



Energy Science Technology & Policy

Carnegie Mellon University
College of Engineering

Energy Science, Technology and Policy Master's Program

Graduate Student Handbook

Academic Year 2023-2024

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Energy Science, Technology and Policy Master's Program
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EST&P GRADUATE STUDENT HANDBOOK

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D) Welcome and Introduction

The Faculty and Staff of the Energy Science, Technology and Policy (EST&P) program welcome you to Carnegie Mellon University (CMU). EST&P is an interdisciplinary Master of Science (MS) degree program in the College of Engineering and is affiliated with CMU's Scott Institute for Energy Innovation (SIEI). EST&P proudly builds upon the significant accomplishments in energy by CMU's faculty, researchers, students, and graduates.

Introduction:

EST&P offers distinctive and customizable Master of Science degrees based in engineering, aligned with new discoveries in science, attuned to sustainability and the environment, and informed by a broader perspective in economics and public policy. Effective solutions to energy problems will come from engineers and technical managers who understand the interdisciplinary challenges of energy and appreciate the broad interconnected issues of its supply, conversion, transport, storage, demand, utilization, policy, economics, sustainability, and the environment.

EST&P is a professional master's degree program oriented towards career preparation of engineers and scientists who have a passion for leading society's energy future. The MS degrees are awarded for successful completion of their required coursework. Regardless of the degree program, all EST&P graduates share core energy knowledge, delivered in our four required courses, and an engineering focus, assured through completion of an engineering concentration (choosing one from six engineering departments). Further customization is achieved through the many courses and different curricular paths available, including a large range of individual energy-related courses and projects at CMU, as well as four degree variants, including applied, advanced, and applied advanced study, in addition to the base EST&P degree.

EST&P graduates pursue diverse careers where they lead in the development of new technologies and policies for the production, transport, and efficient use of energy. The curriculum is designed to prepare you for a position of responsibility in all energy sectors, including traditional energy utilities and suppliers, alternative and renewable energy, power generation and distribution, energy intensive manufacturing, energy efficiency and sustainability practices, consulting companies, government labs, non-profits, and academic institutions. We have designated career counselors in CMU's [Career and Professional Development Center](#).

Graduate Student Handbook:

This handbook will guide and inform your opportunities and choices in the EST&P program. It contains detailed information about EST&P degree requirements, policies, and procedures, and it supplements the [College of Engineering graduate policies](#) and the [University policies](#). As you join us in the middle of our second decade as CMU's Engineering Energy master's program, we hope you have a productive and rewarding academic year, which will serve as a foundation to an impactful career, and that you will not hesitate to contact us with any questions.¹

¹ Note that modifications to this standard handbook may occur in the 2023-2024 academic year. Modifications will be communicated in separate documents delivered by email or posted to Canvas and possibly addended to this handbook.

II) EST&P Degree Options and Requirements

A) Overview of EST&P Degree Options

The College of Engineering's EST&P program offers professional master's degrees in energy.

Table I lays out the degree programs **by the number of semesters required** (columns) to complete each program and **whether a summer internship is required** (rows).

Degrees build from the top, left entry (the base EST&P degree) downward and to the right.

Each of the Applied Study Degrees (lower row) are constructed from the Foundational Degrees (upper row) directly above them. Similarly, the Advanced Study Degrees (three semester column) build directly from the two-semester degrees immediately to their left.

Table I

| | | Required Semesters | |
|----------------------------|-----|------------------------|---------------------------------|
| | | Two | Three |
| Required Summer Internship | No | EST&P | EST&P Advanced Study |
| | Yes | EST&P Applied Study | EST&P Applied Advanced Study |

- The **M.S. in Energy Science, Technology and Policy (EST&P)** degree is the base two-semester program, on which all the other EST&P degrees are built. Two semesters of full-time study are required for completion of 96 units of qualifying coursework.
- The **M.S. in EST&P – Applied Study (EST&P-APS)** degree integrates professional development (3 units) and a summer internship (3 units across two courses) with the base EST&P degree. Two semesters of full-time study and a summer internship between those semesters are required for completion of 102 units of qualifying coursework.
- The **M.S. in EST&P - Advanced Study (EST&P-ADS)** degree integrates further targeted study (36 units) of Energy Projects or a second Engineering Concentration with the base EST&P degree. Three semesters of full-time study are required for completion of 120 units of qualifying coursework.
- The **M.S. in EST&P – Applied Advanced Study (EST&P-AAS)** integrates professional development (3 units) and a summer internship (3 units across two courses) with the EST&P-ADS degree. Three semesters of full-time study and a summer internship between two of those semesters are required for completion of 126 units of qualifying coursework.

Prospective students apply to and receive an admission offer for one of the distinct EST&P degrees, as well as one the six engineering concentrations within the EST&P program.

Prospective students apply to and receive admission offers directly from the EST&P program of the College of Engineering at CMU, not one of the six affiliated engineering departments.

II.A. Overview of EST&P Degree Options (cont'd)

All EST&P degrees require:

- 24 units of Energy Core,
- 36 units of one Engineering Concentration, and
- 36 units of Breadth Electives,

which is also the exact distribution for the (96 units of the) base **EST&P** degree.

The Advanced Study (**EST&P-ADS**) degree also requires:

- 36 units of Advanced Study Concentration
- for a total of 120 units.

(12 appropriate units may be counted towards both Breadth Electives and Advanced Study).

The Applied Study Degrees build off the Foundational Degrees by integrating:

- 3 units of career and professional development and
 - 3 units related to a summer internship, separated across two courses,
- for an additional six units to the total of the appropriate Foundational Degree.

The two Foundational Degrees are compared in **Table II**, which highlights how the degrees build from left to right in the number of units and semesters required, as well as in degree customizability.

The two Applied Study degrees are compared in **Table III**.

Comparing **Table II** and **Table III** highlights how the Applied Study degrees build from the appropriate Foundational Degrees.

The two Foundational Degrees are illustrated using puzzle graphics in **Figure 1**, and the two Applied Study Degrees are illustrated using puzzle graphics in **Figure 2**.

The puzzle graphics aim to highlight how the distinct components of the degrees fit to a larger whole, and to indicate the flexibility in designing a degree that fits your individual career goals.

II.A. Overview of EST&P Degree Options (cont'd)

Table II.
Foundational Degrees
Energy Science, Technology & Policy (EST&P)

| EST&P | EST&P-ADS |
|--|--|
| Master of Science (M.S.) | Master of Science (M.S.) |
| 2 semesters of full-time study are required | 3 semesters of full-time study are required |
| 96 total units | 120 total units |
| <p>Energy Core:</p> <ul style="list-style-type: none"> ○ 24 units required ○ 39-610, -611, -612, -613 <p>Engineering Concentration:</p> <ul style="list-style-type: none"> ○ 36 units ○ Choose 1 concentration: CEE, CHE, ECE EPP, MEG, MSE ○ Courses approved by each department <p>Breadth Electives</p> <ul style="list-style-type: none"> ○ 36 units ○ Advisor approval needed ○ Graduate level engineering courses, and limited non-engineering graduate classes related to energy | <p>Energy Core:</p> <ul style="list-style-type: none"> ○ 24 units required ○ 39-610, -611, -612, -613 <p>Engineering Concentration:</p> <ul style="list-style-type: none"> ○ 36 units ○ Choose 1 concentration: CEE, CHE, ECE EPP, MEG, MSE ○ Courses approved by each department <p>Breadth Electives</p> <ul style="list-style-type: none"> ○ 36 units* ○ Advisor approval needed ○ Graduate level engineering courses, and limited non-engineering graduate classes related to energy <p>Advanced Study</p> <ul style="list-style-type: none"> ○ 36 units* ○ Energy Projects OR ○ 2nd Engineering Concentration |

* 12 appropriate units may be counted towards both Breadth Electives and Advanced Study

II.A. Overview of EST&P Degree Options (cont'd)

**Table III.
Applied Study Degrees
Energy Science, Technology & Policy (EST&P)**

| EST&P-APS | EST&P-AAS |
|---|--|
| Master of Science (M.S.) | Master of Science (M.S.) |
| 2 semesters of full-time study are required | 3 semesters of full-time study are required |
| 102 total units | 126 total units |
| <p>Energy Core:</p> <ul style="list-style-type: none"> ○ 24 units required ○ 39-610, -611, -612, -613 <p>Engineering Concentration:</p> <ul style="list-style-type: none"> ○ 36 units ○ Choose 1 concentration: CEE, CHE, ECE, EPP, MEG, MSE ○ Courses approved by each department <p>Breadth Electives</p> <ul style="list-style-type: none"> ○ 36 units ○ Advisor approval needed ○ Graduate level engineering courses, and limited non-engineering graduate classes related to energy | <p>Energy Core:</p> <ul style="list-style-type: none"> ○ 24 units required ○ 39-610, -611, -612, -613 <p>Engineering Concentration:</p> <ul style="list-style-type: none"> ○ 36 units ○ Choose 1 concentration: CEE, CHE, ECE, EPP, MEG, MSE ○ Courses approved by each department <p>Breadth Electives</p> <ul style="list-style-type: none"> ○ 36 units* ○ Advisor approval needed ○ Graduate level engineering courses, and limited non-engineering graduate classes related to energy |
| | <p>Advanced Study</p> <ul style="list-style-type: none"> ○ 36 units* ○ Energy Projects OR ○ 2nd Engineering Concentration |
| <p>Applied Study</p> <ul style="list-style-type: none"> ○ 6 units required ○ 39-699, 39-661, 39-662 ○ Internship required** | <p>Applied Study</p> <ul style="list-style-type: none"> ○ 6 units required ○ 39-699, 39-661, 39-662 ○ Internship required** |

* 12 appropriate units may be counted towards both Breadth Electives and Advanced Study

** The internship is required between a full-time spring and subsequent full-time fall semester.

II.A. Overview of EST&P Degree Options (cont'd)

Foundational Degrees
Energy Science, Technology & Policy (EST&P)

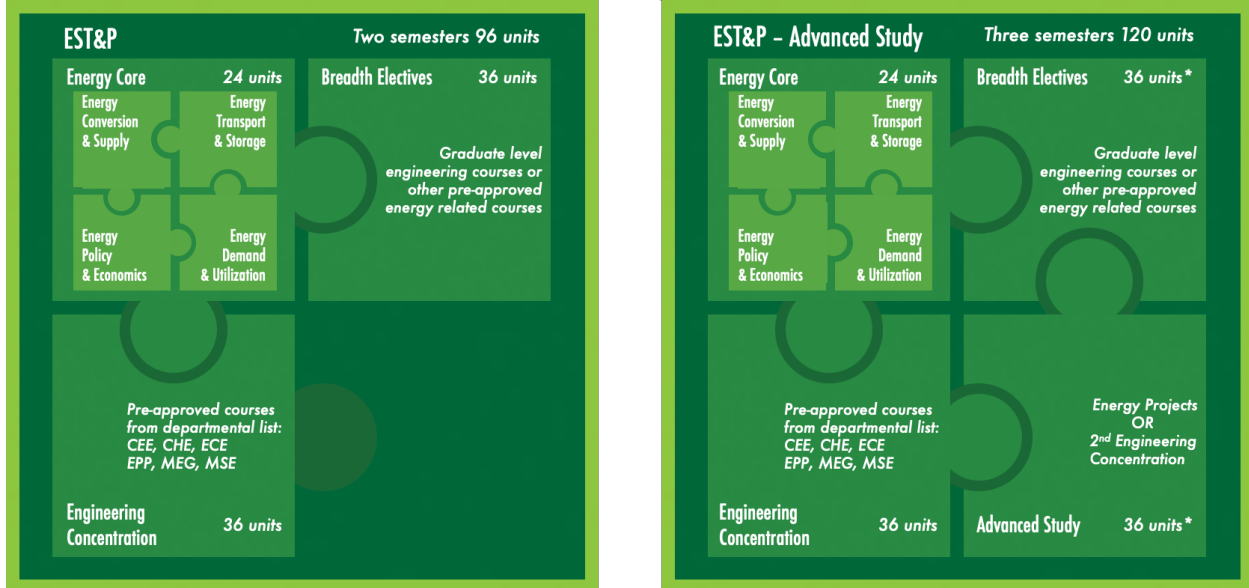


Figure 1. Puzzle graphics describing the foundational degrees in Energy Science, Technology & Policy: EST&P (top left) and EST&P Advanced Study (top right).

* 12 appropriate units may be counted towards both Breadth Electives and Advanced Study

Note: The number of semesters are those that students are required to be full time.

Applied Study Degrees
Energy Science, Technology & Policy (EST&P)

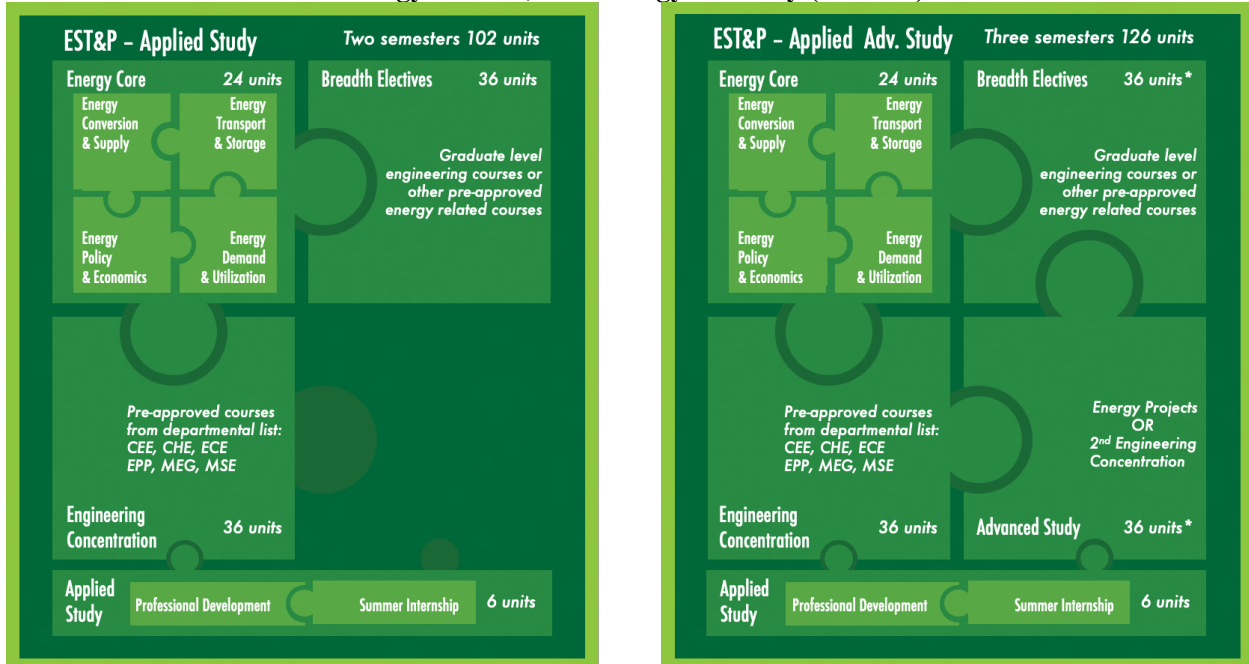


Figure 2. Puzzle graphics describing the Applied Study Degrees in Energy Science, Technology & Policy: EST&P- Applied Study (top left) and EST&P Applied Advanced Study (top right).

* 12 appropriate units may be counted towards both Breadth Electives and Advanced Study

Note: The internship is required between a full-time spring and subsequent full-time fall semester.

Note: The number of semesters are those that students are required to be full time.

B) EST&P Course Categories and Policies

Energy Core (24 total units of required coursework):

Students in all EST&P degrees must take the following four core courses.

1. 39-610 Energy Conversion and Supply (6 units, mini 1)
2. 39-613 Energy Transport and Storage (6 units, mini 2)
3. 39-611 Energy Demand and Utilization (6 units, mini 3)
4. 39-612 Energy Policy and Economics (6 units, mini 4)

The required [Energy Core](#) provides a foundation for understanding energy as an engineer, presenting different perspectives on the multifaceted issues in energy. Students participate in multidisciplinary teams to describe and develop solutions to energy problems, present results and write reports, and engage in active discourse with faculty and colleagues.

Engineering Concentration (36 units):

Students in all EST&P degrees must select one of six engineering concentrations (this is initially done when applying for admission). The engineering concentration sets the template for engineering depth coursework.²

Each participating engineering department has identified courses that are pre-approved to fulfill their concentration requirement. Only departmentally approved courses will count towards meeting the engineering concentration degree requirement. Concentrations may include both required and elective courses; they vary in structure from department to department.

For complete details please refer to Appendix B of this Handbook and/or pages on the EST&P Website: <https://www.cmu.edu/engineering/estp/degree-programs/engineering-concentrations/index.html>

Links for the individual engineering concentrations are given here:

- [Engineering Concentration in Chemical Engineering](#)
- [Engineering Concentration in Civil and Environmental Engineering](#)
- [Engineering Concentration in Electrical and Computer Engineering](#)
- [Engineering Concentration in Engineering and Public Policy](#)
- [Engineering Concentration in Materials Science and Engineering](#)
- [Engineering Concentration in Mechanical Engineering](#)

The EST&P program works with concentration departments to maintain these lists of approved courses. If courses become available that are not listed in the engineering concentrations, please consult your Academic Advisor to discuss the potential inclusion of new courses as fulfilling concentration requirements.

For students that have concerns regarding their engineering concentration, it is their responsibility to consult with their Academic Advisor.

² Note that the concentration is not listed in the degree title, and it does not appear on diplomas or transcripts.

II.B. EST&P Course Categories and Policies (cont'd)

Breadth Electives (36 units):

Students in all EST&P degrees must take an additional 36 units of [breadth electives](#), which are graduate level College of Engineering classes, or approved graduate level alternatives. Students are encouraged to take breadth electives outside the department associated with their engineering concentration.

Breadth electives allow for significant customization of the degree toward the specific interests of individual students, and standard policies are listed below. Selection of breadth elective courses is generally made in consultation with an EST&P academic advisor.

Most engineering graduate courses are acceptable as breadth electives. Graduate courses satisfy this requirement if they do not have significant overlap with other courses taken by the student.

Up to 12 units of advisor-approved upper-level undergraduate coursework (400 or 500 level) can be counted toward the breadth elective requirement, when the course is needed as preparation for a graduate class. Classes at the 300 level and below do not count towards the EST&P degree.

