

**The Swanson School of Engineering  
Summer Reading Packet  
For Students Entering Fall 2018 (Term 2191)**



Dear First Year Engineering Student:

On behalf of the First Year Engineering academic advising team in the Swanson School of Engineering, it is my pleasure to extend the warmest welcome to you, the class of 2022! The advising team is looking forward to working with a new class of students this fall term and, in preparation for what will undoubtedly be the most challenging year of your academic career to date, has prepared some materials that we believe will be helpful as you start your engineering studies at Pitt.

The upcoming school year will be different from any which you have experienced thus far. You will work harder. You will put in more time. You will have to rely on your classmates for help and for team-earned grades. And for the first time, you will be in class only with others who were equally as gifted academically in high school as you were.

In this endeavor, you will have the support of an academic advisor. I am proud to work with a team of talented, committed people who are interested in your academic success. The onus, however, is on you to commit to the experience and take responsibility for your engineering education. Please read the following pages carefully and consider this exercise the first step toward ensuring a successful freshman year.

The articles in this summer reading packet are focused around six learning outcomes that we hope you will achieve during your first year in the Swanson School of Engineering. They are as follows:

- Establish a Pitt Network and know how to use it.
- Know how to use Pitt's technology resources.
- Understand the engineering major options and make a department selection.
- Understand basic SSOE policies and procedures OR know how to get the info online or from whom to get it.
- Master time management so as to be successful beyond the first year.
- Gain academic self-awareness/knowledge of academic strengths and weaknesses.

You'll learn more about our advising goals during Orientation in August, but we hope this introduction will help prepare you for a productive advising relationship and an outstanding freshman year. ***Please take time to read this packet in its entirety and complete the worksheet at the end of your reading. You should bring the completed worksheet to First-Year Engineering Orientation on Friday, August 24, 2018.***

On behalf of the First Year Engineering team of advisors, I wish you much success in your first year of college and welcome you to the University of Pittsburgh Swanson School of Engineering!

With warmest regards,



Jill G. Harvey, M.Ed.  
Associate Director and Coordinator of Advising  
First-Year Engineering Program

## Learning Outcome #1: Establish a Pitt Network and know how to use it.

*Our goal is that, by the end of the first year, each engineering student has established a robust Pitt Network. When we say “Pitt Network”, we are referring to the people or offices on campus each student needs to utilize in order to be successful. Each student’s Pitt Network may be a little different, depending on the needs of the student.*

### **Smart Students Take Full Advantage of Campus Resources**

By Patricia Gorden Neill - June 13th, 2013

One thing many college students never discover over their two or four years in college, are the impressive resources available on campus for preparing them for a career, for learning effective writing and studying skills, for health, physical, emotional and mental and for student activities. Most college students never darken the career center door, nor do they find tutors they need to help with tricky math and science problems. Take advantage of all that your campus offers in terms of resources. Using these services can help you grow academically, teach you good time management skills that will stand in good stead all your life, find you a Spanish tutor, advise you on courses to take for the career you want and assist you with all health concerns that arise over your college career.

Think of this: never again in your life will you find so many different resources in one place. No real world company can or will provide you with assistance in getting through a tough project, nor will you find health care, career networking or any of the other programs provided at colleges. If you want to be a truly savvy student, feel free to learn everything you can by exploring the rich resources offered on your campus. Here’s some of the common programs available at most colleges throughout the nation:

#### **Academic Resources**

Academic resource centers might be known by a variety of different names, but it is where you will find class review sessions, tutors for different classes and subjects, workshops on time management and effective studying skills, reading and test taking skills and writing support. Academic advisors may also be available here as well. If you fall behind in a class, or can’t quite grasp a difficult concept in calculus, take advantage of your college’s academic center and find help. Find a peer tutor, a student who has previously taken the same class you’re struggling with who can help you get back on track.

