Department of Electrical and Computer Engineering

Graduate Handbook

Guidance and Advice to Aid Your Graduate Education

College of Engineering
Utah State University

2023-2024

INTRODUCTION

This handbook describes the basic requirements for obtaining your graduate degree in the Department of Electrical and Computer Engineering (ECE) at Utah State University (USU). The handbook summarizes the milestones of your program and provides guidance for how to complete ECE graduate degree programs. This handbook does not cover every expectation, procedure, or policy established by USU that pertains to you as a graduate student. The Department of Electrical and Computer Engineering adheres to the expectations, procedure, and policies of the USU School of Graduate Studies. Therefore, consult the General Catalog (https://catalog.usu.edu/preview_entity.php?catoid=35&ent_oid=3513) for information on all of USU's general graduate policies. Also, if you have questions about something that does not appear in this handbook, departmental staff or faculty are delighted to help you with any matter, great or small. Just ask!!

Keys to Success in Graduate School

Everyone in the ECE Department shares the goal of you getting the most out of your graduate school experience. Beyond obtaining your degree, we strive to create a setting and culture that enable you to be exposed to new ideas, perspectives, and approaches, develop technical and professional skills, and connect you with colleagues who will support you throughout your time at USU and beyond. Everyone has a role to play in creating a safe, engaging, and productive culture. Below are a few guidelines to help you understand your role in fostering that culture.

1. **Develop healthy professional relationships** with your Major Professor, Supervisory Committee members, and peers. Communicate often and as clearly and openly as possible. Be proactive in asking questions and asserting your needs and boundaries. Assume that your colleagues are reasonable and want to foster an equitable and supportive culture. However, also acknowledge that we all fall short of fulfilling our role sometimes, due to personal stresses, anxieties, or misunderstandings. With a small amount of time, effort, and mutual respect, reasonable people can find reasonable solutions to conflicts. Reach out early to relevant peers, ECE faculty or staff, or the Department Head if you need help resolving a conflict. The official channels for grievances are outlined in article 7 of the USU Student Code (https://www.usu.edu/student-conduct/).

2. **Develop attainable goals**, discuss those goals with your Major Professor and Supervisory Committee, and track your progress towards them. Your accomplishments in graduate school will not be counted in hours, so it is unhelpful to think of your graduate student position as an hourly position. Think of it in terms of what you want to accomplish. You are encouraged to set a schedule for regular check-ins with your Major Professor (weekly to monthly) and your Supervisory Committee (at least once per semester).

3. **Be deliberate about your work-life balance**. Focus your work time on work and plan deliberately for breaks and mental health activities, as needed. Sleep is an essential and often undervalued activity that supports creativity, productivity, and mental health. USU has numerous resources to support your mental health - https://www.usu.edu/aggiewellness/.

4. **Find your 'productive mode.'** Different people work in different ways. Explore and figure out how you work best. What kind of space is most conductive to the types of work you need to do (e.g., writing vs. data analysis)? Can you work in an open office or do you need private space? What time of day and for what duration of time can you work effectively?

5. **Discuss finances with your major advisor**. Most PhD and MS/A student funding comes from external grants awarded to faculty members in the department. Talk with your Major Professor to ensure you clearly understand the implications of any grants funding your research, stipend, tuition, etc. ECE assistantships are intended to cover basic living expenses. Outside jobs are not prohibited, but are discouraged. We encourage you to discuss with your Major Professor prior to taking on an outside job to ensure you have a clear, mutual understanding of expectations and implications for your funding.

PROGRAM DESCRIPTIONS AND EXPECTATIONS

General Graduate Student Responsibilities

It is your responsibility to track your progress towards your degree and the completion of graduate school, department and division requirements. You can stay on top of your program milestones by referring to this handbook and visiting the USU School of Graduate Studies website (https://gradschool.usu.edu/) and graduate catalog, as well as other information.

- Your Graduate Program Coordinator will submit the required forms to the School of Graduate Studies. Please do not fill out any forms through ServiceNow unless instructed by your Graduate Program Coordinator to do so.

- You are responsible for meeting any additional requirements and deadlines from the USU School of Graduate Studies, especially those pertaining to commencement exercises.

- You are responsible for ensuring that your report, thesis, dissertation or publications reflects your original work.

Major Professor

Your Major Professor is your principal mentor through your graduate program and your professional development is his/her primary role. Major professors have flexibility in how they design their students' training and, thus, differ in how they interact with their students.

Your Major Professor, acting as a mentor, will do everything he/she can to help you in your graduate program. They will recommend courses to include in your Program of Study, help you define your research project or research questions, give you feedback on written materials, help you prepare for: oral presentations, your Comprehensive Exam (PhD students only), and proposal, report, thesis, or dissertation defenses. They will also help you connect with a professional network and assist in resolving work, research, or other issues that arise.

Note that your Major Professor is also obligated to evaluate your progress and enforce a timely progression through your graduate program. Maintain frequent, open communication with your Major Professor. If conflicts arise between you and your Major Professor, first try to discuss the issue(s) with your Major Professor. If talking does not work or is not possible, the Department Head can assist in arbitrating differences.

Supervisory Committee

Your Supervisory Committee will approve your Program of Study, direct your Comprehensive Exams (if required), supervise and provide feedback on your research, and conduct your defense. Your Supervisory Committee should be formed submitted to the Graduate Program Coordinator by the end of your first semester.

Selecting Committee Members

Prospective Supervisory Committee members are selected by you and your Major Professor. Usually, you will select committee members for their potential contributions to your academic and research program. The School of Graduate Studies maintains a list of Graduate Faculty who are approved to serve on Supervisory Committees in ECE. Adjunct faculty and faculty outside the department or University can serve on your Supervisory Committee with the approval of the Department Head, the Dean of the College of Engineering, and the Vice Provost of the School of Graduate Studies. Remember that all members must agree to serve on your Supervisory Committee prior to submitting names to your Graduate Program Coordinator. Speak with your Graduate Program Coordinator about the process of getting faculty approved to serve on your Supervisory Committee.

- An MS Supervisory Committee consists of at least three faculty members (including your Major Professor). At least one individual must represent your area of specialization and at least one individual must be from outside your immediate area of specialization.
- A PhD Supervisory Committee consists of at least five faculty members with a doctoral degree (including your Major Professor). At least one committee member must come from outside the ECE Department.

Changes to the composition of your Supervisory Committee cannot be made during the *six weeks* prior to your defense.

