Engineering Education
Graduate Student Manual

Last Updated: June 1, 2021
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Section 1. Welcome

Welcome to the Department of Engineering Education (EED) in the College of Engineering at Utah State University (USU). We are sure you will find a dynamic faculty, talented student colleagues, and a supportive staff in the Department. The Ph.D. in Engineering Education program will provide you the knowledge and tools that are necessary to compete in today’s competitive global environment, while preparing you to be a leader in teaching tomorrow’s engineers. Please familiarize yourself with information in this manual, so you will be informed about the program, its policies, and its procedures. We trust you will find this manual useful in assisting you with guidelines to ensure your success. In the new school year and beyond, our program will meet and exceed your expectations of a successful graduate experience. Always feel free to contact anyone in the program with questions.

Congratulations on becoming a productive and important part of our graduate program. The faculty, staff, and students wish you a warm welcome.

Section 2. Declaration of Commitment to Pursuing Ph.D. in Engineering Education

A doctoral degree is the highest professional degree given in the field of engineering education. Potential doctoral students should be aware that the course work, reading and writing duties, and research expectations in a doctoral program are extremely demanding. For every three-credit class taken, approximately 6 to 9 hours of out-of-class study a week may be expected. Thus, a typical semester of doctoral work in this program requires 18 to 27 hours a week of your time. The actual time required depends on course difficulty, your background and experience with that subject, and your semester credit load. If you are awarded a Research or Teaching Assistantship, you can anticipate an additional 20 hours of work per week on average. Once your course work is finished, you must successfully complete a comprehensive Qualifying Exam and present a written dissertation proposal to your Supervisory Committee. After you pass the doctoral Qualifying Exam and your Supervisory Committee approves your research proposal, you then begin work on the dissertation.

The dissertation is an independent research project that makes an original contribution to the body knowledge in the discipline. Students in this Ph.D. program are required to engage in research to advance the knowledge in field of engineering education. Once the dissertation research is completed and the dissertation is written, the Supervisory Committee will critique it, and an oral defense of the research will be held. After all revisions requested by the Supervisory Committee (including your Faculty Advisor) and liaisons for the School of Graduate Studies are completed, the degree of Doctor of Philosophy in Engineering Education is awarded.

The Utah State University Engineering Education doctoral program provides a valuable opportunity for you to develop professional competence in engineering education research and requires a significant amount of work. You should assume that the rigor expected in this program is consistent with expectations in Ph.D. programs at other major research universities. In order to personally assess whether you are prepared to commit to this program, you are asked to carefully consider the following nine key statements and to ask yourself whether you can commit to them in advance of pursuing this Ph.D. degree. Please do not take these statements lightly.
1. I can commit the time necessary to be successful in this program.
2. I can balance the demands of my other, non-USU-related responsibilities (such as family and work responsibilities) with those of the doctoral program.
3. I understand that in order to be successful in this program, I need to be intrinsically motivated and communicate professionally with faculty, staff, and peer students.
4. I have the proper attitude about academic inquiry. Doctoral work is an intensely intellectual experience and should not be considered as anything less.
5. I am committed to developing research competence.
6. I can develop and complete research tasks assigned to me in a reasonable amount of time.
7. I consider perseverance to be one of my strengths.
8. I consider the rewards I will receive upon earning my doctorate (intellectual, psychological, and monetary) sufficient to sustain me through the challenges of doctoral study.
9. There is a high probability that I can complete the scheduled program within the 3 to 4 years that are allotted. If I have concerns about being able to complete the program within 3 to 4 years due to personal factors (such as work or family commitments), I will promptly discuss my situation with my faculty advisor prior to beginning the program.

I declare that I have read the above information and am committed to the demands of the doctoral program. I would like to apply to the doctoral program with full knowledge of the commitment I am making.

Student Name (printed) _________________________
Signature ____________________________________
Date ________________________________________

Section 3. Research and Teaching Assistantships

Research Assistantships (RAs) and Teaching Assistantships (TAs) are different types of graduate assistantships offered to students as a means to receive the financial support necessary to commit to their academic programs. Students must be enrolled in a minimum of 9 semester hours and must be in good academic standing each semester they are appointed. RA and TA appointments are meant to provide students with invaluable experiences in research, and teaching activities, as well as to allow students to engage in an optimal full-time graduate school experience. In EED, some students who assist with both research and teaching qualify as both RA and TA.

Graduate Student RAs are employed an average of 20 hours per week and are focused on assisting the research efforts of their faculty mentor in a way that relates to the student’s educational objectives. Graduate Student RAs are typically paid from individual research awards or from externally funded contracts and grants. The Principal Investigator of the award will direct and supervise the RA’s research activities. Appointments and reappointments are evaluated on a semester-by-semester or yearly basis.
Graduate Student TAs are employed an average of 20 hours per week to help meet the instructional needs of the university. The Graduate TA, under the direction of an assigned faculty member, will aid in the teaching of one or more courses. TAs are paid from Departmental funds; appointments and reappointments are subject to several factors and are on a semester-by-semester or yearly basis.

As new RAs and TAs, graduate students take on multiple roles in the university. First, as employees, they are responsible for issues such as compliance, rules of conduct, regulation, and appropriate human resource procedures. Second, as new graduate students, they learn about available resources to assist them with the inherent challenges found in juggling the work of teaching and/or research with the demands of graduate school. Finally, in their new professional roles of teachers and researchers, graduate students learn and implement tactics for interacting with undergraduates, structuring learning experiences, engaging with cultural issues in a multi-cultured university, and fulfilling faculty expectations of RAs and TAs.

Section 4. Program Requirements

4.1 EED Ph.D. Program Requirements

The EED Ph.D. program requirements can be found in the table on page 8. You must

1. Maintain a minimum cumulative GPA of 3.0 during your graduate study.

2. Identify courses with pre-requisites (such as STAT 5200 and EDUC 6570) and discuss in advance with your Faculty Advisor (Major Professor). They will help solve relevant issues.

3. If you would like to learn the latest statistical analysis/data analytics tools and techniques, you can take an alternative elective course – a course that is not listed on the current course electives list— as an elective course. Prior approval from both your Faculty Advisor and dissertation committee is necessary to take an alternative elective course. If you would like to enroll in an alternative elective course, discuss the situation with your Faculty Advisor (Major Professor), and then your committee, to get approval prior to registering for the course.

USU graduate programs that typically offer course of interest include Education (EDUC), Psychology (PSY), Teacher Education and Leadership (TEAL), and Instructional Technology and Learning Sciences (ITLS). Note that several advanced quantitative measurements courses, including EDUC/PSY 7050 Instrument Design, EDUC/PSY 7070 Advanced Measurements Theory and Practice, and EDUC/PSY 7610 Research Design & Analysis II, are currently listed on the approved electives list. See the USU course catalog to find other courses of interest for elective credit.

4.2 Additional EED Program Requirements for Ph.D. Graduate Students

A full-time matriculated Ph.D. graduate student must fulfill one of the following requirements. For international students who take less than 9 credits in a spring or fall semester in various scenarios listed below, see additional notes ** on the next page.
• Register for 9 or more graduate credits
• Register for 6 or more graduate credits if employed as a graduate assistant for 20 hours per week
• If you have taken all required 30-credit coursework 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), you must register for 3 graduate credits - EED 7900 Independent Study or EED 7970 Dissertation Research - each semester you are in the program
• If you have taken all required 30-credit coursework and 12-credit dissertation research for the program, but are not yet finished with your research, you must register for 3 graduate credits - EED 7990 Continuing Graduate Advisement (CGA), or EED 7900 Independent Study, or EED 7970 Dissertation Research each semester you are in the program. The maximum number of CGA credits available is 10; this approximately equates to 3 semesters of 3 credits each to finish. If you are using CGA credits, you are still eligible for the subsidized graduate student insurance as long as you are still 0.5 FTE and receiving a graduate assistantship.
• During the semester of the final dissertation defense, register for at least 3 graduate credits - EED 7900 Independent Study, or EED 7970 Dissertation Research, or EED 7990 Continuing Graduate Advisement (CGA).
  o One exception for the semester of the final dissertation defense: If you have completed all required 12 credits of EED 7970 Dissertation Research AND you do not receive Research Assistantship or Teaching Assistantship, then you only need to register for 1 credit of EED 7900 Independent Study, or EED 7970 Dissertation Research, or EED 7990 Continuing Graduate Advisement (CGA).