Preceding written advisor approval is required.

Up to 18 units of pre-approved graduate level classes at Carnegie Mellon, outside the College of Engineering, can be counted toward the breadth elective requirement.

Preceding written advisor approval is required.

Students in the EST&P-ADS and EST&P-AAS (Advanced Study) degrees may count up-to 12 units of Advanced Study courses as Breadth Electives.

Such courses must satisfy the criteria for both categories.

Note: all students are **limited** to 18 units of breadth electives from outside the college.

Note: Students are **limited** to one SCS course per semester.

Up to 12 units of advisor-approved directed research / independent study / master's project may count as Breadth Electives.

To count as a Breadth Elective, a factorable letter grade must be assigned for the course.

Preceding written advisor approval is required.

Preceding written approval by the supervising faculty member is required.

A master's project approval request form is available on Canvas.

- This form requires a 1-page plan of study describing the project topic, expected outcomes, deliverables, and the method of evaluation.
- This form must be signed by both the student and the supervising faculty member.
- Once approved, the student will be allowed to be registered for the appropriate number of units of EST&P master's project (39-660).
- Where a similar process or course number exists in the supervising faculty member's home department, that procedure may optionally be followed.

Copies of the completed departmental forms must also be submitted to the EST&P office to be included in a student's permanent records.

II.B. EST&P Course Categories and Policies (cont'd)

Advanced Study (36 units):

As an interdisciplinary engineering program focused on energy, educating engineers and technical managers to understand the interdisciplinary challenges of energy, advanced study is naturally represented by a balance of breadth and depth. Advanced Study Concentrations balance breadth and depth in energy-related engineering coursework and increase degree customizability.

EST&P-ADS and EST&P-AAS students must take 36 units of Advanced Study work. These units must be from the appropriate **pre-approved** lists and/or have **preceding advisor approval**.

Students in the EST&P-ADS and EST&P-AAS (Advanced Study) degrees may count up-to 12 units of Advanced Study courses as Breadth Electives. Such courses must satisfy the criteria for both categories.

There are two paths to satisfy the Advanced Study requirement of EST&P degrees:

- a. 2nd Engineering Concentration
- b. Energy Projects Concentration

a. 2nd Engineering Concentration

Students may complete the Advanced Study concentration by satisfying the requirements of a second Engineering Concentration, as described previously. Here, breadth is achieved by exposure to a second engineering discipline's approach to energy, and depth is achieved through completing a second cluster of concentrated engineering coursework. As examples, a student with CEE and EPP concentrations can be strong and broad in areas of sustainability and climate policy; or a student with MEG and ECE concentrations may be broad and strong in areas of generation and storage in modern grids. Many other examples are possible in achieving advanced studies in energy that are customized to individual students' interests and technological needs.

b. Energy Projects Concentration

Students may complete the Advanced Study concentration by satisfying the requirements of Energy Projects Concentration, described here.

The 36 units in the Energy Projects Concentration are satisfied by taking a combination of:

- i. 0 to 36 units of Independent Master's Project work*
- ii. 0 to 36 units of Project-Intensive coursework*
- iii. 0 to 12 units of Breadth Elective coursework.*

These three categories are described on the following pages.

II.B. EST&P Course Categories and Policies (cont'd)
Advanced Study, Energy Projects Concentration (cont'd):

i. Independent Master's Project Work:

Carnegie Mellon faculty are engaged in a wide range of energy related research, in which undergraduate, master, and doctoral students participate. EST&P students interested in independent project work are encouraged to explore research areas and opportunities on campus by reading the webpages of EST&P affiliated departments, institutes, and faculty, discussing with EST&P advisors and students, and discussing with individual faculty. Independent energy project opportunities can be found through agreement with individual faculty.

Once identified and approved by the student, supervising faculty, and EST&P advisor, students will then sign up for the appropriate course number with the approved number of units. The EST&P Master's Project course is 39-660, however course numbers from partner engineering departments may also be used when registering for faculty supervised project work, as can other pre-approved appropriately supervised independent projects.

A maximum of 36 units of advisor-approved directed research / independent study / master's project can be counted toward the 36-unit Energy Project requirement (and a maximum of 12 of these units can be counted toward the Breadth Elective requirement).

This is usually taken as 39-660, or as the equivalent master's project courses in affiliated departments. To count towards the Energy Project requirement, a factorable letter grade must be assigned for the course.

Preceding written advisor approval is required.

Preceding written approval by the supervising faculty member is also required.

- A master's project approval request form is available on Canvas.
- This form requires a 1-page plan of study describing the project topic, expected outcomes, deliverables, and the method of evaluation.
- This form must be signed by both the student and the supervising faculty.
- Once approved, the student will be allowed to be registered for the appropriate number of units of EST&P master's project (39-660).
- Where a similar process or course number exists in the supervising faculty member's home department, that procedure may optionally be followed.

Copies of the completed departmental forms must also be submitted to the EST&P office to be included in a student's permanent records.

Summer Project Work:

Students wishing to count summer project work may register and pay appropriate number of units of 39-660 Master's EST&P Project or equivalent. With preceding approval from both the EST&P advisor and the supervising faculty, these units may count towards the Energy Projects Concentration requirement. Students wishing to carry out summer project work in an internship must discuss this with their academic advisor.³

All policies described above for project Independent Project Work apply to Summer Projects. To count towards the degree requirements, project / course supervision must be provided by an EST&P advisor or affiliated faculty member and a factorable letter grade must be assigned.

³ Project work carried out in an internship counted for the Applied Study internship requirement (39-661) may not be used toward the Energy Projects Concentration requirement.

II.B. EST&P Course Categories and Policies (cont'd)
Advanced Study, Energy Projects Concentration (cont'd):

ii. Project-Intensive Engineering Courses:

With advance approval from an EST&P advisor, regularly scheduled project-intensive engineering courses may count towards meeting the Energy Projects Concentration requirement. Approved courses are generally 12-unit graduate engineering courses that have a significant energy-related project integrated with the coursework (as indicated in the syllabus). In this context, a significant project represents 30 % or more of the overall grade in a 12-unit course.

Approved project-intensive courses include several regularly scheduled engineering classes that have a significant project component described in the syllabus. An up-to-date list is available on Canvas and at : https://www.cmu.edu/engineering/estp/_downloads/estp_project_courses-for-fall-2022.pdf, and examples include:

- 24-722 Energy System Modeling
- 24-618 Computational Analysis of Transport Phenomena
- 12-761 Sensing & Data Mining in Smart Structures and Systems
- 12-718 Environmental Engineering, Sustainability and Science Project
- 12-745 Advanced Infrastructure Systems Project
- 39-605 / 39-606 Engineering Design Projects
- 18-500 ECE Design Experience, 12 units (counting also as the 12 allowed undergraduate units)

In cases where project intensive courses satisfy degree requirements for both Engineering Concentration and Energy Projects Concentration, they can be used to satisfy both; however, the total unit count for the EST&P-ADS and EST&P-AAS degree requirements must be met at 120 and 126, respectively. The total unit count is then met by taking additional approved breadth elective courses.

iii. Breadth Elective Coursework

Breadth Elective Coursework has been described previously. Up to 12 units of general Breadth Electives can be used to count towards the Energy Projects Concentration. Ideally, the breadth elective will be related to a student's interests in project work. Advisor approval is required.

II.B. EST&P Course Categories and Policies (cont'd)

Applied Study (6 units):

EST&P-APS and EST&P-AAS students must successfully complete 3 units of career and professional development and 3 units related to a summer internship, separated across two courses.

a. Career & Professional Development for Engineering Master's Students:

EST&P-APS and EST&P-AAS students must successfully complete the 3-unit course 39-699 - Career & Professional Development for Engineering Master's Students before they start their required summer internship. This course will have students develop the professional skills necessary to be successful in a job/internship search. 39-699 is a required course, and the grade option for it is Pass/No Pass. This is the only course with a Pass/No Pass grade option that will count towards degree requirements. Students must receive a "Pass" grade to register for 39-661 - Master's EST&P Internship.

b. Master's EST&P Internship

Upon the student successfully completing 39-699 and securing a summer internship, EST&P-APS and EST&P-AAS students will enroll for 2 units of 39-661 – Master's EST&P Internship during the Summer/All section. 39-661 is a supervised internship course that engages students in activities that enhance learning from their internship experience through articulating their learning objectives, reflecting on their experiences, and communicating their experiences in professional modes such as reports. Master's EST&P Internship is a required course for any Applied Study degree and must be successfully completed before students may register for 39-662 - Communication of EST&P Internship Experience.

c. Communication of EST&P Internship Experience

Following their summer internship, EST&P-APS and EST&P-AAS students will participate in the Mini-1 course 39-662 - Communication of EST&P Internship Experience. The course provides a platform for students to communicate their internship experience to their peers and faculty through oral presentations. Students will also work on developing a LinkedIn profile and resume by taking advantage of the available university resources, allowing them to enhance career prospects. This is a required course for all Applied Study degrees.

C) Course Registration, Full/Part-Time Status, & Practical Training

Course registration:

Course registration is accomplished through CMU's Student Information Online (SIO) system, accessible through the HUB website. Students are responsible for enrolling in courses appropriate to their degree program. Students are encouraged to register as early as possible to reduce the chances of being wait-listed in a desired course. Students should refer to the University calendar for official registration dates (mid-November for Spring registration; mid-April for Fall registration - <https://www.cmu.edu/hub/calendar/index.html>).

Before beginning online registration, please carefully review the degree and course requirements summarized in various sections of this handbook (including appropriate appendices).

The EST&P degrees have been incorporated into the **Stellic** system (<https://www.cmu.edu/es/stellic/index.html>); students' degrees and concentrations can be planned, tracked, and audited within Stellic (the EST&P advisor can help make exceptions). Pay close attention to required courses in any concentration. Be aware that most graduate courses are taught only once per academic year.

The EST&P Academic Program Manager serves as the primary academic advisor for the program, the Director is the secondary advisor. Academic advisors are available to help students choose courses that meet both stated degree requirements and their personal / professional objectives.

Add / Drop Policies / Deadlines:

Students can modify their registered schedule by adding / dropping courses up until the add/drop deadline. Students taking undergraduate and master's level courses must follow the procedures and deadlines for adding, dropping, or withdrawing from courses as identified on the academic calendar. Information can be found at <https://www.cmu.edu/hub/registrar/course-changes/index.html>. There is a separate calendar for doctoral level courses. As a courtesy to others, students should drop a course as soon as they decide not to take it. This may allow a waitlisted student to be enrolled and will limit the disruption to any team-based projects.

Add / drop deadlines are usually at the end of the first week of classes for mini courses, or at the end of the first 10 days of classes for semester long courses. Add / drop deadlines for engineering courses follow the university wide academic calendar, and specific deadline dates can be found here:

<https://www.cmu.edu/hub/calendar/index.html>. Courses in the Heinz School (policy), Tepper School (business), and School of Computer Science often have their own unique academic calendars (including for add, drop, audit, and pass/fail deadlines), which is often different from the university academic calendar. In addition, doctoral (PhD) level courses may have different add / drop deadlines: such courses are department identified in SIO.

EST&P students must adhere to all course-specific deadlines.

Late drops are handled through the Drop Voucher system, which permits students a limited number of late course drops. Master's students are permitted one drop voucher per 12 months of study (beginning with the month they started) and may use only **one voucher per semester** (including summer). Courses dropped using a voucher will be removed from the student's transcript, **as long as the drop is confirmed in SIO by the student within 24 hours of receiving the automated voucher email.**

Students should always consult their academic advisor for details and to check the impact that specific add / drop events have on progress towards graduation and student status.

II.C. Course Registration, Full/Part-Time Status, & Practical Training (cont'd)

Full-time student status:

Full-time CMU students must register for a minimum of 36 units.

Unless admitted as a part-time degree-seeking student, all EST&P students are required to register as a full-time student each semester, for the number of semesters indicated in **Table I** and described below.

- Students in the Energy Science, Technology and Policy (**EST&P**) degree program complete their degree in **two** required full-time semesters⁴ of **48** units per semester, for a total of **96** units of qualifying coursework. They can begin in the fall or spring semester.
- Students in the EST&P – Applied Study (**EST&P-APS**) degree program complete their degree in **two** required full-time semesters⁴ of **48** units per semester and complete an additional **3**-unit professional development before their internship, a **2**-unit internship in the summer between two semesters, and a **1**-unit communication of internship course after their internship, for a total of **106** units of qualifying coursework.
EST&P-APS students **must** begin in the **spring** semester.
- Students in the EST&P - Advanced Study (**EST&P-ADS**) complete their degree in **three** required semesters⁵ of full-time study with a typical course load of **42** units per semester, for a total of **120** units of qualifying coursework. They can begin in the fall or spring semester.
- Students in the EST&P – Applied Advanced Study (**EST&P-AAS**) complete their degree in **three** required semesters⁵ of full-time study with a typical course load of **42** units per semester and complete an additional **3**-unit professional development before their internship, a **2**-unit internship in the summer between two semesters, and a **1**-unit communication of internship course after their internship, for a total of **126** units of qualifying coursework.
They can begin in the fall or spring semester.

Details on minimum and maximum units are given in Section III(D).

Part-time student status:

Part-time MS EST&P enrollment is an option available for students who have applied and received admission to a part-time degree program of study. This option is made available for students who would like to pursue an EST&P degree while maintaining external employment. Note that immigration regulations do not allow Carnegie Mellon University to issue F1 visa documents to a part-time MS degree-seeking student.

⁴ Students may also complete the **EST&P** and **EST&P-APS** programs in **three** semesters and remain in good academic standing, as the minimum full-time course load is 36 units per semester.

⁵ Students may also complete the **EST&P-ASA** and **EST&P-AAS** programs in **four** semesters and remain in good academic standing, as the minimum full-time course load is 36 units per semester.

II.C. Course Registration, Full/Part-Time Status, & Practical Training (cont'd)

Practical Training:

Curricular Practical Training (CPT)

When eligible, international students may carry out Curricular Practical Training (CPT).

The Office of International Education (OIE) determines eligibility based on immigration law / policy.

International students who are in good standing in the **EST&P-APS or EST&P-AAS** degree programs **may** be eligible for a Curricular Practical Training (CPT) summer internship after **one** full-time semester.

These degrees **require** completion of a CPT internship.

Students in the **EST&P-APS** degree program must begin in the Spring semester.

International students who are in good standing in the **EST&P-ADS** degree programs **may** be eligible for a Curricular Practical Training (CPT) summer internship after **two** full-time semesters.

These degrees **do not require** completion of a CPT internship.

International students who enter these two degree-programs (as well as the base **EST&P** degree program) in the spring semester are not eligible (a US student visa regulation) for CPT in the summer, as they will have only completed 1 full-time semester by summer.

During a CPT internship related to the **EST&P-APS or EST&P-AAS** degree programs, a student must register for 2 units of coursework in **Master's EST&P Internship** (39-661).

These units count towards your Applied Study Degree requirements.

During a CPT internship related to other degree programs, a student must register for at least 3 units of coursework in an appropriate course, as guided by your academic advisor.

These units may count towards your degree, in any category they fill appropriately.

Tuition must be paid for Internship units, and they will be billed at the part-time per-unit graduate tuition rate. Units for 39-661 may be eligible for scholarships.

Pre-completion Optional Practical Training (OPT)

When eligible, international students may carry out Pre-completion Optional Practical Training (OPT).

The Office of International Education (OIE) determines eligibility based on immigration law / policy, and provides guidance on implications for post-completion OPT.

Pre-completion Optional Practical Training (OPT) is also available to international students for US-based off-campus summer internships, as an alternative to CPT, and in some cases part-time employment during the academic year.

Students must apply early in spring semester to receive timely pre-completion OPT approval.

Summer course registration is not necessary for a pre-completion OPT internship.

In all cases, international students must consult with the Office of International Education (OIE) for eligibility before seeking an internship or signing an offer contract.

D) Miscellaneous Program Information, Student Status, and Financial Policies

Typical Completion Timelines:

Students may begin EST&P degree programs in either the Fall or Spring semesters, except students in the **EST&P-APS** degree program, who **must** begin in the Spring semester.

Students in the **EST&P** and **EST&P-APS** program typically finish in **two** full-time semesters. However, students may also complete these programs in **three** semesters and remain in good academic standing, as the minimum full-time course load is 36 units per semester.

Students in the **EST&P-ADS** and **EST&P-AAS** programs typically finish in **three** full-time semesters. However, students may also complete these programs in **four** semesters and remain in good academic standing, as the minimum full-time course load is 36 units per semester.

Depending on the starting semester and degree duration, students graduate in either the Fall or Spring semesters after completing the number of consecutive full-time semesters appropriate to complete the specific degree program.

Carnegie Mellon graduate students are expected to complete their degree requirements within the standard length of time for their program of study as outlined in the relevant Graduate Student Handbook. Standard program lengths for graduate students vary significantly – ranging from two semesters for some full-time master’s programs to several or more years for doctoral programs. Upon completion of the graduate program degree requirements, the degree will be certified by the student’s academic program in the semester in which the student completes the requirements.

Early Completion

Graduate students who consider the completion of all degree requirements in less than the standard length of time for their program of study may consult with their degree-granting program or department to determine if early degree certification is allowed and under what circumstances.

Extended or Longer-than-Standard Completion

Longer-than-standard degree completion may occur due to academic interruptions in making progress toward the degree as defined by the academic program, interruptions of full-time study or progress towards the degree due to serious, documented medical issues, or other unusual or unforeseen circumstances.

Master’s students who require longer than the standard time to complete their degree requirements are expected to remain in close contact with their graduate program and will be certified at the end of the semester in which they have completed their degree requirements. Students shall reference CMU Policy on Master’s Student Statute of Limitations (www.cmu.edu/policies/student-and-student-life/masters-students-statute-of-limitations.html) regarding guidelines and restrictions which place an upper limit on the maximum length of time allowable for master’s degree completion and certification.

Additional Guidance for Students

Program of study.

Students seeking guidance about their program of study and degree requirements should consult with their academic advisor and/or appropriate associate dean, financial aid, and student accounts. Students are expected to make normal progress toward their degree to graduate within the standard timeframe for their program of study. Under U.S. Federal Title IV regulations, student eligibility for federal financial aid is contingent upon enrollment in and successful completion of courses that are counted as credit toward their current degree program. To receive the maximum amount of federal financial aid for which they may be eligible, students must enroll each semester in at least 36 units that count toward their current degree level. (See separate guidance regarding integrated degree completion.) Students should consult with their designated college liaison in The HUB regarding billing and financial aid, particularly for early completion, longer-than-standard completion, or integrated undergraduate and master's degree programs.