Program of Study

In consultation with your Major Professor, you will construct a tentative list of courses you plan to take to fulfill the credit requirements for your degree. See courses for your area/division on the department website (https://engineering.usu.edu/ece/students/undergraduate/flowcharts). PhD and Plan A/B MS students should have an initial meeting with their Supervisory Committee to discuss their research plans, direction and draft a Program of Study. After this meeting and agreement from your committee, your projected Program of Study should then be entered into DegreeWorks. To have your Program of Study loaded into DegreeWorks, provide a check sheet to the Graduate Program Coordinator who will then load it into DegreeWorks. Once entered, the Program of Study will then be circulated electronically to your Supervisory Committee for their approval. Your Program of Study should be submitted by the end of your first semester (ME/MS) or the end of your second semester (PhD).

DEGREES OFFERED

Master of Engineering (ME) in Electrical *or* Computer Engineering
Master of Science (MS) Plan A/B in Electrical *or* Computer Engineering
Master of Science (MS) Plan C in Space Systems Engineering
Doctor of Philosophy (PhD) in Electrical Engineering

Master of Engineering (ME) in Electrical *or* Computer Engineering (coursework only)

The Master of Engineering (ME) degree is designed for students with a Bachelor of Science degree in Electrical or Computer Engineering who would like to increase their *technical depth* in engineering. Student select a specialization in Computer Engineering or Electrical Engineering. To obtain the specialization in Computer Engineering or Electrical Engineering, at least nine credits of ECE coursework must be taken in the desired specialization area.

Requirements
1. Successful completion of a minimum of 30 credits (beyond the Bachelor of Science degree) of graduate-level coursework, at or above 5000-level. Must receive a grade of "C" or better in each course while maintaining a graduate cumulative GPA of 3.0 or higher.
2. At least 18 credits of ECE coursework must be completed at or above the 5000-level.
3. At least one ECE depth course (having a graduate-level prerequisite) is required.
4. At least 15 credits of 6000-level or above coursework is required.
5. At least three credits of Professional Experience (ECE 6250 – Graduate Internship/Coop or a substantial lab-intensive course) is required. Only three credit of ECE 6250 – Graduate Internship/Coop is allowed and must have *prior approval*. The list of the lab-intensive courses will be given to you by the Graduate Program Coordinator.
6. A maximum of 12 credits outside of the ECE department may be allowed based upon a comprehensive academic plan. Courses must by approved by the ME advisor.

Additional Requirements
1. No more than two ECE 5930/6930/7930 – Special Topics courses are allowed unless otherwise approved by the ME advisor, Graduate Program Coordinator, and Department Head.
2. No more then three credits of ECE 5930/6930/7930 – Independent Study may be counted toward the ME degree. Registration for ECE 5930/6930/7930 – Independent Study requires *prior approval* (by the responsible instructor, the ME advisor, the Graduate Program Chair and the Department Head) of the intended course work, deliverables, and credits.
3. No more than three credits of ECE 6250 – Graduate Internship/Coop may be counted toward the ME degree. Registration for ECE 6250 – Graduate Internship/Coop requires *prior approval* (by the ME Advisor and the Department Head) of a description of your project with defined deliverables, signed by your company supervisor, ECE Internship Coordinator, and student. Only one semester is allowed.
4. The student's Program of Study and any subsequent deviations must be approved by the ME advisor.

ME Deadlines
1st Semester
- Discuss program plan with ME advisor
- Submit departmental ME check sheet

Beginning of Final Semester
- Notify Graduate Program Coordinator that you will finish that semester and they will notify the School of Graduate Studies. Notification must be given no later than October 1st for Fall semester and February 1st for Spring semester.

Middle of Final Semester
- Turn in Alumni Card (with photo) and Placement Survey. All paperwork must be completed before the Graduate Program Coordinator will fill out a Graduation Checklist for you.

Final Step
- Submit graduation application to the School of Graduate Studies.

Master of Science (MS) in Computer Engineering (Plan A/B)

The Master of Science (MS) in Computer Engineering is a *research-based* degree. Two plans are offered. MS-Plan A is thesis-based and MS-Plan B is project/report-based. Both degrees also have substantial coursework requirements. Successful completion (3.0 GPA or higher) of a minimum of 30 credits is required for both plans. A "C" or better grade is required for each course.

Plan-A Requirements – The Plan-A degree is based on coursework and research and requires a formal thesis. It is designed to prepare graduates for entering a PhD program or performing research in industry or government labs. It consists of at least 24 credit hours of coursework (5000-, 6000-, and 7000-level) in Computer Engineering, technical electives and a research project. Among the courses taken:

1. At least 12 credits (excluding Thesis Research – ECE 6970) in Electrical or Computer Engineering.
2. At least two sequences in Electrical or Computer Engineering or Computer Science. One of the sequences MUST be in core Computer Engineering courses. The last course MUST be a 6000- or 7000-level course at the end of the sequence.
3. No more than 15 credits of ECE 5000-level or CS 5000-level courses, non-ECE/CS, may be applied towards the MS in Computer Engineering degree.
4. In addition, at least six credits of Thesis Research (ECE 6970) are required.
5. Responsible Conduct of Research (RCR) Training is to be taken in first semester. Send the certificate to the Graduate Program Coordinator.

Plan-B Requirements – The Plan-B degree is based on coursework and engineering design and requires a formal design project report. It is designed to prepare graduates for employment requiring advanced design in industry. It consists of at least 24 credit hours of coursework (5000-, 6000-, and 7000-level) in Computer Engineering, technical electives and a research project. Among the courses taken:

1. At least 12 credits (excluding Design Project – ECE 6950 and Thesis Research – ECE 6970) in Electrical or Computer Engineering.
2. At least two sequences in Electrical or Computer Engineering or Computer Science. One of the sequences MUST be in core Computer Engineering courses. The last course MUST be a 6000- or 7000-level course at the end of the sequence.
3. No more than 15 credits of ECE 5000-level or CS 5000-level courses, non-ECE/CS courses, may be applied toward the MS in Computer Engineering degree.
4. In addition, at least three credits of Design Project (ECE 6950) and three credits of Thesis Research (ECE 6970) are required.
5. Responsible Conduct of Research (RCR) Training is to be taken in first semester. Send the certificate to the Graduate Program Coordinator.

Additional Requirements

1. If a student (funded or not) chooses an MS degree, changing to the ME degree is only possible with approval of the Major Professor, the ECE Graduate Committee, and the Department Head.
2. No more than three credits of ECE 5930/6930/7930 – Independent Study may be counted toward the MS degree. Registration for ECE 6930/6930/7930 – Independent Study requires prior approval (by the responsible instructor, the student's committee, the Graduate Program Chair, and the Department Head) of the intended course work, deliverables, and credits.
3. No more than two ECE 5930/6930/7930 – Special Topics courses are allowed unless otherwise approved by the student's committee.
4. No more than one credit of ECE 6250 – Graduate Internship/Co-op may be counted toward the MS degree. Registration for ECE 6250 – Graduate Internship/Co-op requires prior approval of a description of your project with defined deliverable, signed by your Company Intern Supervisor, ECE Internship Coordinator, and you. The Internship must be directly related to your research as outlined by the Program of Study.