#### **Computer Technical Support**

Most colleges have computing centers that not only provide tech support, but can advise you on different software programs. They may have a computer lab that offers classes or

workshops that teach how to use a variety of software programs. You can also buy software or license to use software at discounted prices. If you need any computing assistance, this is the place to go.

### **Athletic Center**

Your college's athletic center can tell you how to access all the athletic resources available at the college. You'll find weight rooms, gyms, exercise rooms and classes and a variety of treadmills, rowing machines, stationary bikes, handball and racquetball courts and whatever else the athletic center offers in terms of recreation and sports. A stop here a few times a week could take care of all of your exercise needs.

### **Career Services**

Remember why you're here in college in the first place: to prepare yourself for a career. While most students never do check out the career services center, be sure you do. You can take assessment tests on your skills and interests, you can read about a huge variety of different careers, learn networking skills, find internships, prepare your resume and get assistance in finding a summer job. You can do practice interviews with professionals who can help build your strengths and downplay your weaknesses. Since it is unlikely you'll ever have so many career resources available again, take full advantage of it while you do. Get to know the career services staff as they can help you with the first few jobs you get after college.

### **Health and Counseling**

Whether you slammed a finger in the car door or you need to talk to someone because your boyfriend broke up with you, this is the place to come for help. For health problems, most campus health centers can do examinations, lab tests and x-rays and perhaps even more extensive services. If not, they can refer you to local health care centers or hospitals. Usually a professional counseling center is located near the health center. Many have a variety of professionals including social workers, psychologists and psychiatrists. Do yourself a favor and don't put off dealing with either your physical or mental health.

<http://www.academicinfo.net/campus-life/smart-students-take-full-advantage-of-campus-resources>

## **Learning Outcome #2: Know how to use Pitt's technology resources.**

*A good deal of business at the University of Pittsburgh is carried out online. Not only will you register for classes online, you will have the ability to access a wealth of resources and information through your My Pitt Portal. Therefore, being comfortable with the technology resources at the University of Pittsburgh is important. Below you will find links to information help guides for Pitt's technology resources.*

The University Registrar's Office has developed a New Student Guide, which provides detailed information regarding registration, the University calendar, and how to get a copy of your transcript: <http://www.registrar.pitt.edu/newstudentguide.html>

Computing Services and Systems Development at the University of Pittsburgh provides information about a vast array of technology related questions including CourseWeb, PeopleSoft Mobile, and Panopto. Additionally, they offer free software downloads for University of Pittsburgh students. <http://technology.pitt.edu/services/student-services>

## **Learning Outcome #3: Understand the engineering major options and make a department selection.**

*A major benefit of being a first year student in the Swanson School of Engineering is the opportunity for a common, undecided first year. You will not officially declare your major within engineering until the end of your first year, which will give you the opportunity to be exposed to all of your options. Below you will find descriptions of the engineering major options at the University of Pittsburgh.*

### **Bioengineering (BioE)** <http://www.engineering.pitt.edu/Bioengineering/>

Bioengineering students solve biomedical problems and help improve human health via an in-depth curriculum that integrates a significant amount of life science courses. Some beginning courses include Organic Chemistry, BioE Thermodynamics, and Biomechanics. Later courses include Biological Systems and Signals, Biotransport Phenomena, Human Physiology, and Bioinstrumentation. Bioengineers continue to graduate or medical school and also have successful careers in academia, biotech companies (e.g. designing artificial organs) or with federal agencies such as the FDA.

### **Civil & Environmental Engineering (CEE)** <http://www.engineering.pitt.edu/Departments/Civil-Environmental/Civil-Program/>

The Civil Engineering curriculum combines a broad-based education with focus on science (e.g. Math, Physics and Chemistry), engineering analysis (e.g. Environmental Engineering, Fluid and Soil Mechanics, Transportation, Structures, Sustainability, and Construction Management) and design (e.g. Concrete Structures, Steel Structures, Water and Wastewater Treatment Facilities, Pavement, and Foundations). Specializations include structural engineering, geotechnical and pavement engineering, environmental engineering, water resources, and construction management. Most Civil and environmental engineers are involved with essential facilities and structures such as buildings, bridges, dams, highways, airports, as well as water, wastewater, and solid/hazardous waste treatment facilities.