International students.

Immigration status for students in F-1 and J-1 non-immigrant status is tied to making normal progress toward completing degree requirements. Therefore, F-1 and J-1 students who are considering completing their degree requirements early, anticipating longer-than-standard completion, or moving from an undergraduate to a graduate student classification (integrated undergraduate-graduate study) should consult with their designated advisor in the Office of International Education (OIE) to ensure compliance with immigration regulations.

Deferred Admission Policy:⁶

At the time of the admission offer, EST&P applicants may petition to defer admission for one semester or one academic year. A petition form submitted to EST&P and a written (email) decision will be returned to the applicant within approximately 14 days.

After the deadline to accept or defer admission has passed, applicants wishing to be reconsidered must reapply for admission. In such cases, EST&P sponsors the application fee, and will re-use any official tests scores, transcripts, and other documentation sent in support of the original application, if the applicant chooses.⁶

Switching Degree Programs:⁶

Admitted students that have already accepted admission but wish to change between EST&P degrees must follow the procedures to transfer to another CMU degree program. A student must apply to the new degree by the posted admission deadline (the EST&P program sponsors the application fee, and will re-use any official tests scores, transcripts, and other documentation sent in support of the original application). The student's application will be reviewed by the appropriate admissions committee. If admission is granted to the new degree, then the necessary degree change paperwork is submitted to the registrar and OIE, as appropriate.

⁶ Consult closely with the Director and Assistant Director to determine if deviations from the described policies will be allowed.

II.D. Misc. Program Information, Student Status, and Financial Policies (cont'd)

Minimum and Maximum Units per Semester:

Full-time CMU student status requires registering for a minimum of 36 units per semester.

The typical minimum course load (not including units for Applied Study) for full-time students enrolled in the EST&P and EST&P-APS degrees is 48-units of degree satisfying courses per semester, thereby enabling the completion of the 96-unit or 102-unit degree requirement in the required 2 semesters. Deviations from the typical minimum unit requirement must be approved by an EST&P advisor, and may lead to additional time for degree completion.

The typical minimum course load (not including units for Applied Study) for full-time students enrolled in the EST&P-ADS or EST&P-AAS degrees is 40-units of degree satisfying courses per semester, enabling completion of the 120-unit or 126-unit degree unit requirements in the required 3 semesters. Deviations from the typical minimum unit requirement must be approved by an EST&P advisor, and may lead to additional time for degree completion.

As required by F1 visa rules, international students must maintain full-time student status (i.e., registering for at least 36 units) in all semesters, including their last semester, and must make normal progress toward degree completion each semester. Therefore, international students are advised that a semester course load below 48 units towards the EST&P and EST&P-APS degrees or 40 units towards the EST&P-ADS and EST&P-AAS degrees may affect student visa status, if such students are deemed as not making normal progress towards degree completion.

Deviations from the minimum unit requirement must be approved by an EST&P academic advisor, after student consultation with the Office of International Education (OIE).

An EST&P student's schedule is over-loaded when it exceeds 48 units per semester.

Students are permitted to register for up to 54 units, to facilitate scheduling of preferred courses.

Once the semester starts, as the drop deadline approaches students should return to the maximum units. To be eligible for an overload (exceeding 48 units per semester), students must petition their academic advisor for advance approval.

An academic advisor will require a minimum Quality Point Average (QPA) of 3.6 or above, as of the prior CMU/EST&P semester, to consider an overload.

Official audit (which are not generally approved) or pass/fail units **do** count toward full-time or overload status (but not towards degree requirements).

Master's Thesis:

Energy Science, Technology and Policy is a coursework-based professional master's program, and a Master's Thesis option is not available.

II.D. Misc. Program Information, Student Status, and Financial Policies (cont'd)
Courses without Factorable Letter Grades (cont'd):

Courses without Factorable Letter Grades:

Under *limited circumstances*, for courses other than 39-699 Career & Professional Development for Engineering Masters Students, a student may be permitted to register or to convert a course registration to Pass/No Pass (or Audit) with appropriate advisor and instructor approval.

To receive EST&P advisor approval, a student must submit a completed petition form that explains why they would like to complete coursework that does not count towards the degree and does not receive a letter grade.

Please note that EST&P policy is to DECLINE advisor approval of Pass/No Pass (or Audit) for any student registered for an overload schedule of more than 48 units.

Courses taken as Pass/No Pass (or Audit) will not count toward EST&P degree requirements, apart from 39-699 (Career & Professional Development for Engineering Masters Students), which is a Pass/No Pass course required for the EST&P-APS and EST&P-AAS degrees. Students in all EST&P degree programs are encouraged to take 39-699.

The EST&P program prefers the Pass/No Pass grade option to the Audit grade option.

Officially auditing a course means being present and participating in a class without receiving academic credit or a letter grade. To audit a course, one must first register for the course and then file a request for audit that requires program and instructor approval. The units of audited courses count toward the maximum course load units, but do not count toward degree requirements. A successfully completed audit course will appear on a transcript with an 'O' audit designation, which is not a factorable letter grade (it does not get factored into the QPA). The scope and extent of a student's participation must be arranged and approved by the course instructor in advance. Auditors are expected to attend class as though they are regular class member. Some faculty may require an auditor to submit homework and to participate in team project work. Students who do not attend the class regularly, or prepare themselves for class, or meet other instructor audit requirements will receive a blank grade.

If a student decides they cannot complete a class for letter grade and are not approved to convert that course registration to Pass/No Pass (or Audit), they must drop the class in SIO prior to the drop deadline, have and use a voucher appropriately by the voucher deadline, or withdraw and receive a W on their transcript.

CMU Canvas System:

Most instructors use the CMU Canvas web service to manage course communications, assignments, and reference materials. Carnegie Mellon's Canvas homepage is: <https://cmu.instructure.com/>. Login credentials are the CMU single sign in credentials (Andrew ID credentials).

Students are expected to check Canvas weekly and respond to requests for Canvas submissions appropriately. Students will also use Canvas to submit onboarding forms required by the program, to access the course syllabi repository, and to submit their resume if they wish to be included in the EST&P Resume Book.

EST&P uses Canvas for program and professional communications in a "course" entitled **EST&P Professional Resources ('23-'24)**. Students are automatically enrolled in the EST&P Professional Resources ('23-'24) "course". Please check this Canvas "course" frequently as it contains important program forms, program and course information, and career related postings. EST&P Professional Resources ('23-'24) will be updated throughout the academic year with announcements, calendar of events, professional resources about jobs and internships, program news and updates, energy links, and a discussion board.

II.D. Misc. Program Information, Student Status, and Financial Policies (cont'd)
Courses without Factorable Letter Grades (cont'd):

Graduate Transfer Credits:

Up to 12 units of graduate work completed at other universities may be considered for transfer credit, provided that the course work is part of a graduate program leading to the degree sought and that the grade in each course is 3.0 or greater. Transfer credit is not granted prior to admission to EST&P and are only approved after the student has satisfactorily completed at least 36 units of graduate courses at Carnegie Mellon. Transfer credit requests will be handled on a case-by-case basis, with special consideration to whether the transfer credits can be applied toward the EST&P degree requirements. Criteria used to evaluate transfer credit are: accreditation status of the sending institution, course description, learning outcomes, syllabus, and student work products. Approval of transfer credits to CMU is not a guarantee that courses count towards the EST&P degree unit requirements. Transfer credits will not substitute for EST&P's core classes. CMU's policy on transfer credit evaluation can be found here: <https://www.cmu.edu/policies/student-and-student-life/transfer-credit-evaluation-and-assignment.html>

Cross-Registration/PCHE:

Carnegie Mellon University offers students the opportunity to take courses for credit through a cross-registration program (see Pittsburgh Council on Higher Education (PCHE) and Cross-registration below) and through the receipt of transfer credit from other accredited institutions. The Carnegie Mellon University transcript will include information on such courses as follows: Carnegie Mellon courses and courses taken through the university's cross-registration program will have grades recorded on the transcript and be factored into the QPA. All other courses will be recorded on this transcript indicating where the course was taken, but without grades. Such courses will not be considered for academic actions, honors or QPA calculations. CMU's policy on cross-registration can be found here: <https://www.cmu.edu/hub/registrar/registration/cross/>

II.D. Misc. Program Information, Student Status, and Financial Policies (cont'd)

Tuition and Cost of Attendance:

EST&P tuition is charged at the standard College of Engineering master's student rate.

Students are billed each semester for one-half of the academic year graduate tuition.

The current College of Engineering's graduate tuition and fees are posted on the HUB website's [Graduate Tuition & Fees page](#). There is usually a modest increase in tuition at the beginning of every Fall Semester.

An EST&P or EST&P-APS degree student will complete the program in two semesters of full-time study and must pay full-time tuition for two semesters (most likely with a modest increased rate for the 2nd semester tuition if they start in the Spring Semester).

An EST&P-ADS or EST&P-AAS degree student will complete the program in three semesters of full-time study and will pay for three semesters of full-time tuition (most likely with a modest increased rate at the beginning of every Fall semester after the first semester).

An EST&P-APS and EST&P-AAS degree student will also complete 2 units of a summer internship and tuition for those units are billed at the part-time unit rate for that summer. Scholarships for these units are available.

The overall cost of attendance is estimated for the College of Engineering on the Hub website [Itemized College of Engineering Cost of Attendance](#) page; costs include activity & technology fees, transportation, off-campus housing, health insurance, etc..

Financial Aid:

Students in the EST&P program are self-funded, are funded by their employer, or are funded by external scholarships, fellowships, and educational loans. General information on [financial assistance for engineering graduate students](#) is available on the College of Engineering site, as is additional information about [graduate student fellowships and assistantships](#). Graduate students should consult the graduate student financial aid information found on the HUB website: <https://www.cmu.edu/sfs/financial-aid/graduate/index.html>. Students will find the Graduate Financial Aid Guide, information about funding options, and how to apply for financial aid, as well as other helpful links. Those who find themselves in need of immediate funds for emergency situations should contact the Office of the Dean of Student Affairs (see also Appendix A) www.cmu.edu/student-affairs/index.html.

Emergency Loans:

The [Office of the Dean of Student Affairs](#) offers short-term emergency loans for supplies, medication, food, or other unexpected circumstances. The loans are interest-free and for short periods of time (not longer than a month).

Taxes:

The deadline for local, state, and federal taxes is April 15. Questions about your tax status should be addressed to the [IRS](#) or the [Pennsylvania Department of Revenue](#). Although subject to federal taxes, student stipends are generally not assessed local or state taxes.

III) Academic Standards and Graduation Requirements

A) Course and Minimum QPA

Apart from 3 units of 39-699 (Career & Professional Development for Engineering Masters Students) counted for the Applied Study Degree programs, all courses that are counted towards EST&P degree requirements must be taken for credit with a factorable letter grade assigned (e.g., A, B, C, D, R).

Apart from 3 units of 39-699 (Career & Professional Development for Engineering Masters Students) for the Applied Study Degree programs, all courses taken as pass/no pass (or audit⁷) grading DO NOT COUNT towards the unit EST&P degree requirement.

For each course taken, the policies and procedures of the instructor, the department, and the college in which the course is offered must be followed by EST&P students. The grade assigned by the course professor / instructor is final and cannot be changed. The decision to use plus or minus grading for graduate level courses is at the discretion of each course instructor. Mid-semester Grades, which are optional, and Final Grades are posted online to SIO.

Carnegie Mellon graduate students are graded on a letter grade scale, which (for courses at the graduate level) can optionally include plus or minus designations at the discretion of the course instructor.

The factorable letter grades (and numerical equivalent factor) are interpreted by EST&P as:

A (4.0) -- Excellent; student work exceeds expectations

B (3.0) -- Good; work is acceptable for an EST&P student

C (2.0) -- Marginal; student work is not up to EST&P program standards

D (1.0) -- Unacceptable work for an EST&P student, does not count towards the degree

R (0.0) -- Unacceptable work for an EST&P student, does not count towards the degree

A plus/minus designation adds/subtracts 0.3 to all grades (A+ and D- are not allowed).

EST&P students, in any degree program, must maintain a minimum overall QPA⁸ of 3.0 (B) or above (in all courses that count towards the EST&P degree) and must maintain a minimum QPA over all of their **required** courses of 3.0 (B) or above (including: 39-610, 39-611, 39-612, and 39-613; and any additional courses required for students in CHE, MSE, or MEG Engineering Concentration(s)) to remain in good academic standing and to satisfy the requirements of the Master's Degree.

Students with cumulative QPAs, or current semester QPAs, lower than 3.0 at the end of a semester are placed on **academic probation**.⁹ If a student obtains a grade below a C+ (2.3) in any required course, or a student has below a 3.0 QPA in their core courses, they will be immediately placed on **academic probation**. Students on academic probation are notified by an EST&P Academic Advisor or EST&P Program Director. Students on academic probation must increase their cumulative, current semester, and required course QPA to 3.0 or better during their next full-time academic semester.

No course with a grade lower than C (2.0) may be counted toward the Master's Degree requirements, and no **required** course with a grade lower than C+ (2.3) (including: 39-610, 39-611, 39-612, and 39-613; any additional courses required for the student's selected Engineering Concentration(s), for those in CHE, MSE, or MEG concentrations may be counted toward the Master's Degree requirements.

When calculating the QPA to meet EST&P degree graduation requirements, the average grade of only the course units (with a factorable letter grade) that meet degree requirements for a student's degree shall be at least a B — 3.0. If a student has taken more than minimum number of total units for the distinct degrees, then the student may choose any of the 96 of the first 120 units attempted for the EST&P and EST&P-APS degrees, or 120 of the first 144 units attempted for the EST&P and EST&P-APS degrees, to compute the grade average, providing the courses selected meet all degree requirements.

⁷ EST&P generally does not approve audit courses.

⁸ CMU uses a quality point average (QPA), which is identical to a grade point average (GPA).

⁹ See next section on academic probation.

B) Academic Probation

At the end of each semester, after grades have been posted, the academic performance of each student is reviewed. Courses that negatively affect the QPA cannot be removed from the requirement unless another completed course can replace the course with the lower grade and the student has not reached the maximum number of total units. The QPA for academic review is computed based on the guidelines for graduation requirements.

Any student with a Required Course QPA of less than 3.0, or with a Cumulative QPA of less than 3.0, or with a QPA of less than 3.0 in the most recently completed full semester is immediately placed on academic probation. Additionally, if a student obtains a grade below a C+ (2.3) in any required course, they will be immediately placed on academic probation. The student will receive an electronic notification (email) of their academic probation status, including a description of the specific terms of their probation and the timeframe and requirements to remove probation. All students on probation are subject to the following sanctions:

- The student cannot receive a program scholarship or program support.
- The student cannot be selected to receive awards, travel / conference funding, etc.
- The student may not formally represent EST&P as an officer or other positions in a student club or campus organization.

In most cases, a student on academic probation will automatically be removed from probationary status at the end of the subsequent enrolled semester if they qualify to do so.

If an EST&P student has a Required Course or Cumulative QPA lower than 3.0 during an initial and subsequent semester, the student may be permanently dropped from the EST&P program and may not graduate. If this occurs, the student will have an opportunity to appeal to the Provost. Unless the decision is overturned, the student is not entitled to a refund of tuition or student fees.

C) Process for Appealing Final Grades

Final grades will be changed only in exceptional circumstances and only with the approval of the instructor and the department, unit, or program. Grading is a matter of sound discretion of the instructor and final grades are rarely changed without the consent of the instructor who assigned the grade.

The following circumstances are the unusual exceptions that may warrant a grade appeal:

- (a) the final grade assigned for a course is based on manifest error (e.g., a clear error such as arithmetic error in computing a grade or failure to grade one of the answers on an exam), or
- (b) the faculty or staff member who assigned the grade did so in violation of a university policy.

The full university policy can be viewed here:

<https://www.cmu.edu/graduate/policies/appeal-grievance-procedures.html>

D) Degree Planning and Tracking : Stellic

It is the responsibility of each student to ensure that she or he is enrolled in courses to remain in good standing with the degree program and to complete all the necessary coursework for graduation according to the degree timelines. Each student is assigned an academic advisor, who is communicated to you via email and is listed in the HUB Student Information Online (SIO).

Stellic:

The EST&P program uses the degree planning and tracking (auditing) interface supported by CMU called Stellic (academicaudit.andrew.cmu.edu). Stellic functions as both a degree audit and a semester-to-semester scheduling tool. Degree audit software allows students to keep track of degree requirements so that they can stay on track to graduate. Students can view degree requirements, see which courses are pre-requisites and co-requisites, then drag-and-drop classes into their schedules and share their course plans with their academic advisors. Stellic was founded and developed by CMU undergraduates and was designed to be easy to use and responsive to the needs of CMU students and academic advisors.

The EST&P program's degrees have been incorporated into the Stellic system and all students' degrees and concentrations can be planned and tracked within Stellic, including auditing the courses taken / planned with respect to degree requirements. If you have questions concerning your degree planning or audit, please discuss with your academic advisor.

EST&P aims to use Stellic as official degree audits, unless exceptional circumstances arise that fall outside Stellic functionality. Note that this system is continually improving, and there are very few exceptional circumstances; in most cases, Stellic audits can be modified to catch new circumstances.

Students should work with their advisor to ensure that Stellic audits are accurate.

E) Graduation Requirements and Statute of Limitations

It is the responsibility of each student to ensure that she or he has completed all the necessary coursework for graduation. The EST&P Director and Program Manager / Academic Advisor are available to advise students during the semester, but only the student can be held responsible for failure to meet graduation requirements. Note that the EST&P curriculum and graduation requirements may be revised from time to time. However, the requirements in effect at the time of a student's matriculation will dictate the graduation requirements that must be followed (unless approved by the student and advisor).

All units required for a master's degree in the College of Engineering, whether earned in residence or transferred from another institution, must be recorded on the transcript within seven years of the date the student enrolled in the program.¹⁰ This statutory period can be extended by the College of Engineering's Associate Dean for Graduate and Faculty Affairs for special circumstances that do not make it possible for the student to complete the requirements within the statutory period. Any request for a waiver of the statute of limitations for master's degree studies must be approved by the EST&P Director and by the College of Engineering's Associate Dean for Graduate and Faculty Affairs. The waiver request must explain the exceptional circumstances that warrant an extension. For cases in which a waiver is granted, the waiver will cover specific courses and will specify a period for completion of the program.