5. The student's Program of Study and any subsequent deviations must be approved by the student's committee.
6. MS Plan-A and Plan-B students will need to submit a written proposal. It must have a signed title page (by the student's committee) and include a list of literary references. No formal proposal defense will be held. STUDENTS CANNOT DEFEND THE SAME SEMESTER THAT THE PROPOSAL IS SUBMITTED.

Master of Science (MS) in Electrical Engineering (Plan A/B)

The Master of Science (MS) in Electrical Engineering is a *research-based* degree. Two plans are offered. MS-Plan A is thesis-based and MS-Plan B is project/report-based. Both degrees also have substantial coursework requirements. Successful completion (3.0 GPA or higher) of a minimum of 30 credits is required for both plans. A "C" or better grade is required for each course.

Plan-A Requirements – The Plan-A degree is based on coursework and research and requires a formal thesis. It is designed to prepare graduates for entering a PhD program or performing research in industry or government labs. It consists of at least 24 credit hours of coursework (5000-, 6000-, and 7000-level) in Electrical Engineering, technical electives and a research project. Among the courses taken:
1. At least three credits of Electrical or Computer Engineering coursework must be completed at the 7000-level.
2. At least 12 credits (excluding ECE 6970 – Thesis Research) of Electrical or Computer Engineering courses must by completed at or above the 6000-level.
3. No more than 15 credits of ECE 5000-level or non-ECE (5000- to 7000-level) may be applied toward the MS in Electrical Engineering degree.
4. In addition, at least six credits of Thesis Research (ECE 6970) are required.
5. Responsible Conduct of Research (RCR) Training is to be taken in first semester. Send the certificate to the Graduate Program Coordinator.

Plan-B Requirements – The Plan-B degree is based on coursework and engineering design and requires a formal design project report. It is designed to prepare graduates for employment requiring advanced design in industry. It consists of at least 24 credit hours of coursework (5000-, 6000-, and 7000-level) in Computer Engineering, technical electives and a research project. Among the courses taken:
1. At least three credits of Electrical or Computer Engineering coursework must be completed at the 7000-level.
2. At least 12 credits (excluding ECE 6950 – Design Project and ECE 6970 – Thesis Research) of Electrical and Computer Engineering courses must be completed at or above the 6000-level.
3. No more than 15 credits of ECE 5000-level or non-ECE (5000- to 7000-level) may be applied toward the MS in Electrical Engineering degree.
4. In addition, at least three credits of Design Project (ECE 6950) and three credits of Thesis Research (ECE 6970) are required.
5. Responsible Conduct of Research (RCR) Training is to be taken in first semester. Send the certification to the Graduate Program Coordinator.

Additional Requirements
1. If a student (funded or not) chooses an MS degree, changing to the ME degree is only possible with approval of the Major Professor, the ECE Graduate Committee, and the Department Head.
2. No more than three credits of ECE 5930/6930/7930 – Independent Study may be counted toward the MS degree. Registration for ECE 6930/6930/7930 – Independent Study requires prior approval (by the responsible instructor, the student's committee, the Graduate Program Chair, and the Department Head) of the intended course work, deliverables, and credits.

3. No more than two ECE 5930/6930/7930 – Special Topics courses are allowed unless otherwise approved by the student's committee.
4. No more than one credit of ECE 6250 – Graduate Internship/Co-op may be counted toward the MS degree. Registration for ECE 6250 – Graduate Internship/Co-op requires prior approval of a description of your project with defined deliverable, signed by your Company Intern Supervisor, ECE Internship Coordinator, and you. The Internship must be directly related to your research as outlined by the Program of Study.
5. The student's Program of Study and any subsequent deviations must be approved by the student's committee.
6. MS Plan-A and Plan-B students will need to submit a written proposal. It must have a signed title page (by the student's committee) and include a list of literary references. No formal proposal defense will be held. STUDENTS CANNOT DEFEND THE SAME SEMESTER THAT THE PROPOSAL IS SUBMITTED.

MS/A Deadlines
1st Semester
- Form a Supervisory Committee that consists of at least three members – Major Professor, a committee member (usually in the same research area), and a committee member outside your field of research (not necessarily outside of the department).
- Once all members have agreed to be on your committee, email the names to your Graduate Program Coordinator.
- The Graduate Program Coordinator will complete the form required by the School of Graduate Studies.
- Discuss your research topic and required coursework with your Supervisory Committee and submit a check sheet to your Graduate Program Coordinator.

Thesis Proposal
- Attend (or watch) a REQUIRED ECE proposal workshop.
- Must be submitted by the end of the 2nd semester. Students cannot defend the same semester that the proposal is submitted.

Major Professor Review
- Attend (or watch) a REQUIRED ECE Formatting Workshop and an optional School of Graduate Studies Thesis and Dissertation Information Session.
- At least six weeks prior to defense, submit your thesis to your Major Professor for the initial read and revision.

Committee Review
- Once your Major Professor has tentatively approved your thesis, send it to the other committee members for their review. This needs to be done at least four weeks prior to the defense.

Scheduling Defense
- You must be registered the semester you defend.
- Coordinate a date and time with your committee.
- Email the Graduate Program Coordinator with the date and time, an abstract, and a picture of yourself. This needs to be done at least 10 *working* days before you want to defend.
- The Graduate Program Coordinator will reserve a room for you, check your file for accurateness, and submit your Appointment for Exam to the School of Graduate Studies.
- You will be notified by email when your Appointment for Exam has finished the approval process and your defense has been scheduled with the School of Graduate Studies. If there are any deviations from the scheduled defense, inform your Graduate Program Coordinator immediately.

- Your Graduate Program Coordinator will send you the following forms that must be filled out and returned – Alumni Card, Placement Survey, Consent to Post, and a ServiceNow Form.
- All of these forms MUST be submitted to your Graduate Program Coordinator before your thesis will be submitted to the School of Graduate Studies for review.

Day of Defense
- Come 30 minutes early to set up.

Format Review Process
- Can take up to 4 weeks.
- Your Major Professor will be responsible for all technical content, writing, and ECE formatting requirements.
- FOLLOW ALL INFORMATION GIVEN TO YOU AT THE ECE FORMATTING WORKHOP. Run a thorough check for spelling, grammar, and punctuation.
- When your thesis is approved by your Major Professor, he/she must send the Graduate Program Coordinator your thesis electronically. Submitting your thesis to the Graduate Program Coordinator means that it is as complete and finished as you and your committee want it to be. The only corrections allowed after that time are the format ones requested by the School of Graduate Studies.
- Once all the forms are submitted and approved, the Graduate Program Coordinator will submit your title page through ServiceNow.
- The School of Graduate Studies will notify you when your thesis has been reviewed and let you know if corrections need to be made. If needed, you will make the corrections and send your thesis to your Major Professor for them to check it again. When approved, your Major Professor will send the Graduate Program Coordinator the final version of your thesis. The Graduate Program Coordinator will upload the thesis again for the School of Graduate School's final approval.
- The Graduate Program Coordinator will have your final thesis uploaded to the ECE website. (Bound copies are no longer required for USU, but if you would like any personal bound copies, the library will provide that service for you. You will make the copies, take them to the second floor of the library, pay the binding fees, and they will take care of the rest. You can pick them up after the binding is finished.)
- MAKE SURE THAT YOU APPLY FOR GRADUATION.
- After everything has been completed, your degree will be closed out and posted on your transcript at the end of the current semester. This can take up to 45 days after the last day of the semester. Your diploma will be sent to you 8 – 10 weeks after the end of the semester.

