laboratory assignments.

**Course Objectives**

- To interpret clearly and concisely an experimental procedure, results, and conclusions in a technical presentation and report.
- To function well on a team, to articulate aspects of successful teamwork, and to self-assess the success of a team.
- To schedule, budget, and complete an open-ended engineering design project.
- To document an application of the engineering design process to solve a problem.
- To describe the disciplines of engineering, the roles of the engineering profession, and applications of engineering tools.
- To reflect on the ethical and social impact of engineering design

## **Course Structure**

[Labs](#) (8 lab experiments and 5 project model shop sessions)

[Semester-Long Design Project](#) (in lab and outside of class in open lab)

Lectures (10 industry experts and professors on engineering disciplines)

Recitations (13 classes including 11 team presentations)

## **Required Materials**

There is no required textbook for this course. You will need various [software](#). All course material and required reading is on the [EG 1004 Lab Manual](#). All software and course materials are free to EG 1004 students.

## **Course Policies**

Lab attendance is based on the lab quiz. After it has been given, you will receive a zero on the quiz, and be able to join the lab if time remains. If time does not remain, you must submit a [makeup request](#) and perform the lab during [open lab](#) (scroll down to see the schedule when the EG model shop will be open). Each lab has an associated lab report that is due one week after the lab is performed.

Lecture attendance is taken in the first five minutes. If you are late for a lecture you will lose credit for that lecture, but are allowed to attend.

Recitation attendance is mandatory. Arriving late will result in grade penalties. Contact your recitation professor before recitation to determine whether your lateness or absence is excused.

## **Grading Policy Breakdown**

<b><i>Item</i></b>	<b><i>Breakdown</i></b>
<i>Teaching Assistant Lab Reports (Technical Content)</i>	15%
<i>Writing Consultant Lab Reports (Writing Skills)</i>	15%
<i>Lab Quizzes</i>	5%
<i>Recitation Presentations</i>	15%
<i>Semester-Long Design Project</i>	30%
<i>Professional Development</i>	10%
<i>Lecture Attendance</i>	10%
<b><i>Total</i></b>	<b>100%</b>

## **Course Topics**

### **Labs (for each lab you will create a presentation & lab report)**

Lab 1 – Software for Engineers (Microsoft Excel and Autodesk Revit)\*

Lab 2 – Computer-Aided Design Competition (Autodesk Fusion 360)

Lab 3 – Prototyping with Microcontrollers, Sensors, & Materials (Arduino)

Lab 4 – Model Shop Session 1 & Project Workshops

Lab 5 – Introduction to Digital Logic

Lab 6 – Model Shop Session 2 & Benchmark A Deadline

Lab 7 – Boom Construction Competition

Lab 8 – Processes & Water Filters

Lab 9 – Model Shop Session 3 & Benchmark B Deadline

Lab 10 – Sustainable Energy Vehicle Competition

Lab 11 – Biomedical Forensics\*\*

Lab 12 – Model Shop Session 4 & Early Submission Deadline

Lab 13 – Model Shop Session 5 & Final Submission Deadline

\*This lab does not have a presentation or lab report

\*\*This lab does not have a lab report

### **Recitations**

<b>Week</b>	<b>Recitation</b>	<b>Recitation Introduction</b>	<b>Writing Consultant</b>
1	Introduction to EG 1004 & Technical Presentation Guide	What is Engineering?	Writing EG Lab Reports
2	Project Team Selection	Technical Report Example	Citations & Paraphrasing
3	Lab 2 Presentations	Technical Presentation Tips	Creating a LinkedIn Profile
4	Lab 3 Presentations & How to Prepare Milestones	Engineering Design Process	Technical Writing Standards
5	Milestone 1 (Design Thinking, CATME 1 & LinkedIn)	Metacognition	Writing & Revising Resumes
6	Lab 5 Presentations	Ethics & Stakeholder Impact	Data is Your Argument
7	Milestone 2 (Design Canvas, CATME 2 & Resume)	Reflection	How to Write as a Team
8	Lab 7 Presentations	Undergraduate Resources	The Art of the Cover Letter
9	Lab 8 Presentations & Final Presentation Guide	Graduate School	ePortfolios in Engineering
10	Milestone 3 (Design Pitch, CATME & Cover Letter)	Career Development	Writing as a Professional
11	Lab 10 Presentations	Engineering & Social Justice	Resumes Revisited
12	Lab 11 Presentations	Emerging Topics	Writing in Engineering
13	Final Presentation (Engineering Notebook & ePortfolio)	Entrepreneurial Mindset	--