As outlined in the Master's Students Statute of Limitations, <https://www.cmu.edu/policies/student-and-student-life/masters-studentsstatute-of-limitations.html> students will complete all requirements for the master's degree within a maximum of seven years from original matriculation as a master's student, or less if required by a more restrictive department, school, or college policy. Once this time-to-degree limit has lapsed, the person may resume work towards a master's degree only if newly admitted to a currently offered master's degree program under criteria determined by that program.

Under extraordinary circumstances, such as leave of absence, military or public service, family or parental leave, or temporary disability, a school or college may, upon the relevant department's recommendation and with the written approval of the dean (or designate), defer the lapse for a period commensurate with the duration of that interruption.

Students who are pursuing a master's degree as part-time students for all semesters of their program, as approved by their program, may also appeal to their program or department for extension of the time to degree limit.

¹⁰ For more details on the University's Statue of Limitations policy, visit here:
<https://www.cmu.edu/policies/student-and-student-life/masters-students-statute-of-limitations.html>

F) Leave of Absence, Withdrawals & Enrollment Verification

Students in the EST&P program are expected to attend all classes and participate in program activities. This excludes any defined academic break periods, and official University holidays. For the most up-to-date University calendar please see: <https://www.cmu.edu/hub/calendar/index.html>.

Leave of absence:

A student may need to take a temporary leave of absence for many reasons. This is done by filing a Leave of Absence form with the HUB after securing the appropriate signature approvals. The leave will take effect on the date that the form is signed by the Dean of Engineering. Return from a voluntary leave of absence requires program approval through a Request for Return from Leave of Absence form. Students in good standing in all courses, and with no current or pending academic action when taking a Leave of Absence, will be reinstated with the same standing as prior to the leave. Students in poor standing, on academic probation, or with an academic integrity violation at the time of their Leave of Absence, must submit a written request for re-instatement. This request will be evaluated by the EST&P admissions committee, who will respond in writing to the request within two weeks. Requests for reinstatement must be submitted within the time limit imposed by the 7-year statute of limitations.

Withdrawal:

A student who decides to leave the university with no intentions of returning is required to file a Withdrawal form with the HUB. A student cannot return from a Withdrawal. For more information visit the University's [Student Leave](#) and [Student Return](#) policies.

Withdrawal of Degree:

The university reserves the right to withdraw a degree even though it has been granted should there be discovery that the work upon which it was based or the academic records in support of it had been falsified. In such a case, the degree will be withdrawn promptly upon discovery of the falsification. The complete reference to this university policy is available at:

<https://www.cmu.edu/policies/student-and-student-life/withdrawal-of-a-degree.html>.

Enrollment Verification:

Enrollment Services is the only University office that can provide an official letter of enrollment, an official transcript, or an enrollment verification.

Enrollment verification can be requested online through [The HUB](#).

A student can request the EST&P program to provide a letter certifying their Engineering Concentration or Advanced Study Concentration, as this information is not specified on either the diploma or transcript.

IV) Student Responsibilities, Resources

A) Degree and Program Requirement Knowledge

Students are responsible for successfully completing the program, being aware of the rules and policies, and swiftly resolving any issues. When questions arise, students should first consult this EST&P Graduate Handbook, the EST&P Canvas pages, the official CMU website, the HUB, SIO, Stellic, and other appropriate official references. If further clarification is needed, students should consult with EST&P staff, especially with the student's academic advisor. Students must always verify informal and unofficial sources of information, such as word of mouth from fellow classmates, through the official sources listed above, and always verifying with their academic advisor.

Changing Academic Requirements and Policies:

The EST&P program changes requirements sometimes, to continually improve the program.

EST&P uses a "grandfather" policy regarding these changes; every student has the right to graduate:

- (a) under the policies in effect at the time of entry into the graduate program, or
- (b) under the policies in force at the time of receiving the degree.

Student Handbook:

It is the responsibility of each student to read and understand the contents of this handbook.

This handbook is not exhaustive and is subject to change, clarification, and revision at any time.

B) Academic Advisor

The role of the Academic Advisor is complex and can vary from student to student.

At least three primary roles can be identified: evaluator, permissions grantor, and counselor/mentor.

The Academic Advisor is responsible for evaluating the student's progress toward degree completion, for granting written approval for specific degree requirements / exceptions, and for providing guidance to assist individuals achieve successful degree and career outcomes.

As such, students should meet with their advisor to obtain specific information on course options and degree progress, discuss or obtain written approval required for courses or degree exceptions, or to get career and professional advice.

Advisors do their best to provide information and point students to relevant resources.

Keep in mind:

- The EST&P Academic Advisor is a cooperative partner, along with other CMU resource partners, helping each student stay on track towards academic and professional career success.

Students are ultimately responsible for their own success.

- Conversations with your Academic Advisor are not considered "written approval." Written approval is defined as clear approval indicated on a signed form, on a note in the official student file (such as in Stellic), in a letter, or in an email.

When required, permission is granted only by written approval.

- An Academic Advisor may provide broad context and specific positive / negative aspects related to a particular decision path: an Academic Advisor does not "make a decision for students."

Decisions are made exclusively by the student.

*IV.B. Academic Advisor (cont'd)***Change of Advisor:**

The Academic Program Manager serves as the primary Academic Advisor for all EST&P students, while the Director serves as the secondary academic advisor. It is the responsibility of both the Advisor and Student to seek accommodations of differences in good faith. If a student wishes to change their primary Academic Advisor, this can be done via an email request to the Director, who will consult with the student and make an update to the student's file if granted.

C) Academic Calendar, Registration, Pre-Requisites, Degree Planning

EST&P and the [College of Engineering](https://www.cmu.edu/hub/calendar/index.html) adhere to the official CMU Academic Calendar. The Academic Calendar can be found at <https://www.cmu.edu/hub/calendar/index.html> and provides information on all deadlines including registration dates, class start dates, add/drop deadlines, exam dates, and more.

Note that BS/MS courses and PhD courses may have different specific calendars (especially add/drop deadlines). The [Heinz College](#) and the [Tepper School of Business](#) follow their own calendars, with dates that differ from the university's calendar for add, drop, audit, and pass/fail deadlines.

EST&P students must adhere to these deadlines if they are taking courses from those colleges.

Registration for courses begins in April (November) for the Fall (Spring) semester.

CMU students are not permitted to register for two courses that conflict in time.

It is not uncommon to be waitlisted from some classes at the time of registration up until the tenth day of class. This is common practice across the university to ensure that students within their home department have priority to register for courses. Individual departments and instructors control and manage waitlists. As a courtesy to others, students should drop a course as soon as they decide not to take it. This may allow a waitlisted student to be enrolled and will limit the disruption to any team-based projects.

Courses at CMU generally have specified pre-requisites, which limit the ability of undergraduate students without pre-requisites to register for such courses. As a graduate student, SIO will allow you to register for courses without having the published prerequisite. It is each student's responsibility to ensure they have adequate background knowledge to be successful in the courses they take.

Students are responsible to track their progress towards completion of EST&P degree requirements by monitoring course registration and degree progress in Student Information On-Line (SIO) and Stellic. If further clarification is needed, students should consult with their academic advisor, who maintains the official tracking of degree progress.

D) Semester Timeframes and Attendance Requirements

All EST&P students must be physically present and attend classes from the beginning to the end of each semester. All EST&P students must attend final exams as scheduled by the university and individual course instructors. Neither the EST&P program nor course instructors have control over the university exam schedule. Students should keep this in mind when arranging travel at the end of a semester. Having purchased airline tickets is not an acceptable excuse for missing a final exam.

Proper registration for appropriate courses, attending courses and exams throughout the semester and finals, and maintaining an appropriate QPA (discussed elsewhere herein) are necessary conditions to stay in good standing with the program. Delays caused by failing or dropping a class, or academic probation due to poor grades, are not allowable reasons for extending a program of study.

E) Petitions for Exceptions and General Requests

General Petition Form:

If an EST&P student wants to petition an exception to a degree requirement rule or policy, the student must first set a meeting with their academic advisor to discuss the specific rule and their unique curricular circumstances for attaining an exception. After this meeting, the student should submit a general petition form for review by either the curriculum committee and/or the relevant department representative, as appropriate.¹¹ The academic advisor will do this on the student's behalf.

Students will be notified promptly concerning the decision on their petition.

Petition to Change Engineering or Advanced Study Concentration:

EST&P students are admitted into a degree program with an Engineering Concentration as requested at the time of application. To petition for a change in Engineering Concentration or Advanced Study Concentration, the following rules must be followed. EST&P students must complete their first semester under their admitted concentration before petitioning to change concentrations. EST&P students must first meet with their academic advisor to discuss the feasibility¹² of an Engineering Concentration change. After this meeting, the student should submit a completed general petition form¹¹ and associated documentation¹¹ for review by either the curriculum committee and/or appropriate department representative(s), as appropriate.

The academic advisor will do this on the student's behalf. The form must be submitted¹¹ before the end of the first week of class in the semester the student will graduate. Students will be notified promptly concerning the decision on their petition. Students cannot change Engineering or Advanced Study Concentration to extend the time of their studies.

Petition to Change Degree Programs:

EST&P students are admitted into a specific degree program. In some circumstances, students can change degree programs. Whether and how this can be accomplished is determined through consultation with your academic advisor.

F) Miscellaneous Items and Responsibilities

Change of Address:

Students are responsible for notifying EST&P and the HUB of all address changes in a timely manner. Students will be held responsible for any failure to receive official college notices due to having an incorrect address on file; F-1 students may jeopardize their status if address information is not kept current. Students can change their address using SIO, which is available via the HUB website:

<http://www.cmu.edu/hub/index.html>.

Timing for Requests and Replies:

Please allow a minimum of 24 hours (one business day) to process a required form or to respond to an email request. EST&P Staff may occasionally accommodate a "last minute" request but cannot guarantee availability or appropriate processing.

Suggestions for Success:

A few general guidelines / expectations for students to have a successful tenure within the EST&P program are that students:

- Participate in the EST&P program, energy activities, and CMU community.
- Take responsibility for their learning, decision-making, actions, and well-being.
- Be respectful of fellow students, professors, and EST&P staff members and their time.

¹¹ The required documentation and associated deadlines may be modified at the discretion of the academic advisor. However, some written documentation should be provided for student's records.

¹² This feasibility includes a clear reasoning, as well as a plan and path to maintaining good academic standing and graduating within the appropriate timeframe of the student's degree.

G) Professional Development and Other Resources and Opportunities

Carnegie Mellon University, the EST&P program, and the Scott Institute for Energy Innovation, offer several professional development opportunities and benefits, such as: on-campus career fairs, professional networking opportunities, workshops, career counseling, conference registration and travel funds, professional development support, scholarships, and Graduate Student Assembly (GSA) representation. The following list identifies opportunities and application procedures.

The Carnegie Mellon Career and Professional Development Center (CPDC):

The Carnegie Mellon [Career and Professional Development Center](#) (CPDC) provides numerous career preparation and job search resources. These include guidance in preparation of resumes and cover letters, interviewing skills, offer negotiation and career networking, and career fairs.

CPDC staff hold drop-in sessions¹³ and teach a 3-unit course entitled “Career & Professional Development for Engineering Master’s Students” (39-699). We strongly recommend all EST&P students take 39-699 in their first semester. It is a requirement to take in the Applied Study degree programs.

CPDC sponsors an Energy Career Fair in association with Energy Week, sponsored by the Scott Institute of Energy Innovation. Information about the Energy Career Fair and Energy Week will be communicated during the year.

Be sure to sign up for [Handshake](#) for full access to CPDC resources.

EST&P Business Cards:

EST&P students have the option to request CMU business cards, during a select period that will be announced. The EST&P program sponsors the first 100 cards. Business cards can be requested online [here](#).

EST&P Professional Development Allocation:

EST&P students may apply to receive up to \$50 per semester in professional development expense reimbursement, during each semester of full-time enrollment in the EST&P program. Expenses MUST be pre-approved and allocated by the EST&P directors. Expenses must meet CMU guidelines for allowable non-employee expense reimbursement. Typical allowed expenses include professional certification exams, poster printing, and the like.

EST&P Alumni, Program, and Director Scholarships:

A limited number of scholarships are offered to incoming EST&P students having exceptional qualifications. Scholarship offers are made by the admissions committee at the time that admission is offered; recipients currently receive ~ 20-50% reduction in their semester tuition. Scholarship recipients must be full-time EST&P students. Scholarships may be extended for an additional semester if funding is available and if the student is in good academic standing (as judged by QPA and collaboration with faculty). Scholarships are not offered at any time other than admission.

EST&P Intern Opportunities:

Several intern opportunities with the EST&P program are available throughout the year. Opportunities are announced during the academic year. These may include requests for a Course Assistant for an EST&P related class or for a Student Ambassador to support EST&P development and marketing, etc. When available, EST&P will advertise these opportunities to all eligible students and provide details on the application process.

¹³ These are still being done virtually in 2022-2023 owing to the ongoing pandemic policies.

IV.G. Professional Development and Other Resources and Opportunities (cont'd)

The CMU Graduate Education Office:

The CMU Graduate Education office provides numerous programs, workshops, and services of value to EST&P professional master's students. Check their [Professional Development page](#) for up-to-date listing of events.

Graduate Student Assembly (GSA):

The GSA is a university-wide branch of student government that represents all graduate students at Carnegie Mellon. EST&P students elect their own representative to GSA, who serves as their contact regarding GSA issues and events.

GSA returns a portion of EST&P students' fees to the EST&P student group, if there is an EST&P representative. These funds can be used to support social and educational events, as decided by the EST&P students (and following CMU spending policies).

EST&P GSA representatives may be elected by students or appointed by the EST&P program office. Current representatives often assist to find their successor(s). Note that EST&P asks each GSA representative to sign a responsibilities agreement.

Responsibilities of the EST&P GSA representative include attending GSA meetings, organizing at least one social event per semester (i.e., rock climbing, bowling, ice skating, etc.), sitting on the funding award committee, acting as a liaison between EST&P program staff and students, and helping with EST&P events.

Graduate Student Conference Funding:

[Graduate Student Conference Funding](#) is available through the Graduate Student Assembly and the Provost's Office and is managed by the Office of the Assistant Vice Provost for Graduate Education. Award amounts are up to \$750 per student or up to \$1,500 per group. Preference is given to students making presentations. The open application periods and deadlines are listed on the [graduate education website](#). To obtain funding, students must read and follow all directions and ensure they meet all criteria for acceptance, including required post-conference activities of reporting and publicity participation.

EST&P Conference Travel Supplemental Reimbursement:

There are opportunities throughout the academic year to attend energy related conferences, present posters or papers, and represent the EST&P program. If you wish to attend and participate in a professional meeting or conference, and to represent EST&P, you may request financial support for your travel by submitting a Conference Travel Application to EST&P requesting financial support. This form must be **submitted for review at least three weeks in advance of the travel date**.

Awards are contingent on availability of program funds, and priority is given for those making a paper or poster presentation, and for those making cost efficient travel plans. Your professional development allocation will be used as part of any awarded conference funding, and preference is given to supplement GSA conference funding awards. Only one supplemental request for travel support per student will be considered. Submission and approval of a Conference Travel Application is separate from but related to the travel reimbursement process.

You are responsible for reading and abiding by the University's Business and Travel Expense Policy. Receipts and justifications must be submitted within one week of purchase date or return from travel. Failure to follow University policy can lead to disciplinary action and/or non-payment of travel. For both professional development and travel reimbursement process, please contact the EST&P program coordinator for further detail and instructions.

H) Problems, Graduate & University Ombudsperson, Grievance Resolution

Graduate students are expected to discuss any concerns or grievances with members of their academic program, including the Director, Academic Advisor, and/or Program Ombudsperson, as appropriate. If a student wishes, the Associate Dean for Graduate and Faculty Affairs of the College of Engineering is also available for consultation. All such discussions will be considered confidential provided no laws are broken and unless otherwise told by the graduate student.

EST&P Ombudsperson:

Within the EST&P program, students are encouraged to work with the Director and Academic Program Manager when problems arise. However, situations may occur where students need advice on some aspect of their activities or interactions with others in the EST&P program yet may not feel it is appropriate to speak with their advisor or another member of the EST&P staff or faculty. While close friends and family are important resources in such situations, it is also true that their scope of experience might not include working toward a master's degree in engineering at CMU. For this reason, EST&P relies on a Graduate Ombudsperson from our administrative home department.

The Materials Science and Engineering Ombudsperson is Paige Houser and EST&P students may contact her at phouser@andrew.cmu.edu. She is available to consult with students about any situation that affects their work and, where appropriate, offer advice or attempt to resolve a problem. Conversations with the Ombudsperson are confidential (provided no laws are broken and unless otherwise told by the graduate student) and the Ombudsperson will not communicate information to the EST&P program office, Director, or Academic Program Manager, Engineering Department Heads, or other faculty/staff members without the student's consent.

University Ombudsperson:

In the past, the Assistant Vice Provost for Graduate Education was the university Ombudsperson for graduate students. The office is in transition at this point with the recent retirement of the previous Assistant Vice Provost for Graduate Education. When a new person is assigned this role, we will update the Handbook.¹⁴

The Ombudsperson's role is to provide support for graduate students under complete confidentiality (provided no laws are broken and unless otherwise told by the graduate student). The Ombudsperson will assist and support graduate students to help clarify issues and suggest possible solutions to problems, as well as direct students to the appropriate departmental and college processes and resources for handling conflicts.

Grievance Resolution:

If resolution of an academic grievance or concern cannot be obtained within their academic departments, graduate students may file a formal appeal of academic actions to the Associate Dean for Graduate and Faculty Affairs of the college. If a resolution cannot be reached by this process, an appeal may be made to the Provost at the request of either the student or the college.

A summary of the graduate student appeal and grievance procedures is available at the following link: www.cmu.edu/graduate/policies/appeal-grievance-procedures.html

¹⁴ If needed, Maggie Sikora, Ed.D. is the Director of Graduate and Post-Doctoral Affairs in the Office of the Vice Provost for Education.

D) Safeguarding Educational Equity

CMU Policy Against Sexual Harassment and Sexual Assault:

The University prohibits sex-based discrimination, sexual harassment, sexual assault, dating/ domestic violence, and stalking. The University also prohibits retaliation against individuals who bring forward such concerns or allegations in good faith.