MS/B Deadlines

1st Semester
- Form a Supervisory Committee that consists of at least three members – Major Professor, a committee member (usually in the same research area), and a committee member outside your field of research (not necessarily outside of the department).
- Once all members have agreed to be on your committee, email the names to your Graduate Program Coordinator.
- The Graduate Program Coordinator will complete the form required by the School of Graduate Studies.
- Discuss your research topic and required coursework with your Supervisory Committee and submit a check sheet to your Graduate Program Coordinator.

Report Proposal
- Attend (or watch) a REQUIRED ECE proposal workshop.
- Must be submitted by the end of the 2nd semester. Students cannot defend the same semester that the proposal is submitted.

Major Professor Review
- Attend (or watch) a REQUIRED ECE Formatting Workshop and an optional School of Graduate Studies Thesis and Dissertation Information Session.
- At least six weeks prior to defense, submit your report to your Major Professor for the initial read and revision.

Committee Review
- Once your Major Professor has tentatively approved your report, send it to the other committee members for their review. This needs to be done at least four weeks prior to the defense.

Scheduling Defense
- Coordinate a date and time with your committee.
- Email the Graduate Program Coordinator with the date and time, an abstract, and a picture of yourself. This needs to be done at least 10 *working* days before you want to defend.
- The Graduate Program Coordinator will reserve a room for you, check your file for accurateness, and submit your Appointment for Exam to the School of Graduate Studies.
- You will be notified by email when your Appointment for Exam has finished the approval process and your defense has been scheduled with the School of Graduate Studies. If there are any deviations from the scheduled defense, inform your Graduate Program Coordinator immediately.
- Your Graduate Program Coordinator will send you the following forms that must be filled out and returned – Alumni Card, Placement Survey, Consent to Post, and a ServiceNow Form.
- All of these forms MUST be submitted to your Graduate Program Coordinator before your thesis will be submitted to the School of Graduate Studies for review.

Day of Defense
- Come 30 minutes early to set up.

Format Review Process
- You must be registered the semester you defend.
- Your Major Professor will be responsible for all technical content and ECE format requirements.
- Follow all information given to you at the ECE Formatting Workshop. Run a thorough check for spelling, grammar, and punctuation.
- When your report is approved by your Major Professor, he/she must electronically send it to the Graduate Program Coordinator. Submitting your report to the Graduate Program Coordinator means that it is as completed and finished as you and your committee want it to be.
- The Graduate Program Coordinator will have your final report uploaded to the ECE website. (Bound copies are no longer required for USU, but if you would like any personal bound copies, the library will provide that service for you. You will make the copies, take them to the second floor of the library, pay the binding fees, and they will take care of the rest. You can pick them up after the binding is finished.)
- You must electronically upload your final report through the library. Information will be given to you by the Graduate Program Coordinator and/or the School of Graduate Studies.
- MAKE SURE THAT YOU APPLY FOR GRADUATION.
- After everything has been completed, your degree will be closed out and posted on your transcript at the end of the current semester. This can take up to 45 days after the last day of the semester. Your diploma will be sent to you 8 – 10 weeks after the end of the semester.

Master of Science (MS) in Space Systems Engineering (Plan C)

The Space Systems Engineering (MS-C) degree is designed to provide early- and mid-career professionals with post-graduate education and an opportunity to develop an understanding of systems engineering from the perspective of the space engineering discipline.

Requirements
1. Successful completion of a minimum of 33 credits (beyond the Bachelor of Science degree) of graduate-level course work, at or above the 5000-level. Must receive a grade of "C" or better in each course while maintaining a graduate cumulative GPA of 3.0 or higher.
2. At least 12 core credit hours and 21 – 22 elective credit hours.
3. A maximum of 15 credit hours at the 5000-level and a minimum of 18 credit hours at the 6000-level or higher.

Core Coursework
ECE 5230 – Space Systems Engineering (3 credits)
ECE 5310 – Control Systems (3 credits)
ECE 6240 – Space Environment and Engineering (3 credits)
MAE 5560 – Dynamics of Space Flight (3 credits)

Elective Coursework
ECE 5240 – Space Systems Design (3 credits)
ECE 5320 – Mechatronics (4 credits)
ECE 6010 – Stochastic Processes in Electronic Systems (3 credits)
ECE 6030 – Mathematical Methods in Signals and Systems (3 credits)
ECE 6040 – Convex Optimization (3 credits)
ECE 6320 – Linear Multivariable Control (3 credits)
ECE 6340 – Spacecraft Attitude Control – Theory (3 credits)

ECE 6345 – Spacecraft Attitude Control – Application (3 credits)
ECE 6560 – Spacecraft Navigation (3 credits)
ECE 7030 – Detection and Estimation (3 credits)
ECE 7210 – Spacecraft Instrumentation (3 credits)
ECE 7330 – Nonlinear and Adaptive Control (3 credits)
ECE 7560 – Advanced Estimation for Aerospace Systems (3 credits)
MAE 5370 – Optimization for Engineers (3 credits)
MAE 5540 – Propulsion (3 credits)
MAE 6540 – Advanced Astrodynamics (3 credits)
MAE 6570 – Optimal Spacecraft Guidance (3 credits)
MAE 7540 – Advanced Astrodynamics Techniques and Applications (3 credits)
MATH 5410 – Methods of Applied Mathematics (3 credits)

MS/C Deadlines
1st Semester
- Discuss program plan with MS/C advisor
- Submit departmental MS/C check sheet

Beginning of Final Semester
- Notify Graduate Program Coordinator that you will finish that semester and they will notify the School of Graduate Studies. Notification must be given no later than October 1st for Fall semester and February 1st for Spring semester.

Middle of Final Semester
- Turn in Alumni Card (with photo) and Placement Survey. All paperwork must be completed before the Graduate Program Coordinator will fill out a Graduation Checklist for you.

Final Step
- Submit graduation application to the School of Graduate Studies.