### **Electrical Engineering (EE)** <http://www.engineering.pitt.edu/Electrical/>

Electrical engineers learn to design devices and systems used in applications including communications, power generation and distribution, computers, sensing and measurement, and automatic control. EE courses cover Digital Logic, Linear Systems & Circuits, Electronic Circuits, Semiconductor Device Theory, Signals & Systems Analysis, and Electromagnetics. Several lab courses provide hands-on experience with the design, manufacture and operation of electronic and photonic devices and complex electrical systems. Employment opportunities include research and development, system design, testing, manufacturing, and sales, while others continue to graduate study.

**Industrial Engineering (IE)** <http://www.engineering.pitt.edu/Departments/Industrial/>

Engineers are educated to design and build things, but Industrial Engineers are educated to design and improve the productivity and quality of integrated systems of people, material, computers, information, equipment, and other resources. IEs focus on making improvements in business processes. The discipline offers a wide array of employment opportunities and IEs can be found working everywhere from manufacturing companies to airlines, distribution companies to financial institutions, hospitals to consulting companies, high-tech corporations to luxury retailers. Some of the courses in the IE curriculum include Productivity Analysis, Manufacturing Processes and Analysis, Economic Analysis, Human Factors, Operations Research, and Supply Chain Analysis.

**Chemical & Petroleum Engineering (CHE)** <http://www.engineering.pitt.edu/Departments/Chemical-Petroleum/Chem-Program/>

Chemical processes and gaining an in-depth understanding of how these processes improve lives are integral to the curriculum. Beginning courses include Organic Chemistry, Foundations of ChE (material and mass balances), ChE Thermodynamics, and Transport Phenomena (momentum, mass, and heat transport from micro- to macroscopic scale). Advanced courses include Physical and Analytical Chemistry, as well as System Engineering (Dynamics & Modeling, then Design), and lab sessions are part of every ChE course. Chemical engineers work in diverse sectors including petroleum, polymer, biochemistry, the environment, and food industries.

**Computer Engineering (CoE)** <http://engineering.pitt.edu/computer/>

The Computer Engineering curriculum focuses on the design, production, operation, and maintenance of computers and digital systems. In addition, computer engineers are involved with the applications of computers and digital technology. Courses include Java, Digital Logic, Linear Systems & Circuits, Digital Laboratory, Computer Interfacing, and Software Engineering. Computer Engineers work as Chip Designers, Application Developers, Software Designers, and Digital Television and Photography Developers. No background in computers or programming is necessary to be in the CoE program.

**Mechanical Engineering (ME)** <http://www.engineering.pitt.edu/Departments/MEMS/Mechanical-Program/>

Mechanical engineering students gain expert knowledge of the design and manufacture of mechanical systems and thermal devices/processes. Courses focus on the principles of motion, energy, and force. Some of the courses in the ME curriculum are Statics & Mechanics of Materials, Mechanical Design, Electrical Circuits, Material Structure & Properties, Kinematics of Machinery, Heat Transfer, Kinetics, Applied Thermodynamics, Applied Fluid Dynamics, and Thermal Systems Design. Mechanical Engineers work in fields including engines and control systems for automobiles and aircraft, medical devices, consumer products like computers and athletic equipment, and electrical power plants.

### **Materials Science and Engineering (MSE)**

<http://www.engineering.pitt.edu/Departments/MEMS/Materials-Science-and-Engineering-Program/>

MSE students integrate fundamental knowledge of materials processing and synthesis to improve the performance of engineered products and design materials for future applications. Courses include Statistics & Mechanics of Materials, Materials, Structures, & Properties, Materials Processing, Heat Mass Transport, Energetics, and Physical Metallurgy. Material science engineers work in materials processing, automotive, telecommunications, aerospace, electronics, or biomedical industries.