Summer semester: Domestic and international students must be registered during the fall and spring semesters, but are not required to be registered in summer. If you choose to be registered in summer for whatever reasons, check with your Faculty Advisor because the EED department and USU may NOT provide tuition waiver even if you are on a graduate teaching or research assistantship during summer.
  o If you have completed all required 30-credit coursework, you do not need to be registered in summer for dissertation research.
  o If you have completed all required 30-credit coursework and 12-credit dissertation research for the program, and you defend their dissertation in summer, you must register in summer 1 credit of EED 7900 Independent Study, or EED 7970 Dissertation Research, or EED 7990 Continuing Graduate Advisement (CGA).

** For international students: All above requirements apply also. In addition,
  • In order to maintain legal status, such as on an F-1 visa, in the United States, you should register each spring and fall semester, but are not required to register in summer.
  • If you are not on a graduate research or teaching assistantship, in general, you must register for 9 credits each spring and fall semester to maintain full-time legal status.
  • If you are on a graduate research or teaching assistantship, you may register less than 9 credits, such as 6 credits in the first semester and 3 credits in the last semester depending on various scenarios listed earlier. In those scenarios, you must file a Reduced Course Load Form each spring and fall semester. You can find the form from the Office of Global Engagement to get approval to take less than a full course load: https://gradschool.usu.edu/reduced-course-load.
4.3 Institutional Requirements

1. **Research Scholars Orientation**: Typically occurs a week before the beginning of classes in the fall semester and immediately following the New Graduate Student Orientation. There will be a sign-in sheet for attendance credit. It is possible to watch a video through Canvas and take a quiz if you are not able to attend in person.

2. **Fall Research Scholars Forum**: Typically occurs during the fall semester. You have the option to watch a video through Canvas and take a quiz if you are not able to attend in person.

3. **Spring Research Scholars Forum**: Typically occurs in the spring semester. You have the option to watch a video through Canvas and take a quiz if you are not able to attend in person.

4. **Complete the Online Responsible Conduct of Research Module** provided by the Collaborative Institutional Training Initiative (CITI).

5. **FERPA Training**: If you will be participating as a teaching assistant in a course and will be handling grades, you must complete FERPA training. You have the option to take this training online.

6. **USU 6900 – Research Integrity**: The Research Integrity course provides an introduction to key topics of Responsible Conduct of Research, which helps students and researchers understand their responsibilities related to proper research conduct and the regulations that ensure research is scientifically sound, ethical, and safe. This understanding is critical for any career in scholarly research, whether in academics, government, or industry.

The individuals are required to complete the Research Scholars Certification program:

- Graduate and undergraduate students as well as postdoctoral fellows who are supported through National Science Foundation funding
- Trainees supported by some categories of grants from NIH, including training grants, development grants, and dissertation grants
- Trainees supported through NIFA grants administered by the USDA

USU 6900 is used to record completion of the Responsible Conduct of Research requirements. Students working toward completion of the certificate must register for USU 6900 during one semester. The course provides an underpinning of ethical conduct for students entering the research enterprise at USU. The course is designed for graduate students, upper-level undergraduate students, and postdoctoral fellows based on regulatory requirements from federal funding agencies.

All doctoral students should include USU 6900 in their Program of Study; the course will appear on the transcript of any student who completes the training. We strongly encourage completion of the Research Integrity course near the beginning of a student’s research activities. The certification is an indication to the institution and the scientific community that the recipient is dedicated to the responsible conduct of research. For information concerning this program, contact Jodi Roberts, Director of Research Integrity and Compliance, at jodi.roberts@usu.edu or (435) 797-4208.
7. **Tuition Residency Requirements:** The Utah law states: If a student who has not previously acquired domicile in Utah enrolls at a Utah system of higher education school, the student must reside in Utah for 12 continuous months and meet the other criteria or qualify for an exception in order to gain residency for tuition purposes. If you are not a resident, see deadlines and instructions on how to apply. [https://www.usu.edu/admissions/residency/](https://www.usu.edu/admissions/residency/)

8. **Sexual Assault Prevention and Alcohol Education:** As part of our comprehensive health and safety program, USU expects all incoming students – including first-year students, transfer students, and graduate students – to complete health and safety online courses before they can register for spring semester courses. These courses will empower students to make informed decisions about issues that affect college students and our USU community. [https://equity.usu.edu/trainings/student-prevention](https://equity.usu.edu/trainings/student-prevention)

9. **Motorpool Mandatory Driver Training:** To be able to borrow vehicles from the USU Motor Pool or drive any USU vehicle, please complete all of the following steps:

   1. Review the tutorial (video) on how to use the Utah Learning Portal.
   2. Create a new user account in the Utah Learning Portal and be sure to save your username and password for later use.
   3. From the Utah Learning Portal, select the Public & Higher Ed portal link, log in to your account, and select the Defensive Driver Training course.
   4. When you have completed the Defensive Driver Training, be sure to save a copy of your completion certificate from the Utah Learning Portal.

   Once all of these steps are complete, fill out the USU Driver Training Certification form. Please note you cannot drive or rent a University vehicle without completing the training and filling out the required form.

10. **Title IX / Affirmative Action:** Students are encouraged to report an incident involving an alleged violation of the USU Sexual Misconduct Policy, which includes: sexual harassment, sexual assault, gender-based harassment, intimate partner violence, domestic violence, and stalking. You can file a report on your own behalf or on behalf of anyone who may have experienced sexual harassment, misconduct or violence [https://equity.usu.edu/](https://equity.usu.edu/). Graduate students teaching classes are required to report any student disclosure of sexual harassment, misconduct, or violence to the Affirmative Action office.

11. **Laboratory Safety:** The Office of Environmental Health and Safety (OSHA) requires training for anyone working in a chemical laboratory including principle investigators, lab employees, research technicians, teaching assistants, and graduate students. Chemical hygiene principles, spill prevention, hazardous waste management, and fire safety are discussed. Check with your Faculty Advisor (Major Professor) for more information and to schedule training [https://research.usu.edu/ehs/](https://research.usu.edu/ehs/).
# EED Ph.D. Program Requirements

## Engineering Education Core (16 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EED 6090</td>
<td>Developing an Engineering Education Curriculum</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 6150</td>
<td>Teaching, Learning, &amp; Assessment in Engineering Edu.</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7010</td>
<td>Role of Cognition in Engineering Education</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7230</td>
<td>Foundations of Engineering Education</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7460</td>
<td>Finance &amp; Grant Writing</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7810*</td>
<td>Research Seminar</td>
<td>1 cr</td>
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</table>

## Elective – Area of Specialization (Minimum 5 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EED 6910</td>
<td>Special Topics in Engineering Education</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7500</td>
<td>Internationalizing Institutions of Higher education</td>
<td>3 cr</td>
</tr>
<tr>
<td>EDUC 7610</td>
<td>Research design and Analysis II</td>
<td>3 cr</td>
</tr>
<tr>
<td>SPED 7700</td>
<td>Single-Subject Research Methods &amp; Designs</td>
<td>3 cr</td>
</tr>
<tr>
<td>PSY 7030</td>
<td>Instrument Development</td>
<td>3 cr</td>
</tr>
<tr>
<td>PSY 7070</td>
<td>Adv. Measurement Theories &amp; Practice</td>
<td>3 cr</td>
</tr>
<tr>
<td>PSY 7650</td>
<td>Longitudinal Research Design &amp; Analysis</td>
<td>3 cr</td>
</tr>
<tr>
<td>TEAL 6150</td>
<td>Foundations of Curriculum</td>
<td>3 cr</td>
</tr>
<tr>
<td>TEAL 6410</td>
<td>Social Foundations of Education</td>
<td>3 cr</td>
</tr>
<tr>
<td>TEAL 7300</td>
<td>Historical, Social, &amp; Cultural Foundations of Education (Prerequisite: TEAL 6410)</td>
<td>3 cr</td>
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## Research Theory Core (9 Credits)

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<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>EDUC/PSY 6570</td>
<td>Introduction to Educational &amp; Psychological Research</td>
<td>3 cr</td>
</tr>
<tr>
<td>STAT 5200</td>
<td>Design of Experiments</td>
<td>3 cr</td>
</tr>
<tr>
<td>EDUC/PSY 6600</td>
<td>Research Design &amp; Analysis I</td>
<td>3 cr</td>
</tr>
<tr>
<td>EED 7040</td>
<td>Qualitative Methods in Engineering Education</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

## Dissertation (12 Credits minimum)

**Ph.D. Dissertation:** Students must take an appropriate number of research credit hours to complement their graduate program and be consistent with the Graduate School requirements.