Doctor of Philosophy (PhD) in Electrical Engineering

1. Students applying for the BS to PhD program must have a letter of recommendation from an ECE faculty member specifically recommending them to the BS to PhD program.
2. A PhD student must form a Supervisory Committee within the first semester of beginning the ECE graduate program. This committee shall consist of five members: a Major Professor who is also an ECE faculty member and four other members. One of the committee members must be outside of the ECE department.
3. A PhD student is required to successfully maintain and complete with a GPA of 3.0 or higher a total of 72 semester credits beyond a Bachelor's degree or 42 semester credits beyond a Master's degree. Only coursework completed with a "C" or better grade at or above the 5000-level course numbering can be counted towards the semester hour requirement.
4. A PhD student is required to complete a minimum of 42 semester credits beyond a Bachelor's degree or 18 semester credits beyond a Master's degree of **coursework** that are not dissertation research credits. The total number of coursework credits is to be determined by the student and the Major Professor and approved by the Supervisory Committee.
5. A PhD student is required to complete a minimum of 18 semester credits beyond a Bachelor's degree of 12 semester credits beyond a Master's degree of **dissertation research**. The total dissertation credits required must be consistent with credits outline in items #3 and #4 above.
6. A PhD student my take up to 18 semester credits of coursework beyond a Bachelor's degree or 9 semester credits of coursework beyond the Master's degree outside of the ECE department. An exception to this requirement must consist of a written justification by the student's Major Professor that is approved by the Supervisory Committee and the ECE Graduate Committee Chair.
7. A **Program of Study** describing how items #3, #4, #5, and #6 will be achieved shall be created by the PhD student and their Major Professor and approved by the Supervisory Committee before the end of the first semester of study. The Program of Study shall detail coursework that enables the student to mast at least ONE of the ECE Department graduate focus areas and shall detail the number of dissertation research credits to be taken. The Program of Study should include courses that enable the student to master the research area of their dissertation topic. The student, Major Professor and the Supervisory Committee must meet to review, discuss, and approve the Program of Study and potential dissertation topics before the end of the first semester of study.
8. A PhD student must pass a Comprehensive Exam after completing a minimum of 33 semester credits of coursework beyond a Bachelor's degree or a minimum of 9 semester credits of coursework beyond a Master's degree. The Comprehensive Exam shall be taken within four years after beginning the BS to PhD program or three years after beginning the MS to PhD program or the PhD candidate will be terminated from the program. The Major Professor and the Supervisory Committee, in consultation with the student, must choose either a Program of Study format or Research format for the Comprehensive Exam. The Comprehensive Exam shall consist of both a written and an oral portion.

   Particular Objectives and Requirements of the Comprehensive Exam:

   8.1 The Program of Study format Comprehensive Exam will focus on the courses taken in the student's PhD program and undergraduate area of expertise. The student will be expected to know the material, as well as make a synthesis between course topics. The Research format Comprehensive Exam will focus on selected scholarly papers related to the student's PhD research topic area. The student will be expected to understand the scholarly papers, as well as make a synthesis between the various topics of the selected papers.

8.2   The exam shall be a demonstration that the student has mastered technical knowledge at a level concordant with a graduate education, including preparatory undergraduate material as necessary, and can apply this knowledge. This requirement is relevant to both formats of the Comprehensive Exam. A Research format exam should require the student to demonstrate an understanding of the details of selected scholarly papers and require them to reproduce or explain any aspect of the papers in writing and orally.

8.3   The exam shall provide a demonstration that the student can communicate effectively in writing, including organizing a response that is coherent, legible, and correct.

8.4   The exam shall be a demonstration that the student can communicate effectively orally, including understanding questions posed and drawing from their background knowledge to present an organized, coherent response. For a Research format exam, oral questions need not be limited to the scope of the assigned papers only, but may include the background and context in which the papers were written, including related theoretical background.

8.5   The exam shall be a demonstration that the student has the ability to understand the logical soundness of their conclusions and can defend positions they have taken using methods appropriate to their sub-discipline. The student is expected to demonstrate an understanding of the scientific methodology and have the ability to critically analyze their own and others' scholarly works.

8.6   The written portion of the Comprehensive Exam for both formats will be held the 3rd week in January and on the same day for all candidates.

8.7   The ECE Graduate Committee shall require the Major Professor to discuss with the student, the objective and expectations for the Comprehensive Exam and to select either a Program of Study format or a Research format Comprehensive Exam. The Major Professor shall notify the ECE Graduate Committee Chairman of the student's intent to proceed with the exam and selected format.

8.8   A PhD student must formally apply to the ECE Graduate Committee Chairman after completing item 8.7 and four months (September 15th) prior to taking the Comprehensive Exam. The student should use these four months to prepare for the exam.

8.9   The ECE Graduate Committee Chairman will meet and brief the PhD students taking the exam on the procedures and expectations for the written and oral portions of the exam.

8.10   If the PhD student is to take the Research format exam, then a meeting of the Supervisory Committee must be convened by the Major Professor to determine the quantity and selection of scholarly papers for the exam and to develop a set of questions for the written portion of the exam. The Major Professor must present a copy of each scholarly paper selected and a set a written questions to the ECE Graduate Committee Chairman who will present that papers to the student for study. **The PhD student must be allowed no less than one week per paper to prepare for the exam.**

8.11   The ECE Graduate Committee Chairman shall inform the PhD student of the results of the written exam before the oral exam is taken.

8.12   The Supervisory Committee and any additional ECE faculty members appointed by the ECE Graduate Committee Chairman will give the oral portion of the exam. At least one member of the ECE Graduate Committee must be present at the oral portion of the Comprehensive Exam. The ECE Graduate Committee Chairman will assign a member of the ECE Graduate Committee to conduct the oral exam.

8.13   A student who successfully passes the written exam must take the oral portion of the exam within two weeks of the written exam.

8.14 A PhD student will have two chances to pass the Comprehensive Exam. If the student fails the Comprehensive Exam twice, then they will be terminated from the program.

9. A PhD student is required to pass a Dissertation Research Proposal Defense after successfully passing the Comprehensive Exam. The Dissertation Research Proposal Defense shall consist of a written document and a presentation to the student's Supervisory Committee of its contents. The Dissertation Research Proposal Defense should be held within one year of passing the Comprehensive Exam and at least one year before the Dissertation Research Defense.

   Dissertation Research Proposal and Defense:

   9.1 The Dissertation Research Proposal shall consist of a thesis topic, a description of the proposed research, a description of the methodology, and a discussion of the relevant scholarly literature.

   9.2 The Dissertation Research Proposal must include a thorough literature search in bibliographic form that is relevant to the proposed research.

   9.3 A maximum of 20 pages, excluding the bibliographical references, is allowed for the Dissertation Research Proposal. It is recommended that the ECE Department LaTeX style be sued for the preparation of the Dissertation Research Proposal.

   9.4 The student must successfully answer questions from the Dissertation Research Proposal literature search at the defense as well as questions on the proposed methodology and the relevance of the research.