## **Learning Outcome #4: Understand basic SSOE policies and procedures OR know how to get the info online or from whom to get it.**

*As Academic Advisors, one of our jobs is to make sure you, the student, are knowledgeable about Swanson School of Engineering policies and procedures. Therefore, if you ever have a question about an academic policy, we prefer you come to us first. However, here we are providing you with links to online resources which outline University of Pittsburgh and SSOE policies.*

The University Catalog should be your main online resource for policies and procedures, and can be found here: <https://catalog.upp.pitt.edu/>

Additionally, the Swanson School of Engineering section of the University Catalog can be found here: <https://catalog.upp.pitt.edu/content.php?catoid=72&navoid=6212>

Some sections of the University Catalog that may be of particular interest to incoming first year engineering students include:

- Academic Standing
- Advanced Standing for Courses Taken Outside the University
- Grading Policies
- Calculation of the Grade Point Average
- Repeating Courses
- Honors Lists
- Registration
- Academic Integrity and Code of Conduct
- Advising
- Humanities and Social Science Requirement

Additionally, the University's student Code of Conduct can be found here:

[http://www.studentaffairs.pitt.edu/wp-content/uploads/2016/11/2016\\_Code\\_of\\_Conduct\\_Nov4.pdf](http://www.studentaffairs.pitt.edu/wp-content/uploads/2016/11/2016_Code_of_Conduct_Nov4.pdf)

While this information likely does not address every detail of academic policy, hopefully it will serve to answer any questions you may have as you prepare for the upcoming year. As always, please bring any additional questions regarding academic policy to your academic advising meetings.

## **Learning Outcome #5: Master time management so as to be successful beyond the first year.**

*Mastering time management is an incredibly important skill for all college students to master. However, because the engineering curriculum is so challenging, a key to being successful from the beginning of your first year is learning how to manage your time early on. This is a conversation you should expect to have with your Academic Advisor early and often, until you have a good handle on managing your time.*

### **Learn to Manage Your Time in College**

By Kelci Lynn Lucier, Contributor | Oct. 5, 2011, at 8:30 a.m.

A common perception both among and of college students is that they are always short on money. While this may be true, many college students are also always running short on something else: time.

With so much going on at a college campus, it's no wonder that students can feel—and actually be—overcommitted when it comes to classes, work, and cocurricular involvement. How can you balance your time when there never seems to be enough of it?

Here are a few things to consider:

1. Manage your academic time: Even though you may have a million other things going on, it's important to remind yourself why you're in college in the first place: to graduate. Consequently, your academic work should always come first when it comes to prioritizing your time.

When looking at your schedule for the week, figure out what your academic commitments look like. What time do you have classes? How much homework do you have to do? What assignments are due? When do you have major exams or quizzes?

If you need to, work backward: If you have an exam on Friday and think you need 3 hours to study for it, block off an hour on Tuesday, Wednesday, and Thursday for study time. And keep those appointments with yourself just like you would anything else on your calendar.

2. Manage your personal time: It's an unrealistic expectation to think that you can study, go to class, and work all day, every day. Your brain needs a break, too! Make sure to allow yourself time to go to something fun in the quad, attend a meeting for your favorite club, and just hang out for an hour or so at night with friends over dinner.

Doing things that make your personal time more enjoyable—and not totally focused on school—can actually improve your productivity when working on projects later. Of course, if you've overcommitted yourself with cocurriculars or consistently let your one-hour dinners turn into four-hour gossip fests, you'll need to adjust things accordingly. Learning to say "No" or "I have to go start studying now" can be one of the best skills you learn in college when it comes to managing your time well.