## Additional Degree Requirements

1. Qualifying Examination
3. Final Dissertation Defense
4. One peer-reviewed, first-author journal paper submission or a conference presentation with a peer-reviewed, first-author paper per 12 dissertation credits. The publication should be generated from the research under supervision of the student’s Faculty Advisor during the course of graduate study at USU.
5. **EED 7810* - Research Seminar (1 credit):** This course is offered each spring semester. Attendance is required throughout the entire Ph.D. program. However, students are required to register for this course only once while in the Ph.D. program.
6. Teaching experience including one or more of the following:
   a. Two semesters of guided teaching experience
   b. Experience as a K-12 teacher
   c. Experience as university/college/community college faculty
   d. Other equivalent experience approved by the Department Head and the student’s graduate committee

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*Other alternative elective courses may be approved by your Faculty Advisor.*
# Section 5. Course Schedule

<table>
<thead>
<tr>
<th>Engineering Education Core</th>
<th>Prerequisites (if applicable)</th>
</tr>
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<tbody>
<tr>
<td>EED 6090 Developing an Engineering Education Curriculum</td>
<td></td>
</tr>
<tr>
<td>EED 6150 Teaching, Learning &amp; Assessment in Engineering Education</td>
<td>Spring, odd years</td>
</tr>
<tr>
<td>EED 7010 Role of Cognition in Engineering Education</td>
<td>Fall, even years</td>
</tr>
<tr>
<td>EED 7230 Foundations of Engineering Education</td>
<td>Spring, even years</td>
</tr>
<tr>
<td>EED 7460 Finance &amp; Grant Writing</td>
<td>Fall, odd years</td>
</tr>
<tr>
<td>EED 7810 Research Seminar</td>
<td>Fall, each year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Theory Core</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC/PSY 6570 Introduction to Educational &amp; Psychological Research</td>
<td>Spring/Summer/Fall, each year, (online)</td>
</tr>
<tr>
<td>STAT 5200 Design of Experiments</td>
<td>Fall, each year</td>
</tr>
<tr>
<td>EDUC/PSY 6600 Measure, Design, &amp; Analysis</td>
<td>Spring/Summer/Fall, each year</td>
</tr>
<tr>
<td>EED 7040 Qualitative Methods in Engineering Education</td>
<td>Spring, even years</td>
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</table>

<table>
<thead>
<tr>
<th>Engineering Elective – Area of Specialization</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>EED 6910 Special Topics in Engineering Education</td>
<td>May be offered in the future.</td>
</tr>
<tr>
<td>EED 7500 Internationalizing Institutions of Higher Education</td>
<td>May be offered in the future.</td>
</tr>
<tr>
<td>EDUC 7610 Research Design &amp; Analysis II</td>
<td>EDUC 6600 or PSY 6600 &amp; STAT 5200</td>
</tr>
<tr>
<td>SPED 7700 Single-Subject Research Methods &amp; Designs</td>
<td>SPED 6700 or instructor permission</td>
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<tr>
<td>PSY 7070 Advanced Measurement Theories &amp; Practice</td>
<td>EDUC 6600 or PSY 6600</td>
</tr>
<tr>
<td>PSY 7650 Longitudinal Research Design &amp; Analysis</td>
<td>PSY 7610 or EDUC 7610</td>
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<td>TEAL 6150 Foundations of Curriculum</td>
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<td>TEAL 6410 Social Foundations of Education</td>
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<tr>
<td>TEAL 7300 Historical, Social, &amp; Cultural Foundations of Education</td>
<td>Admission to any doctoral program</td>
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### Course Schedule by Two-Year Cycle
Subject to change

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<th>Semester</th>
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<td>EED 7970 2</td>
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<td>EED 7900 2</td>
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<td>Summer 2022 3</td>
<td></td>
<td></td>
<td>EDUC 6570</td>
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<td>EDUC 6600</td>
</tr>
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<td></td>
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<td>EDUC 7610</td>
</tr>
</tbody>
</table>

1 Other alternative elective courses (PSY/STAT/TEAL/EDUC) may be approved by your Faculty Advisor.

2 EED 7900 Independent Study and EED 7970 Dissertation Research are courses with variable credits (such as 1, 2, 3, 4, 5, ... credits). When registering for these courses in Banner, choose the number of credits you need and your Faculty Advisor as the instructor who will assign Pass or Fail (no letter grades) at the end of the semester.

3 Summer tuition might need to be paid by the student or his/her Faculty Advisor. College tuition waivers are not always granted in summer unless the student is defending that summer.
Section 6. Milestones for Ph.D. in Engineering Education Degree

The following table shows general guidelines, rather than mandatory requirements, for you to plan academic activities. For example, you may start Institutional Review Board (IRB) training in Semester 1. You should work closely with your Faculty Advisor (Major Professor) while planning these activities.

<table>
<thead>
<tr>
<th>Typical Academic Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Year</strong></td>
</tr>
<tr>
<td>Semester 1</td>
</tr>
<tr>
<td>● 9 credits coursework</td>
</tr>
<tr>
<td>● Form Graduate Committee</td>
</tr>
<tr>
<td>● POS¹ meeting</td>
</tr>
</tbody>
</table>

¹POS = Program of Study - The Program of Study (POS) constitutes a contract between the student, the committee, and the School of Graduate Studies regarding what courses a student will take in completion of his or her program requirements. The POS should be completed within the second semester of coursework. In some cases, your POS may be completed in the third semester of course work, which may delay your progress toward graduation.

²IRB = Institutional Review Board (IRB) - The IRB reviews proposed research involving human participants in order to protect citizens against potential risks of research participation while promoting high-quality studies that can provide rewards to participants and/or society. IRB applications should be reviewed by your Faculty Advisor (Major Professor) before submission.

³CGA = Continuing Graduate Advisement

⁴Only if necessary

Section 7. Checklist for Degree Completion and EED requirements

During graduate study, students must meet EED requirements and submit pertinent forms at various due dates to the USU Graduate School for approval. The Graduate School website [https://gradschool.usu.edu/doctoral-forms-guide/](https://gradschool.usu.edu/doctoral-forms-guide/) provides Required Doctoral Forms Timeline:

- Supervisory Committee
- Program of Study
- Application for Candidacy
- Appointment for Exam
- Record of Exam
- Format & Style
- Dissertation Review
The following table summarizes what students are supposed to complete at different stages of their graduate study. When filling out the forms, remember to **check and re-check** to make sure all data are entered correctly.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Due date</th>
<th>Who submit forms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submit Supervisory Committee Approval Form (SCAF)</strong></td>
<td>Submit the SCAF form to the Graduate School by the end of the third semester</td>
<td>Student</td>
</tr>
<tr>
<td>Each student must form a Supervisory Committee consisting of Faculty Advisor and four other faculty members who will work with them during his/her Ph.D. study. At least one committee member must be outside the Engineering Education Department (EED). The SCAF form is available at <a href="https://gradschool.usu.edu/supervisory-committee-approval/?utm_source=sgs&amp;utm_medium=forms&amp;utm_campaign=plans&amp;utm_term=doctoral&amp;utm_content=supervisory_committee_approval">https://gradschool.usu.edu/supervisory-committee-approval/?utm_source=sgs&amp;utm_medium=forms&amp;utm_campaign=plans&amp;utm_term=doctoral&amp;utm_content=supervisory_committee_approval</a></td>
<td>Students should notify GPC before students submit the SCAF form.</td>
<td></td>
</tr>
<tr>
<td>For further information visit: <a href="https://gradschool.usu.edu/forms/#requiredforms">https://gradschool.usu.edu/forms/#requiredforms</a> under “Doctoral”</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hold the Program of Study (POS) Meeting and Submit POS Form to Graduate School (see Section 8)</strong></td>
<td>Submit the POS form by the end of your second or third semester, after the Supervisory Committee approval.</td>
<td>Student downloads and fills out the POS form. After the Supervisory Committee approval, student submit the form to the <strong>Graduate Program Coordinator</strong> (GPC) for GPC to submit POS request to the Graduate School via ServiceNow.</td>
</tr>
<tr>
<td><strong>Step 1</strong>: Request the Program of Study (POS) form from either Graduate Program Coordinator or your Faculty Advisor, who will download the form (a Word document) from Box under the folder of “Program of Study Form for Students” and email it to you. You do NOT need to enter the POS form into Degreeworks.</td>
<td></td>
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</tr>
<tr>
<td><strong>Step 2</strong>: Fill out the form by entering all courses you have taken in the past and will take in the future. The form contains texts highlighted in blue, which provide instructions and examples. You need to remove those blue texts before sending the filled “clean” form to your Faculty Advisor. The form must NOT include EED 7990 Continuing Graduate Advisement (CGA) because this “course” is not part of credit requirements, and is only used for maintaining the graduate student status after students have completed all credit requirements yet have not graduated.</td>
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</tr>
<tr>
<td><strong>Step 3</strong>: Send the filled “clean” form to your Faculty Advisor for review and possible revisions to ensure all credit requirements towards graduation can be met.</td>
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<tr>
<td><strong>Step 4</strong>: Schedule the Program of Study (POS) Meeting with your Supervisory Committee to approve your POS.</td>
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<tr>
<td>Activities</td>
<td>Due date</td>
<td>Who submit forms</td>
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<tr>
<td>POS meeting, you can also briefly present your dissertation research to receive the first initial feedback from the Committee.</td>
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<tr>
<td><strong>Step 5:</strong> Send the POS form (converted into a PDF format) to the Graduate Program Coordinator (GPC) for the GPC to submit the ServiceNow POS request to the Graduate School. The Graduate School will then get signatures from your Supervisory Committee and the Department Head.</td>
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</tr>
<tr>
<td>If later you need to make changes to the POS, follow Steps 1-5 described above to document the changes. Change the phrase of “Program of Study” into “Modified Program of Study” in your new POS form. The changes must be approved by your Faculty Advisor first and then by the Supervisory Committee. A meeting with the Supervisory Committee might not be necessary. Submit the approved updated POS to the GPC for to submit the ServiceNow POS request to the Graduate School.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For further information, please see section 7 of this manual and visit: <a href="https://gradschool.usu.edu/forms/#requiredforms">https://gradschool.usu.edu/forms/#requiredforms</a> under “Doctoral.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complete Core Courses (25 credits)</strong></td>
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<tr>
<td>The Engineering Education Department (EED) require each student to complete 25 core course credits prescribed in the EED Ph.D. curriculum and maintain a cumulative GPA of 3.0.</td>
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<tr>
<td>For further information visit: <a href="http://eed.usu.edu">http://eed.usu.edu</a></td>
<td></td>
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<tr>
<td><strong>Complete Elective Courses (minimum 5 credits)</strong></td>
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<tr>
<td>The Engineering Education Department (EED) requires each student to complete a minimum of 5 elective course credits prescribed in the EED Ph.D. curriculum and maintain a cumulative GPA of 3.0.</td>
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<tr>
<td>For further information visit: <a href="http://eed.usu.edu">http://eed.usu.edu</a></td>
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<tr>
<td><strong>Complete the Required Research Trainings</strong></td>
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<tr>
<td>Prior to conducting research at USU, each student is required to complete Responsible Conduct of Research Training and Research with Human Subjects Training via the Collaborative Institutional Training Initiative (CITI).</td>
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<tr>
<td>Activities</td>
<td>Due date</td>
<td>Who submit forms</td>
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<tr>
<td>For further information visit: <a href="https://gradschool.usu.edu/online-rcr-training/">https://gradschool.usu.edu/online-rcr-training/</a>&lt;br&gt;<a href="https://research.usu.edu/irb/training/">https://research.usu.edu/irb/training/</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complete Qualifying Exam (see Section 9)</strong></td>
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<tr>
<td>After completing, at the minimum, all but one course in the doctoral program, each student must take Qualifying Exam. For details, see section 9 of this manual.</td>
<td></td>
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</tr>
<tr>
<td><strong>Develop Dissertation Research Proposal (see Section 10)</strong></td>
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<tr>
<td>After passing the Qualifying Exam, each student must develop a dissertation research proposal that describes their proposed dissertation research motivation, literature review, methodology, methods, and design. The Faculty Advisor (Major Professor) will work closely with the graduate student in the development of this proposal. <em>The cover page of the dissertation research proposal should list ALL committee members, but should not list the Graduate School officer.</em> The Graduate School officer and all committee members should be listed on the cover page of the future dissertation. This cover sheet should be signed by all committee members after defending the dissertation research proposal. For details, see section 10 of this manual.</td>
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</tr>
<tr>
<td><strong>Defend Dissertation Research Proposal</strong></td>
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<tr>
<td>Each student must meet with their Supervisory Committee and get approval of their dissertation research proposal before advancing further within the program. Students should work closely with their Supervisory Committee Chair, who is their Faculty Advisor (Major Professor) before scheduling a proposal defense. The Faculty Advisor (Major Professor) must read and approve the proposal document before circulating it among the other members of the Supervisory Committee.</td>
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<td></td>
</tr>
<tr>
<td><strong>Apply for IRB Approval for Dissertation Research</strong></td>
<td><strong>Student’s Faculty Advisor</strong> who indicates this IRB application is for his/her student’s dissertation research</td>
<td></td>
</tr>
<tr>
<td>After the Dissertation Research Proposal is defended and approved by the Supervisory Committee, and <em>before</em> students can conduct their dissertation research, the Faculty Advisor on behalf of his students must submit a research protocol to the USU IRB and receive approval. The Faculty Advisor needs to be listed as the Principal Investigator, and the student as the student researcher. Students should work closely with their Faculty Advisor to develop this IRB protocol for dissertation research.</td>
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</tbody>
</table>
Activities | Due date | Who submit forms
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research. Some students may have conducted a pilot study or preliminary research under a separate, pre-existing IRB protocol before developing their Dissertation Research Proposal. However, a new IRB protocol, which may built upon the pre-existing IRB, that describes the new dissertation research to be undertaken must be approved before the student begins their dissertation research.

When submitting the IRB protocol for dissertation research, one of the following documents needs to be provided:

- Signed Cover Sheet: The signed cover page of the dissertation research proposal. The cover page of this dissertation research proposal should list ALL committee members, but should not list the Graduate School officer. The Graduate School officer and all committee members should be listed on the cover page of the future dissertation.
- Committee Member Communication: A single PDF document containing communications from each committee member indicating that this project is likely to be approved by the student's committee, and is unlikely to require substantial changes upon proposal.
- Application for Candidacy: A PDF of the Application for Candidacy from ServiceNow. This form is likely pending, awaiting IRB approval, but if the committee has approved it, it can be provided while pending.

For further information visit: [http://rgs.usu.edu/irb/getting-started/](http://rgs.usu.edu/irb/getting-started/).

### Submit the Application for Candidacy (ACDD) Form

Ph.D. candidacy is an important milestone in graduate education that marks the development of a graduate student into an independent researcher. The Application for Candidacy (ACDD) form must be submitted to the Graduate School when all candidacy requirements are met. The ACDD form is available at [https://gradschool.usu.edu/candidacy-application/?utm_source=sgs&utm_medium=forms&utm_campaign=plans&utm_term=doctoral&utm_content=application_candidacy](https://gradschool.usu.edu/candidacy-application/?utm_source=sgs&utm_medium=forms&utm_campaign=plans&utm_term=doctoral&utm_content=application_candidacy)

The requirements for Ph.D. candidacy are:

1) Responsible Conduct of Research and Research with Human Subjects training is completed;
2) Qualifying Exam is completed with a PASS;
3) Dissertation Proposal defense is completed and approved

Submit the ACDD Form to the Graduate school 1) as soon as students complete their dissertation proposal defense and get IRB approval for their dissertation research, and 2) no

**Graduate Program Coordinator (GPC)**

Students should notify GPC as soon as they complete their dissertation proposal defense and get IRB
<table>
<thead>
<tr>
<th>Activities</th>
<th>Due date</th>
<th>Who submit forms</th>
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<tbody>
<tr>
<td>by the Supervisory Committee and the dissertation proposal coversheet is signed; and 4) IRB protocol for dissertation research is approved.</td>
<td>later than 3 months prior to their final dissertation defense.</td>
<td>approval for their dissertation research</td>
</tr>
</tbody>
</table>

A signed copy of the cover page of the student’s dissertation proposal, which confirms they have passed their dissertation proposal defense, and evidence of IRB approval for their dissertation research, must accompany the Application for Candidacy form. The Application for Candidacy form, when signed by all members of the Supervisory Committee and the Department Head, attests that student is ready to conduct independent dissertation research.