The University's Sexual Misconduct Policy is available at <https://www.cmu.edu/policies/administrative-and-governance/sexual-misconduct/index.html>

The University's Policy Against Retaliation is available at <https://www.cmu.edu/policies/administrative-and-governance/whistleblower.html>

If you have been impacted by any of these issues, you are encouraged to contact any of the following resources:

- Office of Title IX Initiatives
 - <https://www.cmu.edu/title-ix/>, 412-268-7125, tix@cmu.edu
- University Police
 - <https://www.cmu.edu/police/>, 412-268-2323

Additional resources and information can be found at:

<https://www.cmu.edu/title-ix/resources-and-information/index.html>

Maternity Accommodation Protocol:

Students whose anticipated delivery date is during the semester may consider taking time away from their coursework and/or research responsibilities. Any student who gives birth to a child while engaged in coursework or research is eligible to take either a short-term absence or formal leave of absence. Students are encouraged to consult with relevant university faculty and staff as soon as possible as they begin making plans regarding time away.

- Students must contact the Office of the Dean of Student Affairs to register for Maternity Accommodations. Students will complete an information form and meet with a member of the Dean's Office staff to determine resources and procedures appropriate for the individual student.
 - Planning for the student's discussion with appropriate academic contact(s) (advisor, associate dean, etc.) may be reviewed during this meeting.
- Students in course work should consider options for the semester of the anticipated birth such as working with their course instructors to receive incomplete grades, electing to drop to part-time status or taking a full semester leave of absence.
- Students engaged in research must work with their faculty to develop plans for the research for the time they are away and for resuming upon return.
- Master's students who receive an academic stipend funded by Carnegie Mellon are eligible to continue to receive stipend funding for up to six (6) weeks during a Short-Term Maternity Accommodation or a Formal Leave of Absence. Continued academic stipend funding may be extended by two (2) weeks, for a total of eight (8) weeks, if an absence longer than six weeks is medically necessary. To receive this support students must be registered with the Office of the Dean of Students.

For additional information, please visit the [Student Maternity Accommodation Protocol](#) webpage.

V) EST&P Administrative Information

A) Building and Office Locations

Scott Hall:

The EST&P administrative offices and study lounge are located on the 5th floor of Scott Hall (see upper image of **Figure 3**, viewed from Forbes Ave.). The 5th floor of Scott Hall is also home to the Scott Institute for Energy Innovation. When entering the main doors of Scott Hall (see lower image of **Figure 3**), these enter to the 5th floor, continue walking straight down the hallway in front of you. The EST&P offices are located on your right.

EST&P Offices:

The EST&P study lounge (5101) is the first room (on the right), the Academic Program Manager's office (5103) is the second room, and the Director's office (5105) is the third room (the last of the Hallway). Turning left at the end of the hallway leads you towards the Scott Institute of Energy Innovation offices and towards the Admissions and Program Coordinator's office (5120D). On the left, pass the laboratory, take the first door to 5120 space, and the office is the first on the right.

Directions to Scott Hall:

From "the mall" between Baker Hall and Doherty Hall, walk past Wean Hall until you see the Sherman and Joyce Bowie Scott Hall on your right- this is an all-glass building (see **Figure 3**).



Figure 3. Images of Scott Hall.

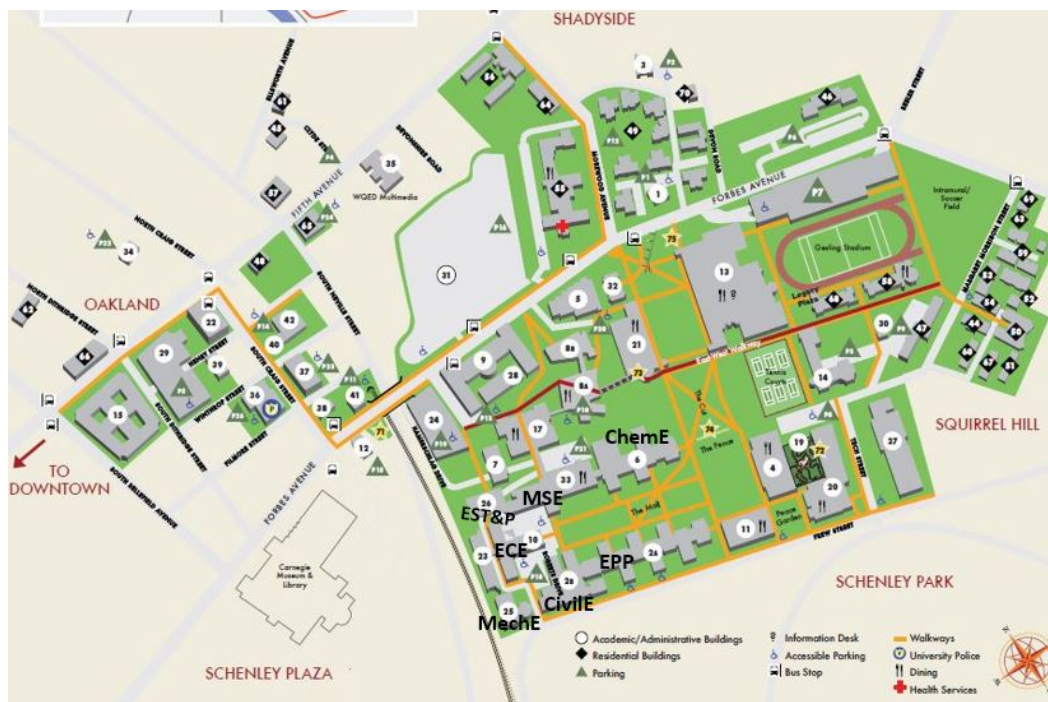


Figure 4. Map of Carnegie Mellon University (see [maps of campus](#) for more). Some important locations are marked in the lower center of the map.

B) EST&P Affiliated Faculty and Staff Contact Information¹⁵

EST&P Administrative Staff

| | | | |
|-------------------------|---|--------------|--|
| Bernens, Alyssa | 5103 Scott Hall Academic Program Manager EST&P | 412-268-2947 | abernens@andrew.cmu.edu |
| Salvador, Paul | 5105 Scott Hall Director EST&P Professor of Materials Science and Engineering | 412-268-7672 | paulsalvador@cmu.edu |
| Thompson, Nicole | 5120D Scott Hall Admissions & Program Coordinator EST&P | 412-268-5090 | nicoletthompson@cmu.edu |

EST&P Support Staff

| | | | |
|----------------------|--------------------------------------|--------------|--|
| Foy, Marcie | 252 West Wing Career Consultant | 412-268-2064 | mfoy@andrew.cmu.edu |
| Houser, Paige | 3317 Wean Hall Ombudsperson EST&P | 412-268-3357 | phouser@andrew.cmu.edu |
| Vaughan, Liz | 103 CUC Student Life Coordinator | 412-268-870 | eav@andrew.cmu.edu |

EST&P Core Faculty

| | | | |
|-----------------------------|---|--|--|
| Kelly-Pitou, Katrina | <i>39-613 Energy Transport and Storage</i> Contact TBD Adjunct Professor of Materials Science and Engineering (EST&P) Energy Systems Analyst, SmithGroup (Pittsburgh, PA) | | |
| Muller, Nicholas - | <i>39-613 Energy Policy and Economics</i> 254C Posner Hall 412-268-812 nzm@andrew.cmu.edu Lester and Judith Lave Professor of Economics, Engineering, and Public Policy | | |
| Salvador, Paul | <i>39-610 Energy Conversion and Supply</i> 5105 Scott Hall 412-268-7672 paulsalvador@cmu.edu Director EST&P Professor of Materials Science and Engineering | | |
| TBD | <i>39-613 Energy Demand and Utilization</i> | | |

¹⁵ For an extended list of associated faculty please see: [EST&P About Us: Affiliated Faculty](#).

C) EST&P Study Lounge Information

EST&P maintains a lounge in Scott Hall 5101 for EST&P students to use appropriately.

The Scott Hall 5101 door to the EST&P student study lounge can be accessed by swiping your CMU Student ID. This door must always remain closed: it should never be propped open.

The kitchen area in the EST&P study lounge is available for student use, so long as everyone works together to maintain a clean and safe area.

CMU custodial services will **ONLY** empty trash and occasionally vacuum the floor.

EST&P's professional staff **DO NOT** provide custodial services. Each student is responsible to leave the lounge in reasonable order upon departing.

Unrestricted access to the study lounge requires responsible adult behavior by every EST&P student. If the room is not kept in good condition and becomes a health and safety hazard, access to the study lounge will be restricted, such as: access only during business hours or only when EST&P staff are present.

Examples of health and safety hazards include cups, dirty dishes, or other items in the sink; unclean surfaces or furniture; food containers or other trash, or any personal items, left in the study lounge.

Any items left in the lounge will be discarded.

Students will be notified by email of any change to the access policies to the Study Lounge.



Printing:

As a CMU graduate student, you have an assigned Andrew printing quota of \$40 per semester.

Please see <https://www.cmu.edu/computing/services/endpoint/printing-kiosks/quota.html> for printing information. A laser printer is currently available in the EST&P study lounge for limited black and white printing. This printer is a HP LaserJet Pro 400 model M401dne, and you can print by connecting your laptop to the printer's USB cable, or from the on-campus network using the printer's static IP address [172.22.51.11]. Low-cost poster printing service is available through the Sorrells Engineering and Science Library in 4400 Wean Hall. Contact the library or see the reference instructions on the [Canvas](#) site-EST&P Professional Resources.

Computing:

Each student is assigned a single-sign-on account (Andrew account) that is used to access campus-wide and EST&P computing resources. Andrew accounts can be managed by visiting the Computing Services website at www.cmu.edu/computing/accounts. Students may contact the Computing Services Help Center if you have any IT issues (i.e., computers, phones, printers, etc.) at 412-268-4357 or it-help@cmu.edu.

Mail :

Mailboxes are not available for EST&P students, neither for academic nor personal use.

If a student plans to have something shipped to themselves at EST&P, please notify the staff in advance and use the following address:¹⁶

Your Name, c/o EST&P Program
Carnegie Mellon University
5000 Forbes Ave, Scott Hall 5103
Pittsburgh, PA 15213-3890

¹⁶ Please communicate with EST&P staff prior to sending any packages to this address.

D) College of Engineering Department Locations and Department Head Contacts

| | | |
|---|-------------------|--------------|
| <u>College of Engineering</u> | 219 Ansys Hall | |
| Sanders, William | 219 Ansys Hall | 412-268-5090 |
| Dr. William D. and Nancy W. Strecker Dean of Engineering, Professor of Electrical & Computer Engineering | | |
| Porter, Lisa | | 412-268-4047 |
| Associate Dean for Faculty and Graduate Affairs, Professor of Materials Science and Engineering | | |
| <u>Chemical Engineering</u> | 1107 Doherty Hall | 412-268-2230 |
| Robinson, Anne | 1111 Doherty Hall | 412-268-2232 |
| CHE Department Head & Trustee Professor of Chemical Engineering | | |
| <u>Civil & Environmental Engineering</u> | 119 Porter Hall | 412-268-2940 |
| Akinci, Burcu | 119D Porter Hall | 412-268-2959 |
| CEE Department Head & Hamerschlag University Professor of CEE | | |
| <u>Electrical & Computer Engineering</u> | Hamerschlag Hall | 412-268-7400 |
| Pileggi, Larry | 1106 Hamerschlag | 412-268-3299 |
| ECE Department Head & Tanoto Professor of Electrical & Computer Engineering | | |
| <u>Engineering & Public Policy</u> | 129 Baker Hall | 412-268-2670 |
| Adams, Peter | 129 Baker Hall | 412-268-2838 |
| EPP Department Head & Thomas Lord Professor of Engineering, Professor of Civil and Environmental Engineering and Engineering Public Policy | | |
| <u>Materials Science & Engineering</u> | 3325 Wean Hall | 412-268-2700 |
| Dickey, Elizabeth | 3327 Wean Hall | 412-268-3913 |
| MSE Department Head & Teddy & Wilton Hawkins Distinguished Professor Professor of Materials Science and Engineering | | |
| <u>Mechanical Engineering</u> ¹⁷ | 4th Floor Scaife | 412-268-2500 |
| Cagan, John | 401 Scaife Hall | 412-268-3657 |
| MEG Department Head & George Tallman Florence Barrett Ladd Professor in Engineering, Professor of Mechanical Engineering | | |

¹⁷ The offices of MEG are moving back to the new Scaife Hall. These may be updated.

E) University Offices

| | | |
|---|--------------|--|
| University Police: emergency | 412-268-2323 | |
| non-emergency | 412-268-6232 | www.cmu.edu/police |
| Student Health Services | 412-268-2157 | www.cmu.edu/health-services |
| Counseling & Psychological Services | 412-268-2922 | www.cmu.edu/counseling |
| Housing Services | 412-268-2139 | www.cmu.edu/housing |
| Dining Services | 412-268-2139 | www.cmu.edu/dining |
| Office of International Education | 412-268-5231 | www.cmu.edu/oie |
| Language and Communications Support in the Student Academic Success Center | 412-268-6823 | https://www.cmu.edu/student-success/ |
| Sorrells Engineering & Science Library | 412-268-7217 | www.library.cmu.edu |
| Career & Professional Dev. Center | 412-268-2064 | www.cmu.edu/career |
| Asst. Vice Provost for Grad. Education | 412-268-7307 | www.cmu.edu/graduate/programs-services |
| Enrollment & Finances for Grad Students | | www.cmu.edu/hub/new-grad/ |
| Graduate Education | | www.cmu.edu/graduate |
| Graduate Student Assembly | | www.cmu.edu/stugov/gsa |

Please see Appendix A for more information relating to University's offices and resources.

VI) Academic Integrity

A) The Carnegie Mellon Code

Students at Carnegie Mellon, because they are members of an academic community dedicated to the achievement of excellence, are expected to meet the highest standards of personal, ethical, and moral conduct possible.

These standards require personal integrity, a commitment to honesty without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations once undertaken must be met, commitments kept.

As members of the Carnegie Mellon community, individuals are expected to uphold the standards of the community in addition to holding others accountable for said standards. It is rare that the life of a student in an academic community can be so private that it will not affect the community as a whole or that the above standards do not apply.

The discovery, advancement, and communication of knowledge are not possible without a commitment to these standards. Creativity cannot exist without acknowledgment of the creativity of others. New knowledge cannot be developed without credit for prior knowledge. Without the ability to trust that these principles will be observed, an academic community cannot exist.

The commitment of its faculty, staff and students to these standards contributes to the high respect in which the Carnegie Mellon degree is held. Students must not destroy that respect by their failure to meet these standards. Students who cannot meet them should voluntarily withdraw from the university.

The Carnegie Mellon Code can also be found on-line at: <https://www.cmu.edu/student-affairs/theword/>.

B) University Policies & Expectations

It is the responsibility of each member of the Carnegie Mellon community to be familiar with university policies and guidelines. In addition to this departmental graduate student handbook the following resources are available to assist you in understanding community expectations:

| | |
|--|---|
| The Word/Student Handbook | https://www.cmu.edu/student-affairs/theword//index.html |
| Academic Integrity Policy | https://www.cmu.edu/policies/student-andstudent-life/academic-integrity.html |
| University Policies Website | www.cmu.edu/policies/ |
| Office of Graduate and Postdoc Affairs | https://www.cmu.edu/graduate/policies/index.html |

Please see Appendix A for additional information about The Word and University resources.

C) Expectations and Requirements

Carnegie Mellon maintains the highest ethical standards and makes continuous efforts to identify and create the kind of academic environment that its members wish to enjoy. As a CMU graduate student, you are an important participant in our university partnership that includes all faculty, staff, administrators, undergraduates, and graduate students. Thus, you are responsible for academic integrity, honesty, and fairness, as are all university community members.

Please review the University Policy on Academic Integrity (<https://www.cmu.edu/policies/student-and-student-life/academic-integrity.html>). The policy includes the University expectations around academic integrity and provides definitions of cheating, plagiarism, and unauthorized assistance.

A review of the University's Academic Disciplinary Actions procedures (<https://www.cmu.edu/student-affairs/theword/academic-discipline/index.html>) is also recommended. These procedures outline the process for investigating, reporting, and adjudicating violations of the University Policy on Academic Integrity. The procedures also outline the appeal process.

In support of the university's position, EST&P encourages EVERY incoming student take the CMU/CIT recommended training offered by the Collaborative Institutional Training Initiative (CITI). Furthermore, **ALL students in degrees requiring Independent Study or Master's Project work, and any students taking Independent Study or Master's Project course work, are REQUIRED to complete the training by the end of their first semester— December 8, 2023—** and to submit their certificate of successful completion to the EST&P Program Coordinator.

The CIT Graduate Student Policy provides the following instructions. "For CIT graduate students, the CITI physical science module package is recommended, rather than the module package for engineers, although both are acceptable. The courses are available at CITI's website: www.citiprogram.org/. Select Carnegie Mellon University as your participating institution when you create your account. This topic is described fully in the CIT Graduate Student Policy page under [Responsible Conduct of Research \(RCR\)](#)."

Required Plagiarism Quiz:

The University of Indiana has an exceptional website that provides examples and a quiz to determine if you understand the difference between proper and improper attribution of text.

All EST&P students are required to complete this quiz before the end of the first week of classes and print and submit the certification provided when the quiz is passed. Certifications will be submitted via the EST&P Canvas site and collected by the EST&P Admissions and Program Coordinator. Submitting this certification indicates that you have learned and understand the approved processes for text attribution. You will be held responsible for this information if a conflict arises in the academic year. Please complete the plagiarism quiz using the following link: <https://plagiarism.iu.edu/mainLogin.php>

D) University Policy Violations

A review of the University's Academic Disciplinary Actions procedures (<https://www.cmu.edu/student-affairs/theword/academic-discipline/index.html>) is also recommended. These procedures outline the process for investigating, reporting, and adjudicating violations of the University Policy on Academic Integrity. The procedures also outline the appeal process.

Cheating occurs when a student avails her/himself of an unfair or disallowed advantage that includes but is not limited to:

1. Theft of or unauthorized access to an exam, answer key, or other graded work from previous course offerings.
2. Use of an alternate, stand-in, or proxy during an examination.
3. Copying from the examination or work of another person or source.
4. Submission or use of falsified data.
5. Using false statements to obtain additional time or other accommodation.
6. Falsification of academic credentials.