   9.5 The written Dissertation Research Proposal, including a title page signed by the student's Supervisory Committee, shall be submitted to the ECE Graduate Committee Chairman to indicate successful passing of the Dissertation Research Proposal Defense.

10. A PhD student will be required to complete an Application for Doctoral Degree Candidacy and have it signed by the Supervisory Committee after successfully completing a Dissertation Research Proposal Defense.

11. The PhD candidate will be required to pass a Dissertation Research Defense of their original, publishable dissertation research.

12. **A PhD student is required to produce publishable peer-reviewed papers as part of their PhD degree program. The student's Supervisory Committee will determine the number and suitability of such papers**.

PhD Deadlines

1st Semester
- Form a Supervisory Committee that consists of at least five members – Major Professor, three committee members (usually in the same research area), and a committee member outside the department.
- Once all members have agreed to be on your committee, email the names to your Graduate Program Coordinator.
- The Graduate Program Coordinator will complete the form required by the School of Graduate Studies.
- Discuss your research topic and required coursework with your Supervisory Committee and submit a check sheet to your Graduate Program Coordinator.

Comprehensive Exam
- Taken after completion of a minimum of 18 credits of coursework (post MS) or a minimum of 33 credits of coursework (post BS).
- Submit an Application for Comprehensive Exam to the Graduate Program Coordinator by September 15th to take the exam the following January.

<u>Dissertation Proposal Defense</u>
- Attend (or watch) a REQUIRED ECE proposal workshop.
- Should be held within one year of passing the Comprehensive Exam and at least one year before the Dissertation Research Defense.
- After successful completion of the Dissertation Proposal Defense, the Graduate Program Coordinator will submit an Application for Candidacy of Doctoral Degree to the School of Graduate Studies.

<u>Major Professor Review</u>
- Attend (or watch) a REQUIRED ECE Formatting Workshop and an optional School of Graduate Studies Thesis and Dissertation Information Session.
- At least six weeks prior to defense, submit your thesis to your Major Professor for the initial read and revision.

<u>Committee Review</u>
- Once your Major Professor has tentatively approved your thesis, send it to the other committee members for their review. This needs to be done at least four weeks prior to the defense.

<u>Scheduling Defense</u>
- You must be registered the semester you defend.
- Coordinate a date and time with your committee.
- Email the Graduate Program Coordinator with the date and time, an abstract, and a picture of yourself. This needs to be done at least 10 *working* days before you want to defend.
- The Graduate Program Coordinator will reserve a room for you, check your file for accurateness, and submit your Appointment for Exam to the School of Graduate Studies.
- You will be notified by email when your Appointment for Exam has finished the approval process and your defense has been scheduled with the School of Graduate Studies. If there are any deviations from the scheduled defense, inform your Graduate Program Coordinator immediately.
- Your Graduate Program Coordinator will send you the following forms that must be filled out and returned – Alumni Card, Placement Survey, Consent to Post, and a ServiceNow Form.
- All of these forms MUST be submitted to your Graduate Program Coordinator before your thesis will be submitted to the School of Graduate Studies for review.

<u>Day of Defense</u>
- Come 30 minutes early to set up.

<u>Format Review Process</u>
- Can take up to 4 weeks.
- Your Major Professor will be responsible for all technical content, writing, and ECE formatting requirements.
- FOLLOW ALL INFORMATION GIVEN TO YOU AT THE ECE FORMATTING WORKHOP. Run a thorough check for spelling, grammar, and punctuation.
- When your dissertation is approved by your Major Professor, he/she must send the Graduate Program Coordinator your dissertation electronically. Submitting your dissertation to the Graduate Program Coordinator means that it is as complete and finished as you and your committee want it to be. The only corrections allowed after that time are the format ones requested by the School of Graduate Studies.
- Once all the forms are submitted and approved, the Graduate Program Coordinator will submit your title page through ServiceNow.
- The School of Graduate Studies will notify you when your dissertation has been reviewed and let you know if corrections need to be made. If needed, you will make the corrections and send

your dissertation to your Major Professor for them to check it again. When approved, your Major Professor will send the Graduate Program Coordinator the final version of your dissertation. The Graduate Program Coordinator will upload the dissertation again for the School of Graduate School's final approval.

- The Graduate Program Coordinator will have your final dissertation uploaded to the ECE website. (Bound copies are no longer required for USU, but if you would like any personal bound copies, the library will provide that service for you. You will make the copies, take them to the second floor of the library, pay the binding fees, and they will take care of the rest. You can pick them up after the binding is finished.)
- MAKE SURE THAT YOU APPLY FOR GRADUATION.
- After everything has been completed, your degree will be closed out and posted on your transcript at the end of the current semester. This can take up to 45 days after the last day of the semester. Your diploma will be sent to you 8 – 10 weeks after the end of the semester.

OTHER GENERAL INFORMATION

Non-ECE Graduate Students

The ECE Department encourages students from non-ECE undergraduate majors to apply to our graduate program. The Department following the overarching philosophy that graduate from our program should have the basic skills expected to be found in engineers holding a degree in electrical or computer engineering at Utah State University. Therefore, non-ECE undergraduates must demonstrate understanding of the core topics in Electrical or Computer Engineering.

Non-ECE undergraduate majors may be accepted <u>CONDITIONALLY</u> into the ECE Graduate Program if the <u>meet the standard qualifications</u> set by the ECE Graduate Committee, with the condition that they must demonstrate competency in, or complete the following prerequisite courses with a B or better grade. Once the conditions are completed, they will be matriculated into the graduate program.

This requirement is not necessary for PhD EE post masters degree students.

ECE 3410 - Microelectronics I (4 credits)
Fundamentals of transistors, operational amplifiers, and other integrated circuits, along with their utilization in amplifiers, switches, and other applications. Laboratory work required.
Prerequisite/Restriction: ECE 2250 and ECE 3620 (may be taken concurrently).
Semester(s) Traditionally Offered: Spring

ECE 3620 - Continuous-Time Systems and Signals (3 credits)
Time domain analysis of higher-order systems: impulse response and convolution. Circuit and system analysis using Laplace transforms. Frequency domain analysis including discrete Fourier series, Fourier transforms, and analog filter design. State-space representations of systems. Some lab work required.
Prerequisite/Restriction: MATH 2280, ECE 2290, CS 1410 (may be taken concurrently).
Semester(s) Traditionally Offered: Fall

ECE 3640 - Discrete-Time Systems and Signals (3 credits)
Sampling of continuous-time signals. Time and z-transform domain analysis of discrete-time systems. Frequency domain analysis using the discrete-time Fourier transform, DFT and FFT. Frequency response and digital filter design. Some lab and computational work required.
Prerequisite/Restriction: ECE 3620.
Semester(s) Traditionally Offered: Spring