For further information visit: https://gradschool.usu.edu/forms/#requiredforms under “Doctoral.”

**Complete Dissertation Research and Write the Dissertation Document**

Once the Dissertation Research protocol is approved by the IRB, students can begin their dissertation research. Students should discuss the data analysis and results of the data collection with their Faculty Advisor (Major Professor). The final dissertation must be approved by the student’s Faculty Advisor (Major Professor) before they can schedule the Final Dissertation Defense.

**Submit Appointment for Examination (AFE) for Final Dissertation Defense**

Before the final dissertation defense, students should notify GPC for GPC to submit the Appointment of Examination (AFE) form. The submission includes an unsigned (draft) title page of dissertation research. The AFE form is available at https://gradschool.usu.edu/examination-appointment?utm_source=sgs&utm_medium=forms&utm_campaign=plans&utm_term=doctoral&utm_content=appointment_examination

For further information visit: https://gradschool.usu.edu/forms/#requiredforms under “Doctoral”

**Final Dissertation Defense**

Students need to discuss with their Faculty Advisor (Major

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<thead>
<tr>
<th>Activities</th>
<th>Due date</th>
<th>Who submit forms</th>
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<tbody>
<tr>
<td>Professor) before scheduling for a defense. The Faculty Advisor (Major Professor) must read and approve the dissertation document before circulating it to the committee members. At least 2 weeks before the dissertation defense, the final dissertation document, in the Word format rather than PDF format, should be provided to all committee members.</td>
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</tr>
<tr>
<td><strong>Submit Record of Examination (ROE) Form Immediately following Dissertation Defense</strong></td>
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<tr>
<td>The Graduate Program Coordinator (GPC) submit the ROE form to the Graduate School. Students must not handle the REO form once it is completed. The form is available at <a href="https://gradschool.usu.edu/examination-record/?utm_source=sgs&amp;utm_medium=forms&amp;utm_campaign=plans&amp;utm_term=doctoral&amp;utm_content=record_examination">https://gradschool.usu.edu/examination-record/?utm_source=sgs&amp;utm_medium=forms&amp;utm_campaign=plans&amp;utm_term=doctoral&amp;utm_content=record_examination</a></td>
<td>After the defense, Faculty Advisor informs the GPC of the results. The GPC will then submit the ROE via ServiceNow.</td>
<td>Graduate Program Coordinator (GPC)</td>
</tr>
<tr>
<td><strong>Submit Other Four Forms After Dissertation Defense</strong></td>
<td></td>
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</tr>
<tr>
<td>After dissertation defense, students must submit four forms: 1) Thesis/Dissertation Format and Style and Electronic Publishing Approval (F&amp;S) 2) Authorship and Copyright (A&amp;C) form 3) IRB-approved Protocol Closeout, and 4) Embargo Request</td>
<td></td>
<td>Student</td>
</tr>
<tr>
<td>All above forms are available at <a href="https://gradschool.usu.edu/forms/#requiredforms">https://gradschool.usu.edu/forms/#requiredforms</a> under “Doctoral”</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The Graduate Program Coordinator (GPC) uploads signed title page and final draft of the dissertation to Thesis Review folder in Box. GPC emails the School of Graduate Study that all forms have been submitted to start review of dissertation by the School of Graduate Study.</strong></td>
<td></td>
<td>Graduate Program Coordinator (GPC, see left-side notes**)</td>
</tr>
<tr>
<td><strong>Submit a Hardcopy of Dissertation to EED</strong></td>
<td></td>
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<tr>
<td>One hardcopy of the student’s dissertation must be submitted to the EED through the Graduate Program Coordinator. The question of whether to order additional bound copies of the dissertation for the Faculty Advisor and/or committee members should be discussed by the Faculty Advisor and candidate.</td>
<td></td>
<td>Student</td>
</tr>
</tbody>
</table>
Section 8. Forming the Committee for the Program of Study and Guidelines

You are encouraged to consider the following information when selecting your Doctoral Dissertation Committee. Before you complete 18 credits of doctoral courses, select a Faculty Advisor (Major Professor). Typically, the Faculty Advisor (Major Professor) is your initial advisor who offers you a research and/or teaching assistantship. They will provide you with the majority of your research and/or teaching feedback and will work closely with you throughout your program experience. Your primary advisor’s area of research will have a strong influence in the direction of your research.

It is extremely important you both share common scholarly interests. If you believe another faculty member is a better match for guiding you through your program and dissertation efforts, it is recommended you first attempt to discuss this with your Faculty Advisor (Major Professor) to finalize any projects or work on transition deliverables/details. If the latter is not a feasible option, you can request a change of Faculty Advisor (Major Professor) by the Department Head. Be aware, however, a change of initial Faculty Advisor (Major Professor) will result in an automatic termination of your teaching and/or research assistantship with your initial Faculty Advisor (Major Professor).

You and your Faculty Advisor (Major Professor) should work together to select two or three additional faculty members in EED and at least one faculty member outside of the EED department who have the expertise in your area or areas related to your research. Make sure the members you select can work well with you and your Faculty Advisor (Major Professor) and whose styles are complementary. All committee members must have been approved by the USU Graduate School. Note that faculty members may decline to serve. You are encouraged to have additional faculty members in mind in case this happens. Once you have selected your committee, complete the appropriate Supervisory Committee Approval Form in the Graduate School (https://gradschool.usu.edu/forms/#requiredforms under “Doctoral”) by the end of the third semester.

At the time you submit your Program of Study (see Section 5 Milestones for Ph.D. in Engineering Education Degree), you must have a five-person committee in place. At least one of the members on your committee should be a faculty member outside of your area of study who is a member of the graduate faculty in their department. This person’s area of scholarly interest should be closely related to the concept behind your dissertation. As such, any committee member outside of EED must be consulted and approved by your Faculty Advisor.

In selecting an outside committee member, keep in mind they should provide specialized assistance in your overall research design but not have a primary role in chairing or co-chairing

<table>
<thead>
<tr>
<th>Activities</th>
<th>Due date</th>
<th>Who submit forms</th>
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<tbody>
<tr>
<td>Commencement</td>
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<tr>
<td>Utah State University holds a graduate ceremony once a year (typically in early May), see <a href="https://www.usu.edu/commencement/index">https://www.usu.edu/commencement/index</a>.</td>
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</table>
your committees. For example, if your goal is to validate a survey, this committee member should be skilled in surveys. If your dissertation topic crosses research areas outside the expertise of your Faculty Advisor (Major Professor), you must discuss with your advisor the stipulations by which this research will be conducted, and your advisor must approve the outside committee member.

Note: It is not unusual for your committee to change due to leaves of absence, sabbaticals, reassignments, change of research interests, or arrival of a new faculty member. If this is the case, be sure to complete a Supervisory Committee Revision Form (https://gradschool.usu.edu/supervisory-committee-approval/) and submit the form to the Graduate School at least 6 weeks prior to the final defense of your dissertation.

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**Section 9. Guidelines for Qualifying Exam**

**9.1 Exam Dates**

The qualifying exam is offered two times a year:

- Thursday and Friday of the fourth week of January, 8:00 am - 12:00 noon for each day
- Thursday and Friday of the fourth week of August, 8:00 am - 12:00 noon for each day

**9.2 The Purpose of the Qualifying Exam**

The main purpose of the qualifying exam in the Engineering Education Department (EED) is to assess the extent to which you have achieved mastery of knowledge gained from the core courses in the Engineering Education curriculum and to gauge your readiness for future doctoral study in engineering education. Evidence of mastery is exemplified with your attainment of a satisfactory decision by the Department as it will allow you to proceed to the next phase of your research program.

The qualifying exam assesses three key measures that indicate the readiness of the student to engage in their own educational research project. These key measures are:

1. A mastery of EED Core course learning objectives. Mastery means you are able to express your knowledge about the main themes you learned in each EED core course in writing.
2. An ability to effectively synthesize educational research articles in writing.
3. An ability to apply core course knowledge and synthesized knowledge of the educational research literature to new teaching and learning contexts, situations, problems, and research designs.