Plagiarism is defined as the use of work or concepts contributed by other individuals without proper attribution or citation. Unique ideas or materials taken from another source for either written or oral use must be fully acknowledged in academic work to be graded. Examples of sources expected to be referenced include but are not limited to:

1. Text, either written or spoken, quoted directly or paraphrased.
2. Graphic elements.
3. Passages of music, existing either as sound or as notation.
4. Mathematical proofs.
5. Scientific data.
6. Concepts or material derived from the work, published or unpublished, of another person.

Unauthorized assistance refers to the use of sources of support that have not been specifically authorized in this policy statement or by the course instructor(s) in the completion of academic work to be graded. Such sources of support may include but are not limited to advice or help provided by another individual, published or unpublished written sources, and electronic sources. Examples of unauthorized assistance include but are not limited to:

1. Collaboration on any assignment beyond the standards authorized by this policy statement and the course instructor(s).
2. Submission of work completed or edited in whole or in part by another person.
3. Supplying or communicating unauthorized information or materials, including graded work and answer keys from previous course offerings, in any way to another student.
4. Use of unauthorized information or materials, including graded work and answer keys from previous course offerings.
5. Use of unauthorized devices.
6. Submission for credit of previously completed graded work in a second course without first obtaining permission from the instructor(s) of the second course. In the case of concurrent courses, permission to submit the same work for credit in two courses must be obtained from the instructors of both courses.

Procedures for dealing with allegations of these policy violations are detailed in the university's Academic Disciplinary Action Procedures for Undergraduate Students and the Academic Disciplinary Action Procedures for Graduate Students, which are published in The WORD student handbook. Periodic review of these procedures will be overseen by the Dean of Student Affairs or her/his designee in consultation with Faculty Senate and the relevant student governing bodies. Any amendments to these procedures are subject to the approval of Faculty Senate. Additional guidelines and procedures for graduate students may exist at the college/department/program level, in which case they are communicated in the college/department/program graduate student handbook.

VI.D University Policy Violations (cont'd)

In extreme cases where the first violation is particularly deplorable, as determined by the EST&P Director and Assistant Director, a student may be permanently dropped from the EST&P program. Upon a second academic integrity violation, the student will immediately be dropped from the EST&P program.

University-wide Academic Disciplinary Protocol:

Procedures for dealing with allegations of these policy violations are detailed in the university's Academic Disciplinary Action Procedures for Graduate Students: <https://www.cmu.edu/student-affairs/theword/academic-discipline/index.html> which is published as part of The WORD student handbook.

Periodic review of these procedures will be overseen by the Dean of Student Affairs, or her/his designee, in consultation with Faculty Senate and the relevant student governing bodies. Any amendments to these procedures are subject to the approval of Faculty Senate. Additional guidelines and procedures for graduate students may exist at the college/department/program level, in which case they are communicated in the college/department/program graduate student handbook.

VII) **Miscellaneous Items and University Policies**

A) **Acknowledgements**

This handbook was prepared with the help and support of our partner engineering departments: Chemical Engineering, Civil & Environmental Engineering, Electrical & Computer Engineering, Engineering & Public Policy, Materials Science & Engineering, and Mechanical Engineering. Portions of the text herein are copied with permission from some of their graduate student handbooks. Every attempt is made for EST&P program policies to conform with [The Word](#) and [College of Engineering graduate policies](#). These include policies on intellectual property, freedom of expression, student privacy, academic disciplinary actions, and academic integrity.

B) **Consumer Information**

Students in the EST&P program are self- or family-funded, funded by their employer, or by external scholarships, fellowships, and educational loans. Students are permitted to enroll in project-based classes, as well as independent study and master's project research courses. The [CMU HUB website consumer information page](#) provides access to information that current and prospective students of the University may need to be informed consumers. The CMU website also provides student consumer information linked on their [Middle States Accreditation](#) pages.

C) **Carnegie Mellon University Statement of Assurance**

Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Furthermore, Carnegie Mellon University does not discriminate and is required not to discriminate in violation of federal, state, or local laws or executive orders.

Inquiries concerning the application of and compliance with this statement should be directed to the university ombudsman, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-1018.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.

The Statement of Assurance can also be found on-line at:

<https://www.cmu.edu/policies/administrative-and-governance/statement-of-assurance.html>.

D) Assistance for Individuals with Disabilities

The Office of Disability Resources at Carnegie Mellon University (<http://www.cmu.edu/education-office/disability-resources/>) has a continued mission to provide physical and programmatic campus access to all events and information within the Carnegie Mellon community. They work to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans with Disabilities Act (ADA) and Sections 503 and 504 of the Rehabilitation Act of 1973. Students who would like to receive accommodations can begin the process through [Disability Resources secure online portal](#) or email access@andrew.cmu.edu to begin the interactive accommodation process.

For more information, please see <http://www.cmu.edu/education-office/disability-resources/>. Students with disabilities are encouraged to self-identify with the Office of Disability Resources and request needed accommodations. Any questions about the process can be directed to Catherine Getchell, 412-268-6121, getchell@cmu.edu.

E) University Policies & Expectations

It is the responsibility of each member of the Carnegie Mellon community to be familiar with university policies and guidelines. In addition to this EST&P graduate student handbook, the following resources are available to assist you in understanding community expectations:

- The Word/Student Handbook: www.cmu.edu/student-affairs/theword
- Academic Integrity Website: <https://www.cmu.edu/policies/student-and-student-life/academic-integrity.html>
- University Policies Website: www.cmu.edu/policies
- College of Engineering Graduate Student Policy website: <https://engineering.cmu.edu/education/academic-policies/graduate-policies/index.html>
- Graduate Education Website: www.cmu.edu/graduate/policies
- Computing Services Website: <https://www.cmu.edu/computing/>
- Carnegie Mellon's policy on alcohol and drugs.
All students should be aware of university policies:
<https://www.cmu.edu/policies/administrative-and-governance/alcohol-and-drug-policy.html>

International Students must register and attend the mandatory Office of International Education (OIE) international student orientation. If you are unable to attend orientation, you may make an appointment to meet with an advisor in the Office of International Education in Posner Hall 3rd floor. You must check in with OIE **by the 10th day of classes** or face administrative withdrawal.

The commitment of its faculty, staff, and students to these standards contributes to the high respect in which the Carnegie Mellon degree is held. Students must not destroy that respect by their failure to meet these standards. Students who cannot meet them should voluntarily withdraw from the university.

The Carnegie Mellon Code can also be found on-line at:
<https://www.cmu.edu/student-affairs/theword/>.

F) University Health Requirements

As a full-time student, you must have medical insurance and required immunizations that meet the university's minimum requirements. Please see 2023-2024 student health insurance criteria at www.cmu.edu/health-services/student-insurance.

All full-time students must meet the university's immunization requirements¹⁸ posted at www.cmu.edu/health-services/immunization. Students must complete an online immunization form and/or waiver **by August 1, 2023**, documenting that you have either had the required vaccines or have had blood tests proving immunity to certain diseases. Students can complete the immunization form in HealthConnect, accessible at www.cmu.edu/health-services. Failure to submit the online immunization form or meet the requirements before the start of classes will result in disenrollment from classes and removal from university housing.

Students must also confirm enrollment in the required health insurance plan, or certify compliance with mandatory health insurance coverage at Student Health Services: **by August 28, 2023**.

G) Employment Eligibility Verification

If you are receiving a stipend, you are going to be a TA, or you are planning to have a position with CMU then Employment Eligibility Verification is required.

Form I-9 must be completed within 3 business days of beginning work for any type of compensation (stipend or employment). Additional details are highlighted below.

To ensure compliance with federal law, Carnegie Mellon University maintains the [Employment Eligibility Verification \(I-9\) Policy \[pdf\]](#) covering the university's I-9 and E-Verify requirements:

Every individual receiving a stipend from CMU or employed by CMU must comply with the I-9 Policy by completing the Form I-9 within three business days following the first day of stipend start date/employment.

Individuals who expect to work on a federally funded project are further responsible for submitting an E-Verify Processing Request Form to the Office of Human Resources.

For more information, please see CMU's [Guidance for Completing the Form I-9 and E-Verify Requirements at CMU \[pdf\]](#), or visit the Human Resources Service website to [learn more about Form I-9 and E-Verify](#) and to [schedule an appointment to complete the Form I-9](#).

H) Consensual Intimate Relationship Policy Regarding Undergraduate Students

<https://www.cmu.edu/policies/student-and-student-life/consensual-relationships.html>

This policy addresses the circumstances in which romantic, sexual or amorous relationships/interactions with undergraduate students, even if consensual, are inappropriate and prohibited. The purpose of this policy is to assure healthy professional relationships. This policy is not intended to discourage consensual intimate relationships unless there is a conflicting professional relationship in which one party has authority over the other as in the policy.

¹⁸ Please note that all students are required to have a WHO authorized COVID-19 vaccine for Fall 2022. Students can find more information on the accepted vaccines here: <https://www.cmu.edu/health-services/new-students/>

VIII) APPENDICES

A) Highlighted University Resources for Graduate Students

i) Key Offices for Graduate Student Support

Office of Graduate and Postdoc Affairs

www.cmu.edu/graduate; grad-ed@cmu.edu

The Office of Graduate and Postdoc Affairs provides central support for all Master's and Doctoral students, as well as academic programs, with a focus on supporting graduate student success at Carnegie Mellon.

Examples of resources offered through the Graduate Education Office include- but are not limited to:

- Website with university resources, contact information for CMU programs and services, calendar of events related to graduate students
- Bi-monthly email to all graduate students with information on activities, resources, and opportunities
- Professional Development Seminars and Workshops
- GSA/Provost Conference Funding Grants
- GSA/Provost Small Research Grants (GuSH)
- Consultations on issues related to the graduate student experience

The Office of Graduate and Postdoc Affairs also works with the colleges and departments by informing and assisting in developing policy and procedures relevant to graduate students and working with departments on issues related to graduate students. Additionally, we partner with many other offices and organizations, such as the Graduate Student Assembly, to support the holistic graduate student educational experience.

Office of the Dean of Students

<https://www.cmu.edu/student-affairs/dean>

The Office of the Dean of Students provides central leadership of the metacurricular experience at Carnegie Mellon including the coordination of student support. Vice President of Student Affairs and Dean of Students Gina Casalegno leads the Division of Student Affairs which includes the offices and departments listed below (not an exhaustive list).

Graduate students will find the enrollment information for [Domestic Partner Registration and Maternity Accommodations](#) in the Office of the Dean of Students or on their [website](#). This Office also manages the [Emergency Student Loan \(ESLs\)](#) process. There are three forms of support funding for enrolled students: emergency student loans, maternity loans, and the Tartan Emergency Support Fund. These funds are made available through generous gifts of alumni and friends of the university as well as support from student organizations, Undergraduate Student Senate and the Graduate Student Assembly. Students will be provided with additional information about the various types of funding during a consultation meeting with a member of the Dean of Students team. Tuition costs are not eligible for Student Emergency Support Funding.

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*

i. *Key Offices for Graduate Student Support (cont'd)*

Office of the Dean of Students (cont'd)

Additional resources for graduate students include [College Liaisons](#) and the [Student Support Resources](#) team. [College Liaisons](#) are senior members of the Division of Student Affairs who work with departments and colleges addressing student concerns across a wide range of issues. College Liaisons are identified on the student SIO page in the Important Contacts list. The Student Support Resources team offers an additional level of support for students who are navigating any of a wide range of life events. [Student Support Resources](#) staff members work in partnership with campus and community resources to provide coordination of care and support appropriate to each student's situation.

The Division of Student Affairs includes (not an exhaustive list):

- [Athletics, Physical Education and Recreation](#)
- [Career and Professional Development Center \(CPDC\)](#)
- [Center for Student Diversity and Inclusion](#)
- [Cohon University Center](#)
- [Counseling & Psychological Services \(CaPS\)](#)
- [Dining Services](#)
- [Office of Community Standards and Integrity \(OCSI\)](#)
- [Office of Student Leadership, Involvement, and Civic Engagement \(SLICE\)](#)
- [University Health Services \(UHS\)](#)
- [Wellness Initiatives](#)

Center for Student Diversity & Inclusion

<https://www.cmu.edu/student-diversity/>

Diversity and inclusion have a singular place among the values of Carnegie Mellon University. The Center for Student Diversity & Inclusion actively cultivates a strong, diverse, and inclusive community capable of living out these values and advancing research, creativity, learning and development that changes the world.

The Center offers resources to enhance an inclusive and transformative student experience in dimensions such as access, success, campus climate and intergroup dialogue. Additionally, the Center supports and connects historically underrepresented students and those who are first in their family to attend college in a setting where students' differences and talents are appreciated and reinforced, both at the graduate and undergraduate level. Initiatives coordinated by the Center include, but are not limited to:

- First generation/first in family to attend college programs
- LGBTQ+ Initiatives
- Race and ethnically focused programs, including Inter-University Graduate Students of Color Series (SOC) and PhD SOC Network
- Women's empowerment programs, including Graduate Women's Gatherings (GWGs)
- Transgender and non-binary student programs

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*

i. *Key Offices for Graduate Student Support (cont'd)*

Assistance for Individuals with Disabilities

<http://www.cmu.edu/disability-resources/>

The Office of Disability Resources at Carnegie Mellon University has a continued mission to provide physical, digital, and programmatic access to ensure that students with disabilities have equal access to their educational experience. We work to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. Students who would like to receive accommodations can begin the process through [Disability Resources' secure online portal](#) or email access@andrew.cmu.edu to begin the interactive accommodation process.

Students with physical, sensory, cognitive, or emotional disabilities are encouraged to self-identify with the Office of Disability Resources and request needed accommodations. Any questions about the process can be directed to access@andrew.cmu.edu, or call (412) 268-6121.

Eberly Center for Teaching Excellence & Educational Innovation

www.cmu.edu/teaching

We offer a wide variety of confidential, consultation services and professional development programs to support graduate students as teaching assistants or instructors of record during their time at Carnegie Mellon University and as future faculty members at other institutions. Regardless of one's current or future teaching context and duties, our goal is to disseminate evidence-based teaching strategies in ways that are accessible and actionable. Programs and services include campus-wide Graduate Student Instructor Orientation events and our Future Faculty Program, both of which are designed to help participants be effective and efficient in their teaching roles. The Eberly Center also assists departments in creating and conducting customized programs to meet the specific needs of their graduate student instructors. Specific information about Eberly Center support for graduate students is found at www.cmu.edu/teaching/graduatestudentsupport/index.html.

Office of International Education (OIE)

<http://www.cmu.edu/oie/>

Carnegie Mellon hosts international graduate and undergraduate students who come from more than 90 countries. The Office of International Education (OIE) is the liaison to the University for all non-immigrant students and scholars, as well the repository for study abroad opportunities and advisement. OIE provides many services including: advising on personal, immigration, study abroad, academic, and social and acculturation issues; presenting programs of interest such as international career workshops, tax workshops, and cross-cultural and immigration workshops; international education and statistics on international students in the United States; posting pertinent information to students through email and the OIE website; and conducting orientation and pre-departure programs.

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

i. Key Offices for Graduate Student Support (cont'd)

Graduate Student Assembly

www.cmu.edu/stugov/gsa/index.html

The Graduate Student Assembly (GSA) is the branch of Carnegie Mellon Student Government that represents, and advocates for the diverse interests of all graduate students at CMU. GSA is composed of representatives from the different graduate programs and departments who want to improve the graduate student experience at the different levels of the university. GSA is funded by the Student Activities Fee from all graduate students. GSA passes legislation, allocates student activities funding, advocates for legislative action locally and in Washington D.C. on behalf of graduate student issues and needs, and otherwise acts on behalf of all graduate student interests. Our recent accomplishments are a testament to GSA making a difference, and steps to implementing the vision laid out by the strategic plan.

<https://www.cmu.edu/stugov/gsa/about-the-gsa/strategic-plan.html>.

GSA offers an expanding suite of social programming on and off-campus to bring graduate students from different departments together and build a sense of community. GSA is the host of the Graduate Student Lounge on the 3rd floor of the Cohon University Center- a great place to study or meet up with friends. GSA also maintains a website of graduate student resources on and off-campus. Through GSA's continued funding for professional development and research conferences, the GSA/Provost Conference Funding Program and GSA/Provost GuSH Research

Grants are able to run, as managed by the Graduate Education Office. As we move forward, GSA will continue to rely on your feedback to improve the graduate student experience at CMU. Feel free to contact us at <gsa@cmu.edu> to get involved, stop by our office in the Cohon University Center Room 304 or become a representative for your department.

Eberly Center for Teaching Excellence & Educational Innovation

www.cmu.edu/teaching

We offer a wide variety of confidential consultation services and professional development programs to support graduate students as teaching assistants or instructors of record during their time at Carnegie Mellon University and as future faculty members at other institutions. Regardless of one's current or future teaching context and duties, our goal is to disseminate evidence-based teaching strategies in ways that are accessible and actionable. Programs and services include campus-wide Graduate Student Instructor Orientation events and our Future Faculty Program, both of which are designed to help participants be effective and efficient in their teaching roles. The Eberly Center also assists departments in creating and conducting customized programs to meet the specific needs of their graduate student instructors. Specific information about Eberly Center support for graduate students is found at

www.cmu.edu/teaching/graduatestudentsupport/index.html.

Veterans and Military Community

<http://www.cmu.edu/veterans/>

Military veterans are a vital part of the Carnegie Mellon University community. Graduate students can find information on applying for veteran education benefits, campus services, veteran's groups at CMU, and non-educational resources through the Veterans and Military Community website. There are also links and connections to veteran resource in the Pittsburgh community. The ROTC and Veteran Affairs Coordinator can be reached at uro-vaedbenefts@andrew.cmu.edu or 412-268-8747.

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

i. Key Offices for Graduate Student Support (cont'd)

Policy Against Retaliation

It is the policy of Carnegie Mellon University to protect from retaliation any individual who makes a good faith report of a suspected violation of any applicable law or regulation, university Policy or procedure, any contractual obligation of the university, and any report made pursuant to the Carnegie Mellon University Code of Business Ethics and Conduct.