## Lectures (subject to change)

<i>Topic</i>	<b>Lecturer</b>
<i>Intro to EG 1004 &amp; MakerSpace</i>	Jack Bringardner & EG 1004 TAs
<i>Teamwork Skit &amp; VIP Program</i>	Jack Bringardner & EG 1004 TAs
<i>Tandon Career Services</i>	Jolie Woodson
<i>Project Management &amp; Writing</i>	Jack Bringardner & Duncan Osborne
<i>Health</i>	David Truong
<i>Sustainability</i>	Miguel Modestino & Cecil Scheib
<i>Urban Environments</i>	Andrea Silverman
<i>Wireless Communications</i>	Sundeeep Rnagan
<i>Artificial Intelligence</i>	Melissa Goldman (Google VP of Eng)
<i>The World Trade Center Project</i>	Peter Rinaldi (Port Authority of NY & NJ)

## Semester-Long Design Project

Milestones 1, 2, 3 (3 project update presentations in recitation)

Benchmark A, B (2 project deadlines due in model shop lab sessions)

Commissioning (completion of all project tasks)

[Submission](#) (submitting all supporting documentation)

Final Presentation (project sales pitch during the last recitation)

## Additional Resources and Notices

### Moses Center Statement of Disability

If you are a student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at [212-998-4980](tel:212-998-4980) or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu). You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at [www.nyu.edu/csd](http://www.nyu.edu/csd). The Moses Center is located at 726 Broadway on the 2nd floor.

### Course Plagiarism Policies

Students understand and agree that all submitted papers in this course may be delivered for plagiarism review through Turnitin. For the purpose of detecting plagiarism, all papers will be used as source documents in the Turnitin database. Use of AI tools such as ChatGPT is prohibited unless explicitly granted. Please speak with your recitation instructor with any questions regarding this policy.

**NYU School of Engineering Policies and Procedures on Academic Misconduct** *(from the School of Engineering Student Code of Conduct)*

- A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.
- B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:
1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
  2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
  3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work that was meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

### **Academic Misconduct Reporting**

Academic misconduct and issues of academic integrity arising from academic programs and activities will be reviewed by faculty members in cooperation with the Coordinator of Advocacy and Compliance, and in accordance with policies and procedures. If there is a case of academic misconduct, we will inform [Deanna Rayment](#) ([deanna.rayment@nyu.edu](mailto:deanna.rayment@nyu.edu)) of NYU Tandon Student Affairs. Please visit the [NYU Tandon Student Code of Conduct](#) for more detailed information.

### **Religious Accommodations and Support**

The School of Engineering's policy requires students to provide Student Advocacy ([advocacy.tandonstudentlife@nyu.edu](mailto:advocacy.tandonstudentlife@nyu.edu)) with written notification 14 days in advance of the days to be taken off along with the Excused Absence Form. Once the above is received and confirmed, faculty will receive a written request for the absence to be excused.

### **Illness and Excused Absence Policy**

If you are experiencing an illness or any other situation that might affect your academic performance in a class, please email Student Advocacy ([advocacy.tandonstudentlife@nyu.edu](mailto:advocacy.tandonstudentlife@nyu.edu)). The office can reach out to your instructors on your behalf when warranted.

### **Mental Health Statement**

As a student you may experience a range of issues that can cause barriers to learning. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, or loss of motivation. NYU Wellness Exchange can help with these or other issues

you may experience. Help is always available. You can learn about free, confidential mental health services available to you at the [NYU Wellness Exchange](#).

### **Inclusion Statement**

The NYU Tandon School values an inclusive and equitable environment for all our students. We hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is our intent that all students' learning needs be addressed, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. If this standard is not being upheld, please feel free to speak with the course professors.

### **Non-Discrimination Statement**

NYU is committed to maintaining an environment that encourages and fosters appropriate conduct among all persons and respect for individual values. Discrimination or harassment based on race, gender and/or gender identity or expression, color, creed, religion, age, national origin, ethnicity, disability, veteran or military status, sex, sexual orientation, pregnancy, genetic information, marital status, citizenship status, or on any other legally prohibited basis is unlawful and undermines the character and purpose of the University. Violations should be reported to the [NYU Title XI Office website](#).

### **Violence Prevention Statement**

NYU is committed to fostering a safe, productive learning environment. Title IX and our campus policy prohibit discrimination on the basis of sex or gender identity, which includes forms of sexual misconduct such as sexual assault, sexual harassment, dating violence, domestic violence, and stalking. We understand that sexual violence can undermine students' academic success and we encourage students who experienced any form of sexual misconduct to talk about their experience so they can get support. NYU offers resources and options for students impacted by sexual assault, sexual harassment, dating violence, domestic violence, and stalking. Learn about the free, confidential services by visiting the [NYU Title XI Office website](#).