**9.3 Eligibility**

To participate in the qualifying exam, you must complete, at the minimum, all but one non-core course in your doctoral program. Proof of completing this course requirement should be shared with your Faculty Advisor (Major Professor). You need to send an email to your Faculty Advisor (Major Professor) and cc it to the Graduate Program Coordinator (GPC) to make the official examination request.
9.4 Coverage of the Qualifying Exam

The qualifying exam consists of two sections administered over two days. You are given 4 hours to complete each section. You will have a short 15-minute proctored-supervised break each day of the exam. The qualifying exam is designed to assess your ability to synthesize and communicate in writing the theoretical, conceptual, and empirical core knowledge of and research methodology in engineering education. Based on the current EED Ph.D. curriculum, the Exam on Day 1 covers knowledge gained from EED 6090, 6150, 7010, and 7230. The Exam on Day 2 covers knowledge gained from EDUC/PSY 6570, EED 7460, EED 7040, and STAT 5200 (or EDUC/PSY 6600).

9.5 Facility During the Two-Day Qualifying Exam

You will be provided with a non-Internet accessible computer and proctor for monitoring during the exam. No reading (paper or electronic) materials will be permitted in the exam room. At least three days prior to the exam, you can email a prepared list of references that may be relevant to your responses to the EED Graduate Program Coordinator. The list of references can be arranged in any order you like. Your prepared list of references will then be stored on the above-mentioned computer for you to use (copy and paste) during the exam. This will save you time in typing the references when you are taking the exam.

Your exam must be saved in the designated folder on the hard drive of the computer before leaving the exam room. Your exam must follow American Psychology Association (APA) format.

9.6 Qualifying Exam Evaluation

An EED Exam Review Committee, including your Faculty Advisor (Major Professor) and other EED faculty members, will read and review your exam to determine if the quality of the exam is satisfactory (absolute or partially) or unsatisfactory. The final decision of the exam result will be based on the discussion and consensus made by the Exam Review Committee and announced to you approximately 30 days from the exam. If your manuscript is deemed to be partially satisfactory, you are then required to rework the part(s) of the exam suggested by the Committee. If you receive an unsatisfactory result, you must retake the exam on the next available date. The exam can be retaken no more than two (2) times.

Responses to your exam will be evaluated by the Review Committee using the following general criteria, among others:

- Did you respond to all the issues and problems presented in the question?
- Are your responses accurate, concise, clear, well-organized, and conceptualized?
- Do your responses reflect an in-depth understanding of the issues and problems that were presented in the questions?
- Are your responses based on well-established research and theory and did you reference accordingly?

9.7 Tips for Preparing and Studying for the Qualifying Exam

1. Maintain good records of your work completed in each EED core course and then spend ample time reviewing this work prior to the exam. During your review you may want to:
a. Reflect on the learning objectives of each EED core course to consider how you might be asked to apply the course material during the exam.
b. Summarize the major pieces of literature you were asked to read/discuss during each course.
c. Practice summarizing the main points of each course in writing (1-2 pages per course) and time yourself in the process.

2. Maintain an up-to-date list of journal articles or references that you have used in your own classes or research. You can email a prepared list of references that may be relevant to your responses to the qualifying exam to the EED Graduate Program Coordinator for use during the qualifier exam. The list of references can be arranged in any order you like.

3. Talk to other graduate students who have gone through the examination process and ask them how they prepared for the exam. To maintain academic integrity, you should not ask what particular questions were included on the exam. Please note that the qualifying exam questions are subject to change from semester to semester.

Section 10. Guidelines for Completing a Dissertation Research Proposal

As you decide on your dissertation research topic and being to write your dissertation research proposal, it is important to communicate frequently with your Faculty Advisor. Once you have a complete outline of your research plan and research questions, it is recommended that you schedule at least one pre-proposal defense meeting with your Supervisory Committee to ensure that your research topic, questions, and design are appropriate to the scope of your dissertation project. In your first meeting, you should plan to provide a justification from the literature of your research topic, along with a brief description of your PoS, intended research questions and research design (~6-10 slides). Additional pre-proposal defense meetings with the Supervisory Committee may (or may not) be required based upon their feedback in the first pre-meeting.

Once your Dissertation Research Proposal document is complete and you and your Faculty Advisor agree that you are ready to defend your Dissertation Research Proposal, you should schedule the proposal defense meeting with the entire committee. The Dissertation Research Proposal document should be sent to the committee at least 2 weeks prior to the dissertation proposal defense. This document should be carefully reviewed by both you and your Faculty Advisor prior to sending it to the committee.

10.1 Strategies for Choosing a Dissertation Topic

Some students may be lucky in this regard - they may be paid as an EED RA to do research in an area of interest and decide to continue with a dissertation study in the same area. If this is not the case, reading literature - as much as you can - is the best way to conceive a dissertation research area from scratch. As you read, notice what kinds of papers, e.g., topics, theoretical perspectives, methodologies and methods, hold your interest and what kinds do not. You may periodically ask yourself questions like: What interests me about education/engineering? Where do I hope to pursue a career? Answering these questions can help you identify your area of interest.
It is important to understand an area of research interest is not necessarily a useful dissertation topic. This means you have to keep reading and have plenty of discussions with your Faculty Advisor (Major Professor). Once you have an area of research interest in mind, begin to focus your reading within this area. Ask yourself questions like: What are the big questions that pertain to this area? What has been accomplished? What needs to be accomplished? Where could I potentially contribute? This is usually called “finding the gap.” Ultimately, you will have a fitting dissertation topic when you find something that is both interesting to you AND compelling for the field.

In addition to reading and having discussions with you Faculty Advisor (Major Professor), other actions you can take are to solidly prepare for your classes and participate deeply in class discussions. Take personal notes about things you have discussed or read in your courses to look into or study more. Keep your own set of literature comprised of the studies you find interesting. Talk with others outside of class about research and literature.

10.2 Why Require a Dissertation Research Proposal

As part of the requirements for completing the Ph.D. degree in Engineering Education, students must independently write and defend a dissertation research proposal. The dissertation research proposal is not the final dissertation. The dissertation research proposal is a proposal given to your committee before conducting the dissertation research. The dissertation research proposal has two main objectives. First, the proposal articulates the student’s dissertation research plan. Second, the proposal provides an opportunity for the student to gain experience in research proposal writing, which is a necessary component to writing the dissertation.

The process to write and defend a dissertation research proposal includes a series of meetings with the Faculty Advisor (Major Professor) and, possibly, the doctoral dissertation committee. Students must submit the proposal electronically to their entire committee 2 weeks before the defense of the proposal. The dissertation research proposal must be approved by the doctoral dissertation committee before the dissertation research can begin.

10.3 Guidelines for Dissertation Research Proposal

This section provides guidance for Ph.D. students to prepare a dissertation research proposal. The items described in the Dissertation Research Proposal Content and Components section shown below consist of the minimum requirements stipulated by the Department. The recommended page length for the proposal is 30-50 pages, not including references and appendix. You should work with your Faculty Advisor (Major Professor) to determine the most appropriate length of the proposal. The proposal should follow APA guidelines, use 1-inch margins on all sides, be double-spaced, single-sided, and use 12 point Times New Roman font.

The dissertation research proposal consists of Chapters 1-3 of your final dissertation, along with the description of a pilot study (as an additional chapter), if needed. If you are including a pilot study chapter, the text in this chapter should not be an exact copy of a previously submitted or published manuscript. Doing so would constitute copyright infringement. Instead, the pilot study chapter should include a synthesis or summary of other related work to this dissertation and reference a publication already published. If elements of a published or submitted article must be included in the pilot study, this work then needs to be presented in a manner that does not overlap with the published work. If you will use information or data collected from a grant given to your faculty advisor, please plan to discuss authorship and copyright issues beforehand. For more information, please visit
The dissertation proposal (Chapters 1-3 of your dissertation) should contain the following:

- **Cover Page**: See the sample cover page in Appendix A. It should include the title of the research study the graduate student will conduct, student’s name, Faculty Advisor (Major Professor), all other committee members, and department name. The cover page should NOT list the Graduate School officer. The Graduate School officer and all committee members should be listed on the cover page of the future dissertation. After the proposal defense, the cover page needs to be signed by all committee members and submitted to the IRB for IRB application.

- **Chapter 1**, Introduction (3-10 pages): Should include a well described rationale for the study as well as the research questions/hypothesis pertinent to this work.

- **Chapter 2**, Review of Literature (10-25 pages): Should include selected literature on the state of art of the research in the field as well as a discussion of how the graduate student’s work will help fill a gap in the engineering education field.