When looking at your calendar, write in your personal commitments and make sure to leave some time for just hanging out. But make sure to put in start and stop times, too; knowing that you need to start studying at 9 p.m. on Wednesday, for example, will allow you to have some fun with friends early in the evening but also get your homework done.

3. Keep your health in mind: When people's schedules are tight, one of the first things to go is sleep. While it may be common among college students, a lack of sleep is more detrimental than you might think. It can throw everything out of whack: your mental health, your physical health, your stress level, and, of course, your schedule.

Constantly working at a frenetic pace, especially when you're sleep deprived, will catch up with you sooner or later. Take a few moments at the beginning of every week to plan out your homework, your social time—and your sleep.

4. Where to go if you need time-management help: Time management isn't a skill you pick up right away. It takes—ironically—time to learn and time to master. Be patient as you learn how to manage your college academic schedule, what you can handle when it comes to cocurricular management, and what your body needs to function well in a college environment.

The most important thing to have for time management is some kind of system. Some students use the calendars on their phones; others use things like Google Calendar; others still use the classic paper-calendar model. If what you're using isn't working for you, don't give up. Just change and try again.

Additionally, many campuses offer help with time management because it's such a challenge for everyone. Try talking with your academic adviser or an on-campus tutoring center. Additionally, you can tap into resources that your campus health center may offer (especially when it comes to living a well-balance, healthy college life) or even a peer mentoring program. Keep in mind, too, that looking at how other, successful students manage their time can be a great resources as well.

<https://www.usnews.com/education/blogs/the-college-experience/2011/10/05/learn-to-manage-your-time-in-college>

## **Learning Outcome #6: Gain academic self-awareness/knowledge of academic strengths and weaknesses.**

*This academic year will no doubt be the most challenging of your academic career to date, and throughout it you will likely learn more about yourself as a student than you ever have in the past. One key to being a successful student is being aware of both your academic strengths and weaknesses. Please use the questions below for a current assessment of your academic strengths and weaknesses.*

### **Academic Interests**

What classes do you enjoy the most?

What classes do you like the least?

Which classes did you take and receive the highest grades?

Which classes did you take and receive the worst grades?

### **Learning Style**

Do you like to study?

Do you take good notes in class?

How are your test-taking skills?

Are you comfortable asking questions in class?

Where do you sit in class?

How often do you participate in class: always, sometimes or never?

Do you prefer in-class work or projects?

Do you work better alone or in a group?

Do you have a good work ethic or do you struggle to concentrate?

Do you prefer studying on your own or do you seek help from teachers or tutors?

Do you like weekly assignments or 2-3 major assignments a term?

Are you good at daily pop quizzes?

### **Grades**

Do you try to get good grades each term?

What's your GPA? Are you happy with it?

What could you do to improve your grades?

Do you perform better on tests or papers?

Do you review your tests and papers to see what you can learn from them?

<https://www.campusexplorer.com/college-advice-tips/5B430103/Academic-Self-Assessment/>

## Summer Reading Packet Reflection

**\*\*Print out and turn in to your advisor at First Year Engineering Orientation, 8/24\*\***

Name: \_\_\_\_\_

What resources (e.g. guidance counselor, club advisor, personal counselor or therapist) did you utilize as a high school student? Do you plan to connect with similar resources when you arrive on campus at the University of Pittsburgh?

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After registering for classes at PittStart, do you feel comfortable with the online registration process? If not, on what do you feel you need additional instruction?

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At this point in time, what are your top three engineering major choices?

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Are you considering a minor? If so, what subject areas are you considering?

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What are your career goals upon graduation from the University of Pittsburgh?

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After perusing the Undergraduate Catalog, what initial questions do you have regarding academic policies in the Swanson School of Engineering?

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What time management system do you plan to use when you begin college? (e.g. physical planner, calendar, app on phone)

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In what areas are you academically strong, and in what areas do you need to improve?

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