ECE 3710 - Microcontroller Hardware and Software (4 credits)
Synthesis of microcontroller systems, including hardware, programming, and interfacing. Covers architecture basics, instruction set, assembly language programming, I/O, timing, and interrupts. Includes hands-on implementation. Three lectures, one lab.
Prerequisite/Restriction: ECE 2250, ECE 2700, CS 1410.
Semester(s) Traditionally Offered: Fall

ECE 3870 - Electromagnetics I (4 credits) (EE MAJORS)
Discussion of Maxwell's equations, electromagnetic waves, power and energy, reflection and refraction processes, transmission lines, waveguides, and antennas. Explores electrostatic and magnetostatic fields produced by charge and current distributions, as well as electromagnetic forces and materials.
Prerequisite/Restriction: ECE 2250, MATH 2210, MATH 2270, MATH 2280, PHYS 2220. **Semester(s) Traditionally Offered:** Spring

*Depending on the specialization of the undergraduate degree, certain courses (or prerequisites) may be waived if the course or the equivalent was already taken.

**Courses (or prerequisites) may also be waived by passing an exam at the discretion of the course instructor.

***Each course has prerequisites.

Program of Study Limitations

- Transfer Credits
  - Your Supervisory Committee may recommend the transfer of up to nine graduate credits for PhD and six graduate credits for MS students earned at another accredited institution to your USU Program of Study.
  - Transfer credits are subject to the approval of the Vice Provost of Graduate Studies.
  - Transfer credits cannot have been used for another degree.
  - Credits with a "P" grade cannot be transferred.
  - Transfer credits do not count toward the required residency credits.
  - Transfer credits are subject to the same time limit as USU course credits.
- If you deviate from your initial Program of Study during your actual coursework, work with your Graduate Program Coordinator to submit a *Program of Study Revision*.
- Once you complete the coursework credit requirement on your Program of Study, you qualify to be considered a full-time student at three credits. After you finish your entire Program of Study credit requirements, you can register for three credits of ECE 6970 (MS Plan A) or ECE 7970 (PhD) if needed until your defense semester.
- Coursework on your Program of Study more than six years old (MS) and eight years old (PhD) must be revalidated by the School of Graduate Studies at least six weeks prior to your defense. Work with the Graduate Program Coordinator if this is needed.

Responsible Conduct of Research Training

All PhD and MS Plan A students must complete the Responsible Conduct of Research training (RCR). All other students may participate in the program if interested or as directed by their Supervisory Committee.

The training introduces key topics in the Responsible Conduct of Research (RCR), including responsibilities related to proper research conduct, and the regulations that ensure that research is done in ways that are scientifically sound, ethical and safe.

To fulfill the RCR training requirement, you must complete the "Responsible Conduct of Research (RCR) Curriculum" through the CITI training online program. You will take the "Physical Science Responsible Conduct of Research Course." Completion of another CITI Training Module (such as the Social & Behavioral Research Modules used by the IRB or those used by the IACUC) **DOES NOT** fulfill the RCR training requirement. You must pass each module with a score of 80% or higher.

You will find information on how to register for the RCR training via the CITI website here: https://research.usu.edu/compliance/.

Once RCR Training is completed via CITI Training, the Office of Research Integrity and Compliance will automatically receive an email with your certification of completion for their records. You will also need to send a copy of the certificate to your Graduate Program Coordinator so it can be put in your files.

Thesis/Dissertation Preparation and Degree Completion

It is your responsibility to assure that your thesis/dissertation adheres to the publishing standards of the USU School of Graduate Studies *before* you submit it for their review and approval. If you submit your thesis/dissertation to the USU School of Graduate Studies riddled with errors, it will be promptly returned to you without further comment.

In an effort to help you know what is expect from your thesis/dissertation before submission, the USU School of Graduate Studies offers workshops throughout the year designed to help you prepare your manuscript in the correct format. (The ECE Department requires that your thesis/dissertation be done in the LaTeX format – https://engineering.usu.edu/ece/students/graduate/thesis-template.) The workshops also provide valuable information on copyright laws and the approval process. Register for a workshop early in the year, as they fill up quickly. These workshops and not mandatory, but it's highly recommended that you attend one. The ECE Department also has a required Proposal Workshop and a Writing/Formatting Workshop. Your Graduate Program Coordinator will provide you with more information.

In addition, before you begin working on your thesis, Plan B report, or dissertation, review the *USU Publication Guide* found on the USU School of Graduate Studies website: https://gradschool.usu.edu/thesis-dissertation-requirements/ for formatting style. You can also look at the reports/theses/dissertations of recent ECE students which are available on USU's Digital Commons as well as the ECE website: https://ece.usu.edu.

Defense

Your thesis/dissertation defense will include a public seminar in which your research and conclusions are presented to all interested faculty and graduate students, with an opportunity for questions from the audience. Your Supervisory Committee will then convene and discuss the outcome of your defense, resulting in the decision of your performance in the defense.

Refer to the "checklist for completing degree" for deadlines during the course of preparing for and executing your thesis/dissertation defense and work closely with the department Graduate Program Coordinator. There is much policy and paperwork involved, which they are happy to help you navigate.

Thesis/Dissertation Deposition & Degree Closeout

It is your responsibility to meet guidelines for the deposition of your thesis/dissertation with Utah State University after it is accepted by your Supervisory Committee and the USU School of Graduate Studies.

You will have **one** "grace" semester after your defense to finish and deposit your thesis/dissertation with USU and close out your degree. International students must register for USU 7777 during their grace semester (no tuition or student fees will be charged) to maintain their visa status. Domestic student would benefit from registering for USU 7777 to retain access to the USU Library, Box, VPN, or BlueZone during the grace semester. Students can register for the course by emailing gradforms@usu.edu, asking to be registered for USU 7777. You will be charged a late completion fee for every semester required beyond your grace semester to close out your degree. International students will be required to register for 3 credits per semester that hoes beyond their grace semester.

The thesis/dissertation deposition and closeout process can take several weeks to complete. Therefore, if you must have your thesis/dissertation finished and your degree closed out by a specific date, begin the process accordingly. Do not think the review process can be completed in a couple of days!