- **Pilot Study Results** (optional): Should include preliminary findings from current research, a recent conference proceeding, or poster that is relevant and will help support the justification for the work as introduced in the Introduction and Review of Literature sections.

- **Chapter 3**, Research Methodology/Design (10-20 pages): Should include an overview of the intended methodology or research design along with citations to justify the research study selection. In addition, a discussion of the methods and overview of the intended data analysis procedures should be discussed.

10.4 Submission of Research with Human Subjects Protocol for your approved Dissertation Research Proposal

Prior to beginning your dissertation research study, you must apply for USU IRB approval of your dissertation research protocol. With both your Faculty Advisor and Supervisory Committee’s approval, you may be able to submit your IRB application for approval before your proposal defense is completed.

Section 11. Guidelines for Dissertation Research

11.1 Advancement of Ph.D. Candidacy (Completion of Qualifying Exam)

Upon successfully completing your dissertation proposal defense and receiving approval of your dissertation research protocol by the USU IRB, you have advanced to “Ph.D. Candidate” status. This means that and you are ready to conduct your dissertation research as an independent researcher. To do so, you must complete an Application for Candidacy form https://gradschool.usu.edu/candidacy-application/?utm_source=sgs&utm_medium=forms&utm_campaign=plans&utm_term=doctoral&utm_content=application_candidacy soon after completing your proposal defense, but no later than three semesters prior to your final dissertation research defense.
11.2 Guidelines for Final Dissertation

The following paragraphs describe specific components of your final dissertation. These components for Chapters 1-3 and the pilot study (if included) also apply to the dissertation research proposal. To fulfill the responsibilities of the first three chapters in the dissertation research proposal, IRB approval will be needed before you conduct the proposed dissertation research. At the conclusion of your final dissertation document (e.g. Chapters 1-6 or higher) you must include the copy of the IRB approval certificate and report as an appendix in your final dissertation.

Writing the final dissertation will require you to refine the work presented in the dissertation research proposal in coordination with your Faculty Advisor (Major Professor). The following are minimum requirements stipulated by the EED.

Cover Page: See the sample cover page in Appendix B. It should include the title of the research study the graduate student will conduct, student’s name, Faculty Advisor (Major Professor), all other committee members, and department name. The cover page MUST list the Graduate School officer.

Chapter 1. Introduction

1. Frame the problem, i.e., background or need for the study.
   1) Why is this research important?
   2) Cite literature as needed using APA style
2. Summarize your purposes/goals and objectives.
3. Summarize research questions and/or hypotheses, which should align 100% with objectives.
4. Briefly describe your research approach, i.e., qualitative, quantitative, or mixed-methods.
5. Briefly describe the theoretical framework guiding the study, if used, and positionality as a researcher.
6. Briefly discuss the research methodology and/or research design.
7. Summarize the assumptions taken in order to conduct the research.
8. Summarize the significance of the study and implications of the study.
9. Summarize the limitations of the study, from a research design and results standpoint.
10. List the definitions of key terms used in your dissertation.

Chapter 2. Review of Literature

1. Introduction: “This literature review will...."
2. Use subsections that indicate the topics of your theoretical framework.\(^1\)
3. Show in your theoretical framework there is a gap in existing research and how your study will help fill this void.\(^1\)

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\(^{1}\) There is often confusion whether material should be duplicated in Chapter 2 and Chapter 3. The best answer is that you may often need to include discussions in both chapters but with different objectives. For example, you may decide to use a case study qualitative research method in your research. You should then include a literature review of whether any existing case study research has been done in this area (showing the uniqueness of your work) as well as any literature that shows the method is viable for the work you are proposing (similar work done with a case study method). In Chapter 3, you would also want to reference methods publications showing you are following an accepted research methodology and arguing the selection of this method is appropriate.
4. Include a summary of the Review of Literature as it relates to your theoretical framework and main objectives of the research.

Pilot Study (optional)

This pilot study section is optional and required only if pilot work was done to help argue the research. If used, the study becomes Chapter 3 and other chapters increment accordingly.

1. Purpose and overview.
2. Appropriate subsections to define and describe the components of the pilot work, i.e., methods, results, discussions, conclusions, implications, etc.
3. As indicated above, this pilot work should not be copyrighted from previously submitted, reviewed, or published work; this chapter should be original in approach and in writing.

Chapter 3. Research Methodology/Design

1. Describe the research approach (i.e. mixed methods, qualitative, quantitative) and justify your selection (e.g., an explanatory sequential mixed method design was selected because ...).¹
2. Restate the research questions for qualitative and mixed-methods research AND/OR hypotheses for quantitative and mixed-methods research.
3. Describe the research methodology/design and its appropriateness based on your theoretical framework (if used) and positionality as a researcher.¹
4. Discuss IRB approval for your dissertation research. Proof of IRB must be included in an appendix in your final dissertation.
5. Describe the population from which the participants were recruited.
6. Describe participant recruitment or sampling procedures (e.g. purposeful sampling considerations, sample size estimations, and randomization).¹
7. Describe the participants.
8. Describe the data collection methods and discuss how they align with the research methodology.
9. Describe the data analysis techniques (e.g., types of coding techniques, types of statistical analysis techniques, and data mixing procedures).

Chapter 4. Results ²

1. List and describe your results. Be careful not to discuss or interpret your results to any substantial extent in this section.
2. Clearly describe how your results map to or “answer” your research questions and/or hypotheses.

Chapter 5. Discussions ²

1. Interpret your results in the context of the previous work discussed in your literature review and theoretical framework (if used) sections. Be sure to draw connections between your results and those of other researchers.

² A common, standard organization of Chapters 4-6 is provided here. Be aware there is creative flexibility that exists when developing and organizing the results, discussion, and conclusions of your research. Other organizational schemes may be more appropriate for your particular study. You should discuss how to structure Chapters 4, 5, and 6 with your Faculty Advisor before beginning to write your results.
2. Consider the limitations of your study when making interpretations and, if needed, discuss how the study limitations moderate your interpretations.
3. Discuss how the study met its goals/objectives.

Chapter 6. Conclusions/Significance/Implications

1. Summarize the major, most important outcomes from the study.
2. Provide recommendations for future researchers in the same field. These recommendations can include:
   1) Recommendations for future research topics.
   2) Pertinent research questions that need to be answered within the field.
   3) Implications of the research for teaching and/or professional engineering practice.

Section 12. Expectations

12.1 Overall Expectations

Ph.D. students are responsible for working towards completion of their degree programs in a timely manner. In addition to gaining expertise in Engineering Education, you are expected to expand the knowledge of the discipline by discovering and pursuing a unique topic of scholarly research, resulting in the Ph.D. dissertation. It is your responsibility to ensure continued progress of your academic program and research.

- **Expectations:** Students working on an Assistantship (RA or TA) are expected to work an **average** of 20 hours per week (12 months per year for RAs and 9 months for TAs). This includes adherence to timelines for the successful completion of any duties, such as research projects, teaching assignments, and work related to the assistantship. Program coursework, class assignments, and working jobs outside the campus are **not** part of the 20 hours per week. Also, this time needs to be reported to your Faculty Advisor (Major Professor). Be sure you discuss the best strategy to report hours worked.

**Presidential Doctoral Research Fellowship (PDRF) recipients** are also expected to commit to an **average** of 20 hours of work per week (12 months per year). Funding provided through their fellowship by the Office of Research and Graduate Studies and the Department is under the direction of their Faculty Advisor (Major Professor), and research should align with what has been agreed upon by the Faculty Advisor (Major Professor) and the student. Students should also review the additional requirements and expectations needed as a recipient of this fellowship.

- **Resources:** Students will receive appropriate resources, including office space, reasonable access to faculty, appropriate course offerings to meet the student’s approved program of study, and facilities to allow completion of the program per discretion of each Faculty Advisor (Major Professor).

- **Guidance:** Students will receive advice and direction regarding the academic program as well as dissertation research.
• **Training:** Students will receive training on the current best practices in research and teaching, including appropriate techniques, tools, methods, and equipment needed to successfully carry out research or teaching duties.

• **Appropriateness:** Students will have projects and tasks that are assigned appropriately for the program of study and designed to help make continued progress towards completion of the degree.

• **Evaluation:** Students will receive timely and fair assessment of their work, including course work, program exams, research, and teaching.