Additional details regarding the Policy Against Retaliation are available at <https://www.cmu.edu/policies/administrative-and-governance/whistleblower.html>

Carnegie Mellon Ethics Hotline

<https://www.cmu.edu/hr/resources/ethics-hotline.html>

The health, safety and well-being of the university community are top priorities at Carnegie Mellon University. CMU provides a hotline that all members of the university community should use to confidentially report suspected unethical activity relating to areas below:

- Academic and Student Life
- Bias Reporting
- Environmental Health and Safety
- Financial Matters
- High-Risk Incident
- Human Resource Related
- Information Systems
- Research
- Threat of Business Interruption
- Threat of Violence or Physical Harm
- Title IX

Students, faculty, and staff can anonymously file a report by calling 877-700-7050 or visiting www.reportit.net (username: tartans; password: plaid). All submissions are reported to appropriate university personnel.

The hotline is NOT an emergency service.

For emergencies, call University Police at 412-268-2323.

Policy Against Retaliation

It is the policy of Carnegie Mellon University to protect from retaliation any individual who makes a good faith report of a suspected violation of any applicable law or regulation, university Policy or procedure, any contractual obligation of the university, and any report made pursuant to the Carnegie Mellon University Code of Business Ethics and Conduct.

Additional details regarding the Policy Against Retaliation are available at <https://www.cmu.edu/policies/administrative-and-governance/whistleblower.html>

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*ii) Key Offices for Academic & Research Support**Computing and Information Resources**

www.cmu.edu/computing

Computing Services maintains and supports computing resources for the campus community, including the campus wired and wireless networks, printing, computer labs, file storage, email, and software catalog. As members of this community, we are all responsible for the security of these shared resources. Be sure to review the Safe Computing (<https://www.cmu.edu/computing/safe/>) section and the University Computing Policy (<https://www.cmu.edu/policies/information-technology/computing.html>)

Visit the Computing Services website (<https://www.cmu.edu/computing/>) to learn more. For assistance the Computing Services Help Center is available at 412-268-4357 (HELP) or it-help@cmu.edu.

Student Academic Success Center

<https://www.cmu.edu/student-success/>

Student Academic Support Programs

Tartan Scholars

- The Tartan Scholars program was created to provide support for limited resourced students through an intentional first year undergraduate experience with the goals of enhancing the cohort's skill and community building through a lens of self-authorship, growth mindset, and a sense of belonging. As part of the Student Academic Success Center, Tartan Scholars are invited to join the University and participate in summer initiatives and pre-orientation activities prior to their first year at the University.
- There are opportunities for graduate students to serve as accountability, learning, or development partners, workshop facilitators, and presenters. Contact Diane Hightower at ddhight@andrew.cmu.edu for more details.

Learning Support

- **Supplemental Instruction:** Supplemental Instruction (SI) is an academic support model that utilizes peer-assisted study sessions. The SI program provides regularly scheduled review sessions on course materials outside the classroom. SI is a non-remedial approach to learning as the program targets high-risk courses and is available in select courses based on data related to past student performance and feasibility.
- **Peer Tutoring:** Weekly Tutoring Appointments are offered in a one-on-one and small group format to students from any discipline who need assistance with a course that may not be supported by our other services. Weekly appointments give students the opportunity to interact regularly with the same tutor to facilitate deeper understanding of concepts. Students can register online through the Student Academic Success website.
- **Academic Coaching:** Academic Coaching provides holistic one-on-one peer support and group workshops to help students find and implement their conditions for success. We assist students in improving time management, productive habits, organization, stress management, and study skills. Students will request support through the Academic Success Center website and attend in-person meetings or meet using video and audio-conferencing technology to provide all students with support.

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

ii. Key Offices for Academic & Research Support (cont'd)

Learning Support (cont'd)

- **“Just in Time” Workshops:** The Student Academic Success team is available to partner with instructors and departments to identify skills or concepts that would benefit from supplemental offerings (workshops, boot camps) to support students’ academic success and learning. We are eager to help convene and coordinate outside of the classroom skill building opportunities that can be open to any student interested in building skill or reinforcing course concept mastery.
- **Study Partners:** Support for students to create and benefit from their own study groups: The Student Academic Success team assists students in forming and benefiting from peer study groups, whereby all students can reap the benefits of peer-to-peer learning, student agency, and collaboration skill development. Staff from the Student Academic Success Center will be made available to instructors and students to assist with the formation of peer-led study groups. This level of support is open to any course where the instructor requests or agrees such support is appropriate and students are interested in both leading and participating.

Language and Cross-Cultural Support

More than 60% of graduate students at Carnegie Mellon are international students, and others are nonnative speakers of English who have attended high school or undergraduate programs in the US. Many of these students want to hone their language and cross-cultural skills for academic and professional success. Students can choose from sessions on

- how to give a strong presentation,
- writing academic emails,
- expectations and strategies for clear academic writing,
- how to talk about yourself as a professional in the U.S.,
- developing clearer pronunciation,
- using accurate grammar,
- building fluency, and more.
- Students can make an appointment with a Language Development Specialist to get individualized coaching on language or cross-cultural issues.

The Student Academic Success Center is also charged with certifying the language of International Teaching Assistants (ITAs), ensuring that nonnative English speakers have the language proficiency needed to succeed as teaching assistants in the Carnegie Mellon classroom. Students preparing to do an ITA Certification should plan to take classes offered by the language support team at the SASC from the beginning of their first semester. Start by contacting the language support team at the SASC website or attend a Language Support Orientation at the SASC or in your department.

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*

ii. *Key Offices for Academic & Research Support (cont'd)*

University Libraries

www.library.cmu.edu

The University Libraries offers a wide range of information resources and services supporting graduate students in coursework, research, teaching, and publishing. The library licenses and purchases books, journals, media, and other needed materials in various formats. Library liaisons, consultants and information specialists provide in-depth and professional assistance and advice in all-things information - including locating and obtaining specific resources, providing specialized research support, advanced training in the use and management of data. Sign up for workshops and hands-on topic-specific sessions such as data visualization with Tableau, cleaning data with OpenRefine, and getting started with Zotero. Weekly drop-in hours for Digital Humanities and for Research Data Research Management are scheduled during the academic year. Start at the library

home page to find the books, journals, and databases you need; to identify and reach out to the library liaison in your field; to sign up for scheduled workshops; and to connect with consultants in scholarly publishing, research data management, and digital humanities.

Research at CMU

www.cmu.edu/research/index.shtml

The primary purpose of research at the university is the advancement of knowledge in all fields in which the university is active. Research is regarded as one of the university's major contributions to society and as an essential element in education, particularly at the graduate level and in faculty development.

Research activities are governed by several university policies. Guidance and more general information are found by visiting the Research at Carnegie Mellon website.

Office of Research Integrity & Compliance

www.cmu.edu/research-compliance/index.html

The Office of Research Integrity & Compliance (ORIC) is designed to support research at Carnegie Mellon University. The staff work with researchers to ensure research is conducted with integrity and in accordance with federal and Pennsylvania regulation. ORIC assists researchers with human subject research, conflicts of interest, responsible conduct of research, export controls, and institutional animal care & use. ORIC also provides consultation, advice, and review of allegations of research misconduct.

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*

iii) Key Offices for Health, Wellness & Safety

Counseling & Psychological Services

<https://www.cmu.edu/counseling/>

Counseling & Psychological Services (CaPS) affords the opportunity for students to talk privately about academic and personal concerns in a safe, confidential setting. An initial consultation at CaPS can help clarify the nature of the concern, provide immediate support, and explore further options if needed. These may include a referral for counseling within CaPS, to another resource at Carnegie Mellon, or to another resource within the larger Pittsburgh community. CaPS also provides workshops and group sessions on mental health related topics specifically for graduate students on campus. CaPS services are provided at no cost. Appointments can be made in person, or by telephone at 412-268-2922.

Health Services

www.cmu.edu/HealthServices/

University Health Services (UHS) is staffed by physicians, advanced practice clinicians, and registered nurses who provide general medical care, allergy injections, first aid, gynecological care, and contraception, as well as on-site pharmaceuticals. The CMU Student Insurance Plan covers most visit fees to see the physicians and advanced practice clinicians & nurse visits. Fees for prescription medications, laboratory tests, diagnostic procedures and referral to the emergency room or specialists are the student's responsibility and students should review the UHS website and their insurance plan for detailed information about the university health insurance requirement and fees.

UHS also has a registered dietician and health promotion specialists on staff to assist students in addressing nutrition, drug and alcohol, and other healthy lifestyle issues. In addition to providing direct health care, UHS administers the Student Health Insurance Program. The Student Health Insurance plan offers a high level of coverage in a wide network of health care providers and hospitals. Appointments can be made by visiting UHS's website, walk-in, or by telephone, 412-268-2157.

Campus Wellness

<https://www.cmu.edu/wellness/>

At Carnegie Mellon, we believe our individual and collective well-being is rooted in healthy connections to each other and to campus resources. The university provides a wide variety of wellness, mindfulness and connectedness initiatives and resources designed to help students thrive inside and outside the classroom. The BeWell@CMU e-newsletter seeks to be a comprehensive resource for CMU regarding all wellness-inspired events, announcements, and professional and personal development opportunities. Sign up for the Be Well monthly newsletter by contacting the Program Director for Student Affairs Wellness Initiatives, at alusk@andrew.cmu.edu.

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

iii. Key Offices for Health, Wellness & Safety (cont'd)

Religious and Spiritual Life Initiatives (RSLI)

www.cmu.edu/student-affairs/spirituality

Carnegie Mellon is committed to the holistic growth of our students, including creating opportunities for spiritual and religious practice and exploration. We have relationships with local houses of worship from various traditions and many of these groups are members of CMU's Council of Religious Advisors. We also offer programs and initiatives that cross traditional religious boundaries to increase knowledge of and appreciation for the full diversity of the worldview traditions. Our RSLI staff are here to support students across the spectrum of religious and spiritual practice and would be more than happy to help you make a connection into a community of faith during your time at CMU.

University Police

<http://www.cmu.edu/police/>

412-268-2323 (emergency only), 412-268-6232 (non-emergency)

The University Police Department is located at 300 South Craig Street (entrance is on Filmore Street). The department's services include police patrols and call response, criminal investigations, fixed officer and foot officer patrols, event security, and crime prevention and education programming as well as bicycle and laptop registration. Visit the department's website for additional information about the staff, emergency phone locations, crime prevention, lost and found, fingerprint services, and annual statistic reports.

Carnegie Mellon University publishes an annual campus security and fire safety report describing the university's security, alcohol and drug, sexual assault, and fire safety policies and containing statistics about the number and type of crimes committed on the campus and the number and cause of fires in campus residence facilities during the preceding three years. Graduate students can obtain a copy by contacting the University Police Department at 412-268-6232. The annual security and fire safety report is also available online at

<https://www.cmu.edu/police/annualreports/>.

Shuttle and Escort Services

Parking and Transportation coordinates the Shuttle Service and Escort Service provided for CMU students, faculty, and community. The [Shuttle](#) & [Escort](#) websites have full information about these services, stops, routes, tracking and schedules.

VIII.A. *Highlighted University Resources for Graduate Students (cont'd)*

iv) The WORD

The WORD (<http://www.cmu.edu/student-affairs/theword/>) is Carnegie Mellon University's student handbook and serves as the foundation for the department (and sometimes college) handbook. The WORD contains university-wide academic policy information and resources, community policies and resources, and describes the university level procedures used to review possible violations of these standards. It is designed to provide all students with the tools, guidance, and insights to help you achieve your full potential as a member of the Carnegie Mellon community.

Information about the following is included in The WORD (not an exhaustive list) and graduate students are encouraged to bookmark this site and refer to it often. University policies can also be found in full text at: <http://www.cmu.edu/policies/>.

Carnegie Mellon Vision, Mission
Statement of Assurance
Carnegie Code

Academic Standards, Policies and Procedures

- Educational Goals
- Academic and Individual Freedom
- Statement on Academic Integrity Standards for Academic & Creative Life
- Assistance for Individuals with Disabilities
- Master's Student Statute of Limitations
- Conduct of Classes
- Copyright Policy
- Cross-college & University Registration
- Doctoral Student Status Policy
- Evaluation & Certification of English Fluency for Instructors
- Final Exams for Graduate Courses
- Grading Policies
- Intellectual Property Policy
- Privacy Rights of Students
- Student's Rights

Research

- Human Subjects in Research
- Office of Research Integrity & Compliance
- Office of Sponsored Programs
- Policy for Handling Alleged Misconduct of Research
- Policy on Restricted Research

Tax Status of Graduate Student Awards

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

iv. The Word (cont'd)

Campus Resources & Opportunities

- Alumni Relations
- Assistance for Individuals with Disabilities
- Athletics, Physical Fitness & Recreation
- Carnegie Mellon ID Cards and Services
- Cohon University Center
- Copying, Printing & Mailing
- Division of Student Affairs
- Domestic Partner Registration
- Emergency Student Loan Program
- Gender Programs & Resources
- Health Services
- Dining Services
- The HUB Student Services Center
- ID Card Services
- Leonard Gelfand Center
- LGBTQ Resources
- Multicultural and Diversity Initiatives
- Opportunities for Involvement
- Parking and Transportation Services
- Shuttle and Escort Services
- Spiritual Development
- University Police
- Student Activities
- University Stores

Community Standards, Policies and Procedures

- Alcohol and Drugs Policy
- AIDS Policy
- Bicycle/Wheeled Transportation Policy
- Damage to Carnegie Mellon Property
- Deadly Weapons
- Discriminatory Harassment
- Disorderly Conduct
- Equal Opportunity/Affirmative Action Policy
- Freedom of Expression Policy
- Health Insurance Policy Immunization Policy
- Missing Student Protocol
- Non-Discrimination Policy
- On-Campus Emergencies
- Pets
- Political Activities
- Recycling Policy
- Riotous and Disorderly Behavior
- Safety Hazards
- Scheduling and Use of University Facilities
- Sexual Harassment and Sexual Assault Policy
- Smoking Policy
- Student Accounts Receivable and Collection Policy and Procedures
- Student Activities Fee
- Student Enterprises
- Workplace Threats and Violence Policy

VIII.A. Highlighted University Resources for Graduate Students (cont'd)

v) Ethical Job & Internship Search

Career & Professional
Development Center

Carnegie Mellon's Guide to an [Ethical Job/Internship Search](#)

GUIDELINES & POLICIES

The mission of the Carnegie Mellon Career & Professional Development Center (CPDC) is to maximize the career and life potential of our students. One of the ways we accomplish this is by creating opportunities for our students that connect them to employers with whom we have developed relationships. It is important for the development of each student that they conduct themselves in an ethical manner. Not honoring agreements with recruiters reflects poorly on the university and impacts the organization's actions regarding future recruiting activities at Carnegie Mellon.

It is for these reasons that we hope that you represent CMU in a positive manner when conducting your job search. To make use of our services, we at the CPDC expect all our students/job seekers to adhere to the following ethical standards. All students are expected to read and familiarize themselves with these guidelines and our [offer policy](#), in addition to the [consequences for violating these guidelines](#). For any additional questions regarding our policy, please contact your Career Consultant.

Students are expected to:

1. Attend all scheduled campus interviews and career consultant appointments:

Missing or canceling less than 24 hours prior to an interview or 12 hours before an appointment uses/blocks a time slot that could have been filled by another student.

Interview Cancellation and No-Show Policy: If you need to cancel an on-campus interview, you can do so in Handshake before the cancellation end date listed for that interview, as found in the job description. Students who fail to cancel their interview before the interview cancellation date found in Handshake will be subject to the offense policy.

If an emergency occurs and you must cancel after Handshake's cancellation end date, please do so by calling Gerry Marnell in the Career Center at 412-268-1646. Students who do not show up for interviews will be subject to the offense policy. In addition, the student will be required to send a letter of apology to the recruiter. The letter must be approved by the student's career consultant.

2. Be on time for campus interviews:

Please arrive in the Career Center, 10-15 minutes before your interview. Being late reflects poorly on a candidate and disrupts the appointment times of other candidates on the schedule.

3. Present qualifications in a truthful manner:

This expectation applies to information on Handshake, application materials, and responses in interviews including, but not limited to, listing accurate GPA (not rounding up), major, degree level, and experiences information on a resume and online profiles, as well as being truthful in all interview responses.

VIII.A. Highlighted University Resources for Graduate Students (cont'd)
v. Ethical Job & Internship Search (cont'd)

4. Honor all agreements made with recruiters regarding site visits:

Accepting an on-site interview with a company sets into motion a series of events: travel arrangements, scheduling, hotel reservations and a host of other details. If that student subsequently fails to follow through with the site visit without giving the company enough advance notice, it costs the company a considerable amount of wasted time and money, as well as denies another student the opportunity to interview.

5. Understand employers' hiring and offer policy

The CPDC works with employers to provide students with sufficient time to consider offers of employment. For more information, view the [Employer Hiring & Offer Policy](#).

6. Accept job/internships in an ethical manner:

When a student accepts a full-time or internship position, that student is expected to stop all recruiting activities, including applying and interviewing for employment opportunity. Students are expected to notify all other employers with whom they have scheduled or pending interviews of their need to be removed from consideration for those opportunities.

Reneging:

Accepting an employment offer after you previously accepted an offer with another employer is defined as 'reneging' and is considered dishonest and unethical and carries serious implications.

Reneging reflects poorly on the candidate and potentially damages Carnegie Mellon's reputation and relationships with employers. Instances of reneging that are reported by an employer will be investigated by the CPDC and may result in loss of recruiting privileges for the student.

Offense Policy:

- **First Offense:** Removal of job search and interviewing access on Handshake for six months.
- **Second Offense:** Removal of job search and interviewing access on Handshake for one year.
- **Third Offense:** Removal of job search and interviewing access on Handshake for five years.

Note: Depending on the severity of the offense, the CPDC reserves the right to refer the student's case to the Office of the Dean of Student Affairs for further review and judicial proceedings.

Appeal Process:

Any student wishing to appeal his or her revocation of Handshake privileges is entitled to utilize our formal appeal process. To request an appeal, contact your career consultant at the CPDC.

B) Approved Engineering Concentration Courses**Engineering Concentration in Chemical Engineering (CHE):¹⁹**

The CHE Concentration is defined as 36 units of approved CHE graduate-level courses (other than independent study or graduate project courses).