- Submit all required forms to your Graduate Program Coordinator before your defense to ensure a smooth process when you are ready to submit your thesis/dissertation. You will need to submit your Alumni Card and Placement Survey to the department for internal records. You will need to submit the ServiceNow form so the Graduate Program Coordinator can submit your Format & Style and Authorship & Copyright Forms to the School of Graduate Studies. Your thesis/dissertation will NOT be submitted to the School of Graduate Studies until these forms are approved.
- The Graduate Program Coordinator will submit your title page through ServiceNow.
- Your Major Professor will submit your final approved thesis/dissertation to the Graduate Program Coordinator.
- The School of Graduate Studies will briefly review your manuscript for basic grammar errors, plagiarism, and citations. Again, they will simply return your manuscript if it does not already meet the criteria outlined in the USU Publication Guide (https://gradschool.usu.edu/thesis-dissertaiton-requirements/) and your selected journals.
- After the School of Graduate Studies has approved your manuscript, upload a PDF copy of your final thesis/dissertation to ProQuest/Digital Commons and pay their publishing/microfilming fees online.
- If there are further actions required, the School of Graduate Studies will contact you if any further actions are required. If no further actions are necessary, your degree will be closed out and posted at the end of the semester. Congratulations! You are finished!!
- If you want physical copies of your manuscript bound for personal use or to distribute to family, friends, committee members, etc., make the requisite number of copies and take them to the USU Merrill-Cazier Library (Journals & Newspapers Desk) for binding. For the current prince for bound thesis/dissertation copies, contact the USU Library.

STUDENT REGISTRATION STATUS

Full-Time Status

A full-time matriculated graduate student must be one of the following:
- Registered for 9 or more graduate credits.
- Registered for 6 or more graduate credits <u>if employed as a Graduate Research Assistant</u> for 15 hours per week of more.
- Registered for 3 graduate credits will all required coursework completed and only the research component of the degree remaining (the student's Program of Study must have been submitted to the School of Graduate Studies).
- Register for a least three graduate credits (one credit over the Summer semester) during the semester of the final thesis/dissertation defense or, in a non-thesis program, the last semester of coursework required on the student's Program of Study.

Utah Residency

Domestic, non-resident graduate students qualify for Utah Residence after one year. Because the USU School of Graduate Studies will only waiver the non-resident tuition portion for two semesters, it is crucial that you gain Utah Residence before your third semester begins (see Tuition/Waiver Awards below). Note that you must have possessed a valid Utah driver's license for at least three months before you can apply for Utah Residency. Therefore, you must have a Utah driver's license by at least June if applying for Utah Residency for Fall semester and by September if applying for Utah Residency for Spring semester. Contact the Utah State University Residency Office, located in the Taggart Student Center, for more information regarding Utah Residency.

Continuous Graduate Registration

Graduate students using University facilities or faculty time must be registered for a minimum of three graduate credits every semester, except Summer semesters and the student's "grace" semester, until completion of all degree requirements. Continuous registration may be met with courses, independent study, or research credits (ECE 6970 or ECE 7970). The continuous registration requirement goes into effect the semester a student matriculates in the School of Graduate Studies.

A graduate student who is not using University facilities or faculty time may meet the continuous registration requirement by paying the Continuous Registration Fee of $100 per semester (not necessary for Summer semester). This alternative requires completion of the *Application for Leave of Absence/Continuous Registration* form, which includes verification that the student is not using University facilities and/or faculty time. International students usually do not qualify to pay the Continuous Registration Fee because of immigration regulations.

Because of Student Exchange and Visitor (SEVIS) regulations, a student holding an F-1 or J-1 visa is not eligible to pay the $100 fee to complete the degree, but must be registered as a full-time student through the semester of completion. As noted above, once your Program of Study credit requirement is complete, you can register for three credits of ECE 6970 or ECE 7970 (Thesis Research, MS or Dissertation Research) until your defense semester.

FINANCES

Graduate Research Assistantship

Many graduate students in the ECE Department are funded through a Graduate Research Assistantship (GRA). This assistantship provides a monthly salary (paid on the first of the month for the previous month's work) and qualifies the recipients for additional tuition award/waivers and health insurance benefits. If there are changes in the assistantship, the Major Professor should notify the Business Manager (Kathy Phippen) prior to the 5th of the month at the end of which the change is to take effect.

Tuition/Fees

All non-resident students (MS/A and PhD) who are hired as a GRA will qualify for a non-resident tuition waiver (the non-resident portion of your tuition will automatically be removed from your student account). In addition, PhD students who are hired as a GRA will qualify for a resident tuition award (the College of Engineering will pay the resident portion of your tuition). MS/A students will receive a minimum in-state tuition award of $600 from the College of Engineering. If your Major Professor has not agreed to pay your resident tuition from a grant account, then you will be responsible for paying the remainder of your tuition. All graduate students are responsible for paying their differential tuition and student fees (unless your Major Professor has agreed to pay for them from a grant account).

Tuition Waiver/Award Requirements

In order to be eligible for a waiver/award, the following criteria must be met:
- Hired as a GRA working at least 20 hours/week (.5 FTE) and receiving at least $833/month during the duration of the waiver/award period (from the first day of the semester to the last day of the semester).
- Registered as a full-time student at Utah State University (six credit hours if working on Program of Study; three credit hours if finished with Program of Study).
- Maintain a 3.0+ GPA for courses covered by the tuition waiver/award.

Tuition Waiver/Award Limitations

Tuition waivers/awards are subject to the following limitations:
- Credits waived and/or paid through the tuition waiver/award program must be part of your approved Program of Study (see "Program of Study" section for limitations on what courses can be part of your Program of Study).
- A maximum of two semesters' worth of non-resident tuition will be waived for U.S. citizens, as students qualify for Utah residence after one year (see "Utah Residency" section for more details).
- A maximum of 9 credits per semester will be waived and/or paid for each semester.

USU Student Health Insurance

All graduate students who receive a fellowship of $10,000+/year or are employed as a GRA (working 20 hours/week), qualify for a subsidized version of USU's Student Health Insurance. This subsidy requires the fellowship or grant account to pay 80% of the premiums, with the student responsible for the remaining 20%. Coverage is for an entire year, unless you opt out of the program after Fall semester or begin the program during Spring semester.

If you qualify, you must enroll in USU's Student Health Insurance or opt-out by providing evidence that you already have equivalent insurance. This MUST be done every semester.

NOTICE OF NON-DISCRIMINATION

In its programs and activities, including in admissions and employment, Utah State University does not discriminate or tolerate discrimination, including harassment, based on race, color, religion, sex, national origin, age, genetic information, sexual orientation, gender identity or expression, disability, status as a protected veteran, or any other status protected by University policy, Title IX, or any other federal, state, or local law. The following individuals have been designated to handle inquiries regarding the application of Title IX and its implementing regulations and/or USU's non-discrimination policies:

Executive Director of the Office of Equity
Alison Adams-Perlac
alison.adams-perlac@usu.edu
Old Main Rm. 161
(435) 797-1266

Title IX Coordinator
Hilary Renshaw
hilary.renshaw@usu.edu
Old Main Rm. 161
(435) 797-1266

For further information regarding non-discrimination, please visit https://equity.usu.edu/, or contact:

U.S. Department of Education
Office of Assistant Secretary for Civil Rights
(800) 421-3481
ORC@ed.gov

U.S. Department of Education
Denver Regional Office
303-844-5695
OCR.Denver@ed.gov