• **Professional Development:** Students will be provided, in appropriate cases, with opportunities to publish research; present the student's work; apply for patents and copyrights for the student's work; and attend colloquia, seminars, and workshops to support professional development.

• **Fair Treatment:** Students will be given appropriate credit for work and provided clear guidelines on authorship, data ownership, and research practices when engaged in joint research projects (see details in *Ethnical Conduct and Intellectual Property* below).

• **Conflict of Interest:** Students will receive appropriate instruction about avoiding conflicts of interest.

• **Feedback:** Students will be provided feedback on performance and given clear guidelines and agreements on the required areas of improvement when performance is deemed poor and the student is in jeopardy of being removed from the program.

### 12.2 Research Progress Report

The research progress report consists of two components and allows you to report your progress towards graduation concerning what you have learned as well as your progress on your research projects.

**Component One:** The first component involves a written report that is to be submitted at the end of each spring semester to your Faculty Advisor (Major Professor). This report should not be longer than two pages and should be succinct. The report should indicate the milestones you have achieved in the research directly under your Faculty Advisor.

This reported research is not meant to reflect any research work done as part of any courses you have taken or are taking but rather should reflect work done towards research in directions that your Faculty Advisor (Major Professor) and you have chosen and collaborated on. Examples may include a list of abstract submittals for conference publications, submitted journal articles, accepted and published journal articles, submittal of a grant you helped to develop, data collection, data analysis, and in general, any work you have completed in regards to research and publication activities. This document should clearly illustrate you are making progress towards a research agenda.

An appropriate allocation of time towards research should be an average of 20 hours per week. Please note that a 20-hour per week time allocation is a targeted average and is not meant to include homework for courses, research engaged in for other courses, your own personal work, or service work you are completing for others.
Component Two: You are encouraged, but not required, to present your research at the EED 7810 Research Seminar class offered each Spring. However, you are required to attend this course each Spring prior to your graduation, and you just need to register for the course once. If you present at this seminar, you are expected to show your research endeavors and progress to both faculty and fellow EED graduate students. This is an opportunity for you to gain experience making presentations and to receive feedback that will prove beneficial as you progress towards presenting at professional conferences.

12.3 Ethical Conduct and Intellectual Property

- High standards of integrity and ethical practice are important in your academic and professional career. You are encouraged to read carefully the Utah State University ethical conduct policy, which is available online at https://studentconduct.usu.edu/.

- During your graduate study, some courses may require you to design and/or execute a course research project, which may potentially result in conference and/or journal publications. Your Faculty Advisor (Major Professor) might not be aware of these course requirements. You should discuss in advance with your Faculty Advisor your course research project and determine if it is appropriate to use the research topic and/or the research method (such as data collection and data analysis) that are similar to, or the same as, your dissertation research or any other research project that is under supervision of your Faculty Advisor.

- You are encouraged to read carefully what constitutes intellectual property (visit: https://www.usu.edu/policies/587/). For example, you may receive wages, financial support, training, and/or research experience associated with a USU research project (either internally or externally funded) and/or employment under the direction of a Faculty Advisor. In the process of your research, you may come in contact with or generate certain proprietary and confidential information. This includes: data, formulae, computer software, specifications, processes, designs, inventions, creative works, patent applications, copyrights, trade secrets, “know-how”, and/or other technical or product information associated with your research; anything marked as or later designated as “confidential” or “proprietary”; and anything you reasonably should understand to be confidential or proprietary (“Proprietary and Confidential Information”).

You should understand that 1) Proprietary and Confidential Information is owned and controlled by USU; 2) you are not to publish or disclose any Proprietary and Confidential Information to third parties, except as otherwise authorized by USU in writing; and 3) you are not to make any use of Proprietary and Confidential Information, except in the course of your participation in the research or as otherwise authorized by USU in writing.

- To be listed as an author on a publication, criteria generally require you make a significant, identifiable, original intellectual contribution to the project; contribute more than “serving as a pair of hands” (recording data, entering data, typing, analyzing data); understand the study reported in the paper as a whole; and participate in the writing of the technical paper.

As a general guide, you should always discuss with your Faculty Advisor (Major Professor) the order of authorship on publications generated from your course work and project and dissertation research. For additional information on authorship, you are encouraged to review:
If you intend to publish in open access journals, you should discuss with your Faculty Advisor (Major Professor) in advance. The Directory of Open Access Journals, https://doaj.org/, provides a rigorous directory of legitimate open-access journals. You are encouraged to read the following articles about predatory publishing:


12.4 Department Check-In Procedures

- If you are an international student, you will need to see the Immigration Advisor in the Office of Global Engagement (https://globalengagement.usu.edu) as soon as you arrive at Utah State University.

- If you are receiving an assistantship through the Department, you will need to be put on payroll. I-9, W-4, and direct deposit forms will need to be completed. There is specific documentation required for each form. This information will be provided to you by the EED Graduate Program Coordinator once you arrive.

- For office space in the graduate student cubicles, please see the Graduator Program Coordinator of the Engineering Education Department.

- Keys and/or prox cards will be ordered for you once you arrive. It is your responsibility to visit the Key Office once you are notified keys are ready.

- A computer is provided for your use in the Engineering Education student offices. It is your choice to use this computer or you may provide your own computer.

12.5 Department Check-Out Procedures

- Clean out your office space; return the space to its original condition (EED office staff must check the office space).

- Return key and/or prox cards to the Key Office when you have completed the program. If keys are not returned, you will be billed $25 for each key and/or prox card.

- If you used a Departmental computer, make sure all documents are removed from the hard drive and ask the IT personnel to verify the computer is clean of any viruses.
• Turn in a bound copy of your dissertation to the Department.

• Provide employment information: institution where you will work, job title, and permanent email address.

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**Section 13. Other Useful Information**

• Engineering Writing Center:
  https://engineering.usu.edu/students/ewc/

  The Engineering Writing Center (EWC) assists engineering students (both undergraduate and graduate) in developing their technical writing skills. Through one-on-one consultations, students refine document structure, apply technical writing standards, and use correct grammar and format. The EWC is located in SER 130, and appointments can be made at ewc.usu.edu. Hours of operation are Monday through Friday from 1:30-4:30 pm (for scheduled appointments) and Monday through Thursday from 4:30-6:30 pm (for walk-ins).

  The EWC does not provide assistance for theses and dissertations due to the specialized nature of these documents. Graduate students are encouraged to see their Faculty Advisors for assistance with these documents.

• USU Graduate School:
  https://gradschool.usu.edu/

• USU Graduate Catalog:
  http://catalog.usu.edu/preview_entity.php?catoid=12&ent_oid=998

• USU Office of Global Engagement:
  http://globalengagement.usu.edu

• Purdue’s Online Writing Lab:
  https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html

• Publication Manual of the American Psychological Association, Seven Edition

• Engineering/Engineering Education Librarian, Pam Martin (pam.martin@usu.edu)

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**Section 14. Non-Discrimination Statement**

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
OCR@ed.gov

U.S. Department of Education
Denver Regional Office
303-844-5695
OCR.Denver@ed.gov
Appendix A: Sample cover page for Ph.D. dissertation proposal

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION PROPOSAL (line 1)

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION PROPOSAL (line 2 if needed)

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION PROPOSAL (line 3 if needed)

by

Your first name Your last name

A dissertation submitted in partial fulfillment of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Engineering Education

Approved:

______________________________
Major Professor’s name, Ph.D.
Major Professor

______________________________
Committee Member’s name, Ph.D.
Committee Member

______________________________
Committee Member’s name, Ph.D.
Committee Member

______________________________
Committee Member’s name, Ph.D.
Committee Member

______________________________
Committee Member’s name, Ph.D.
Committee Member

UTAH STATE UNIVERSITY
Logan, Utah

Year (four digits, such as 2021)
Appendix B: Sample cover page for Ph.D. dissertation

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION (line 1)

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION (line 2 if needed)

THIS IS THE TITLE OF YOUR PH.D. DISSERTATION (line 3 if needed

by

Your first name Your last name

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Engineering Education

Approved:

______________________________
Major Professor’s name, Ph.D.   Committee Member’s name, Ph.D.
Major Professor

______________________________
Committee Member’s name, Ph.D. Committee Member
Committee Member

______________________________
Committee Member’s name, Ph.D. Committee Member
Committee Member

______________________________
Committee Member’s name, Ph.D. Dean’s name, Ph.D.
Committee Member
Dean of the School of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

Year (four digits such as 2021)