CHE Concentration Required Course:^{20, 21} 12 units

| | | |
|--------|--------------------------|--------------|
| 06-665 | Process Systems Modeling | SP: 12 units |
|--------|--------------------------|--------------|

CHE Concentration Electives:²²

Any combination of course from this list

24 units

| | | |
|--------|---|--------------|
| 06-623 | Mathematical Modeling of Chemical Engineering Processes | FA: 12 units |
| 06-625 | Chemical and Reactive Systems | FA: 12 units |
| 06-663 | Analysis and Modeling of Transport Phenomena | SP: 12 units |
| 06-702 | Advanced Reaction Kinetics | SP: 12 units |
| 06-703 | Advanced Fluid Dynamics | FA: 12 units |
| 06-704 | Advanced Heat and Mass Transfer | SP: 12 units |
| 06-705 | Advanced Chemical Engineering Thermodynamics | FA: 12 units |
| 06-713 | Mathematical Techniques in Chemical Engineering | FA: 12 units |
| 06-720 | Advanced Process Systems Engineering | SP: 12 units |

¹⁹ See Stellic lists for updates.

²⁰ If required courses or unavailable or no longer required during a student's time in the program, then 36 units total from the remainder of the list, or specially approved courses will satisfy the requirements for the concentration.

²¹ A minimum grade of C+ is needed to satisfy the requirement.

²² Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Civil and Environmental Engineering (CEE):²³

The CEE Concentration is defined as 36 units of approved CEE graduate-level courses (other than independent study or graduate project courses).

Approved courses are available in sustainability, water quality, air quality, advanced infrastructure systems, mechanics, and other areas.

CEE Concentration Required Course:

None

0 units

CEE Concentration Electives:²⁴

Any combination of course from this list

36 units

| | | |
|-----------------|--|------------------|
| 12-704 | Probability and Estimation Methods for Engineering Systems | FA: 12 units |
| 12-706 | Civil Systems Investment Planning and Pricing | FA: 12 units |
| 12-712 (19-717) | Sustainable Engineering Principles | FA: 12 units |
| 12-714 (19-714) | Environmental Life Cycle Assessment | SP: 12 units |
| 12-740 | Data Acquisition | FA: 6 units |
| 12-741 | Data Management | FA: 6 units |
| 12-747 | Sustainable Buildings | FA: 6 units |
| 12-749 | Climate Change Adaptation | SP: 6 units |
| 12-750 (19-617) | Infrastructure Management | SP: 12 units |
| 12-751 / 651 | Air Quality Engineering | SP: 12 / 9 units |
| 12-752 | Data-Driven Building Energy Management | FA: 6 units |
| 12-761 | Sensing and Data Mining for Smart Structures and Systems | SP: 12 units |
| 12-766 (19-629) | Climate Change, Science and Solutions | SP: 12 units |

²³ See Stellic lists for updates.

²⁴ Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Electrical and Computer Engineering (ECE):²⁵

The ECE Concentration is defined as 36 units of approved ECE graduate-level courses (other than independent study or graduate project courses).

ECE Concentration Required Course:

None

0 units

ECE Concentration Electives:²⁶

Any combination of course from this list

36 units

| | | |
|--------|--|----------------------|
| 18-418 | Electric Energy Processing: Fundamentals and Applications (counts towards allowed undergrad units) | SP: 12 units |
| 18-618 | Smart Grids & Future Electric Energy Systems | FA: 12 units |
| 18-631 | Introduction to Information Security | FA & SP: 12 units |
| 18-649 | Distributed Embedded Systems | FA: 12 units |
| 18-730 | Introduction to Computer Security | FA: 12 units |
| 18-731 | Network Security | SP: 12 units |
| 18-771 | Linear Systems | FA: 12 units |
| 18-777 | Complex Large-Scale Dynamic Systems (<i>occasional</i>) | FA: 12 units |
| 18-861 | Energy Project Development and Finance | FA: 6 units |
| 18-862 | Control of Grid-Connected Machines & Converters | FA: 12 units |
| 18-865 | Photovoltaic Systems Engineering | FA: 6 units |
| 18-875 | Economics and Engineering of Electric Energy Systems | SP: 12 units |
| 18-879 | S.T. in Systems & Controls: | FA & SP: 12 units |
| 18-882 | S.T. in Energy Systems | FA: 12 units |
| 18-883 | S.T. in Energy Systems | FA & SP: 6 units |

S.T. — Special Topics

²⁵ See Stellic lists for updates.

²⁶ Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Engineering and Public Policy (EPP):²⁷

The EPP Concentration is defined as 36 units of approved EPP graduate-level courses (other than independent study or graduate project courses).

EPP Concentration Required Course:

None

0 units

EPP Concentration Electives:²⁸

Any combination of course from this list

36 units

| | | |
|--------------------|---|--------------|
| 19-424 (24-424) | Energy and the Environment (<i>undergrad course; grad. enrollment limited; counts as 9 of the allowed 12 undergrad units</i>) | FA: 9 units |
| 19-472 | Fundamentals of Electric Power Systems (<i>undergrad course; grad. enrollment limited; counts as 12 of the allowed 12 undergrad units</i>) | 12 units |
| 19-617 (12-750) | Infrastructure Management | SP: 12 units |
| 19-624 | Emerging Energy Policies | FA: 12 units |
| 19-625 | Sustainable Energy for the Developing World | SP: 12 units |
| 19-626 | Climate Science and Policy (<i>occasional</i>) | FA: 12 units |
| 19-627 | Special Topics: Energy Innovation and Entrepreneurship | FA: 12 units |
| 19-629 (12-766) | Climate Change Science & Solutions | FA: 12 units |
| 19-638 (18-618) | Smart Grids & Future Electric Energy Systems | FA: 12 units |
| 19-653 (24-640) | Climate Change Mitigation | FA: 12 units |
| 19-655 | S.T. in EPP | FA: 12 units |
| 19-656 | S.T. Current Issues in EPP | SP: 6 units |
| 19-683 | S.T. Science, Technology & Innovation Policy | FA: 6 units |
| 19-688 | Innovation for Energy and the Environment (<i>occasional</i>) | FA: 12 units |
| 19-696 | Sustainable Development & Innovation (<i>occasional</i>) | FA: 9 units |

S.T. — *Special Topics*

Course numbers in parentheses are cross-listings of the course in other departments.

Continued on next page.

²⁷ See Stellic lists for updates.

²⁸ Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Engineering and Public Policy (EPP) (cont'd)²⁹**EPP Concentration Electives (cont'd):**³⁰

| | | |
|-----------------|--|--------------|
| 19-702 | Quantitative Methods for Policy Analysis | SP: 12 units |
| 19-714 (12-714) | Environmental Life Cycle Assessment | SP: 12 units |
| 19-717 (12-712) | Sustainable Engineering Principles | FA: 12 units |
| 19-724 (27-724) | Materials for Energy Storage (<i>occasional</i>) | SP: 6 units |
| 19-739 (18-875) | Engineering & Economics of Electric Energy Systems | SP: 12 units |
| 19-740 (24-740) | Combustion & Air Pollution Control | FA: 12 units |
| 19-751 (12-751) | Air Quality Engineering | FA: 12 units |
| 19-881 | Seminar in Electric Market Restructuring | FA: 6 units |
| 19-882 | Seminar in Low-Carbon Electric Power | SP: 6 units |

Course numbers in parentheses are cross-listings of the course in other departments.

²⁹ See Stellic lists for updates.

³⁰ Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Materials Science and Engineering (MSE):³¹

The MSE Concentration is defined as 36 units of approved MSE graduate-level courses (other than independent study or graduate project courses).

MSE Concentration Required Courses:^{32, 33, 34}

12 units

| | | |
|--------|---------------------------------|---|
| 27-798 | Thermodynamics I ³⁵ | FA:12 units ³⁵ FA:6 units ³⁶ |
| 27-799 | Thermodynamics II ³⁶ | N/A ³⁵ FA: 6 units ³⁶ |

MSE Concentration Electives:³⁷

Any combination of course from this list

24 units

| | | |
|--------------------|--|--------------|
| 27-700 (24-643) | Energy Storage Materials and Systems | FA: 12 units |
| 27-705 | Nanostructured Materials | SP: 12 units |
| 27-718 | Soft Materials (<i>occasional</i>) | FA: 12 units |
| 27-721 | Processing Design | FA: 12 units |
| 27-722 | Basics and Applications of Power Magnetic Devices (<i>occasional</i>) | SP: 12 units |
| 27-724 | Materials for Energy Storage (<i>occasional</i>) | SP: 6 units |
| 27-725 | Materials in Nuclear Systems (<i>occasional</i>) | SP: 6 units |
| 27-727 | Mechanical Behavior in Extreme Environments (<i>occasional</i>) | SP: 6 units |
| 27-728 | Materials for Future Energy Systems (<i>occasional</i>) | FA: 6 units |
| 27-729 | Solid State Devices for Energy Conversion | FA: 6 units |
| 27-750 | Advanced Characterization and Microstructural Analysis | SP: 12 units |
| 27-752 | Foundations of Semiconductor Nanostructures | SP: 12 units |

Continued on next page.

³¹ See Stellic lists for updates.

³² If required courses or unavailable or no longer required during a student's time in the program, then 36 units total from the remainder of the list, or specially approved courses will satisfy the requirements for the concentration.

³³ A minimum grade of C+ is needed to satisfy the requirement.

³⁴ In Fall 2022, the courses were two 6 unit minis. In Fall 2023, only a 12 unit full semester version is taught.

³⁵ As of Fall 2023

³⁶ Prior to Fall 2023

³⁷ Other pre-approved courses may also count.

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Materials Science and Engineering (MSE) (cont'd):³⁸**MSE Concentration Electives (cont'd):**³⁹

| | | |
|--------|---|---|
| 27-765 | Special Topics: Materials and Society (<i>occasional</i>) | FA & SP: 6 units |
| 27-766 | Defects and Diffusion in Materials ⁴⁰ Diffusion in Materials ⁴¹ | FA: 12 units ⁴⁰ FA: 6 units |
| 27-770 | Electronic, Magnetic, and Optical Properties | SP: 12 units |
| 27-771 | S.T.: Materials and Devices for Energy Efficiency Applications (<i>occasional</i>) | SP: 12 units |
| 27-788 | Defects in Materials ⁴¹ | FA: 6 units ⁴¹ |
| 27-796 | Structure and Characterization of Materials ⁴⁰ Structure of Materials ⁴¹ | FA: 12 units ⁴⁰ FA: 6 units ⁴¹ |
| 27-797 | Bonding of Materials | FA: 6 units |

S.T. — Special Topics

³⁸ See Stellic lists for updates.

³⁹ Other pre-approved courses may also count.

⁴⁰ As of Fall 2023

⁴¹ Prior to Fall 2023

VIII.B. Approved Engineering Concentration Courses (cont'd)

Engineering Concentration in Mechanical Engineering (MEG)⁴²

The MEG Concentration is defined as 36 units of approved MEG graduate-level courses (other than independent study or graduate project courses).

MEG Concentration Required Course:^{43, 44} 12 units

| | | |
|--------|------------------------|--------------|
| 24-722 | Energy System Modeling | FA: 12 units |
|--------|------------------------|--------------|

MEG Concentration Electives:⁴⁵

Any combination of course from this list

24 units

| | | |
|--------------------|--|--------------|
| 24-616 | Tribology - Friction, Lubrication & Wear (<i>occasional</i>) | FA: 12 units |
| 24-618 | Computational Analysis of Transport Phenomena | SP: 12 units |
| 24-628 | Energy Transport & Conversion at the Nanoscale | SP: 12 units |
| 24-629 | Direct Solar & Thermal Energy Conversion | SP: 12 units |
| 24-640 | Climate Change Mitigation (<i>occasional</i>) | FA: 12 units |
| 24-642 | Fuel Cell Systems (<i>occasional</i>) | SP: 12 units |
| 24-643 (27-700) | Energy Storage Materials and Systems | FA: 12 units |
| 24-646 | S.T.: Energy Technology Environmental Control Systems (<i>occasional</i>) | FA: 12 units |
| 24-711 | Fluid Dynamics | FA: 12 units |
| 24-718 | Computational Fluid Dynamics | FA: 12 units |
| 24-721 | Advanced Thermodynamics | FA: 12 units |
| 24-730 | Advanced Heat Transfer | FA: 12 units |
| 24-731 | Conductive Heat Transfer (<i>occasional</i>) | SP: 6 units |
| 24-733 | Radiative Heat Transfer (<i>occasional</i>) | SP: 6 units |
| 24-740 | Combustion and Air Pollution Control | FA: 12 units |

S.T. — *Special Topics*

⁴² See Stellic lists for updates.

⁴³ If required courses or unavailable or no longer required during a student's time in the program, then 36 units total from the remainder of the list, or specially approved courses will satisfy the requirements for the concentration.

⁴⁴ A minimum grade of C+ is needed to satisfy the requirement.

⁴⁵ Other pre-approved courses may also count.

C) EST&P Degree Audits

Note, the program uses Stellic for official audits. These are provided for students own guidance.

NAME: _____ Andrew ID: _____

Degree: _____

Engineering Concentration _____

Advanced Study Concentration _____

I. CORE COURSES

All EST&P Degrees

Must complete 4 required courses

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|----------------------------|
| FALL | | | 39-610 | 6 | Energy Conversion & Supply |
| FALL | | | 39-613 | 6 | Energy Transport & Storage |
| SPRING | | | 39-611 | 6 | Energy Demand &Utilization |
| SPRING | | | 39-612 | 6 | Energy Policy & Economics |
| | | <i>TOTAL</i> | <i>UNITS</i> | 24 | |

24 units of required

II. ENGINEERING CONCENTRATION

All EST&P Degrees

Must be from on approved Engineering Concentration course lists and include any required courses from appropriate list.

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | <i>TOTAL</i> | <i>UNITS</i> | | |

36 units required for All EST&P Degrees

Some of these courses may count towards project intensive courses in the Energy Projects Concentration of Advanced Study

III. BREADTH ELECTIVES

All EST&P Degrees

College of Engineering graduate courses and/or pre-approved CMU graduate courses (see exceptions in Handbook / Stellic)

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | <i>TOTAL</i> | <i>UNITS</i> | | |

36 units required for All EST&P Degrees

12 of these units may also satisfy the Advanced Study requirement, if appropriate.

IV. APPLIED STUDY:

Must complete 3 required courses.

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|--|
| | | | 39-699 | 3 | Career & Professional Development for Engineering Masters Students |
| SUMMER | | | 39-661 | 2 | Masters EST&P Internship |
| FALL | | | 39-662 | 1 | Communication of EST&P Internship Experience |
| | | <i>TOTAL</i> | <i>UNITS</i> | 6 | |

6 units of required for EST&P-APS and EST&P-AAS Degrees

V. ADVANCED STUDY:

EST&P-ADS and EST&P-AAS Degrees

Must be from on approved Advanced Study Concentration course lists and include any required courses from appropriate list.

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | <i>TOTAL</i> | <i>UNITS</i> | | |

36 units required for EST&P-ADS and EST&P-AAS Degrees

12 units can count towards the Breadth Electives Requirement.

Some of these units may also satisfy the Engineering Concentration requirement, if appropriate.

If courses also satisfy previous requirements, extra breadth electives may be required for degree total.

VI. EXTRA BREADTH ELECTIVES

All EST&P Degrees

College of Engineering graduate courses and/or pre-approved CMU graduate courses (see exceptions in Handbook / Stellic).

| Semester | Year | Grade | Course # | Units | Title |
|----------|------|--------------|--------------|-------|-------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | <i>TOTAL</i> | <i>UNITS</i> | | |

These units must be sufficient for the Total Degree Units to meet degree requirements.

Or these are just extra courses.

| DEGREE TOTALS : | Degree | Relevant Sections | Required Units |
|-----------------|-----------|-------------------|----------------|
| | EST&P | I,II,III,VI | <u>96</u> |
| | EST&P-APS | I,II,III,IV,VI, | <u>102</u> |
| | EST&P-ADS | I,II,III,V,VI, | <u>120</u> |
| | EST&P-AAS | I,II,III,IV,V,VI, | <u>126</u> |

NOTE: Please consult other rules, such as QPA requirements for counting courses.

NOTE: Please consult with your Academic Advisor whether your “paper” Audit is accurate and valid.

NOTE: Please consult with Stellic as to whether your “paper” Audit agrees with the “online” Audit.

D) EST&P Handbook Acknowledgement Form



**Energy Science
Technology & Policy**
Carnegie Mellon University
College of Engineering

The Energy Science, Technology and Policy (EST&P) program Graduate Student Handbook has been prepared to inform you about program policies, philosophies, and practices. Please read the entire handbook carefully, giving special attention to the section on academic integrity.

To maintain your status as a master's student seeking an EST&P degree, you must complete your review of this handbook during the first week of classes and then sign a copy of this acknowledgement (using the online Jotform given below).

By signing, you affirm that you have read a copy of the 2022-2023 EST&P Graduate Student Handbook, that you understand the information contained therein, and that you agree to comply with the policies and procedures contained in the handbook. The handbook should be followed as your general guide to the goals, policies, practices, and expectations of the Energy Science, Technology and Policy Master's Program. Note that this handbook is not intended to cover every situation that may arise during your course of study and that the handbook is not a contract between you and the EST&P program.

Sign Handbook Acknowledgement form, here:

https://docs.google.com/forms/d/1kYzgLbINUr_wBLJDPMVH0Pso9_9gfMMsPZGLi2TcaA4/edit

E) Fall 2023 Checklist for EST&P Students

Submit these items by the due date.

Should you have any issues, please contact:

Nicole Rihn, Admissions and Program Coordinator, at nethomps@andrew.cmu.edu

| Item: | Due Date: |
|--|---|
| EST&P Student Handbook Acknowledgement Form – Review/Sign/Submit | 9/8/23 (Google Form) |
| Media Consent Form – Review/Sign/Submit | 9/8/23 (Google Form) |
| Plagiarism Quiz – Complete/Submit | 9/8/23 (Submit certification to Nicole via e-mail) |
| Sexual Assault Prevention for Graduate Students | 9/8/23 (Submit screenshot of “Course Progress” to Nicole via e-mail) |
| CITI’s Responsible Conduct of Research (Advanced Study students in the research option or those taking master’s project/ independent study)- Complete/Submit More info: RCR Training 2019.pdf | Before registering for project/independent study OR by 12/3/22 (Submit certification to Nicole via email) |

F) Modifications from Prior Versions of the Handbook

Version 14.0 was the original version of the EST&P Graduate Handbook, updated for AY 23-24. The official version 14.0 is that which is posted as of EST&P orientation on August 24, 2023. Significant modifications made during the academic year 23-24 will be noted here.