Engineering Education

Graduate Student Manual

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Doctoral Student Manual

Ph.D. in Engineering Education
Hosted by the College of Engineering
Utah State University

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Section 1. Welcome

Welcome to the Ph.D. in Engineering Education program **hosted by 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 associated with the program. Our program will provide the knowledge and tools 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 the information in this manual, which covers the program, its policies, and procedures. We trust you will find this manual helpful in assisting with guidelines to ensure your success. Our program will meet and exceed your expectations of a successful graduate experience in the new school year and beyond. Always feel free to contact anyone in the program with questions.

Congratulations on joining our graduate program as a productive and essential member. 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 know that a doctoral program's coursework, reading, writing duties, and research expectations are extremely demanding. Approximately 6 to 9 hours of out-of-class study a week may be expected for every three-credit class taken. 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 the course's difficulty, your background and experience with the subject, and your semester credit load. If awarded a Research or Teaching/Tutoring Assistantship, you can anticipate an average of 20 hours of work per week. Once your coursework is finished, you must successfully complete the Comprehensive Exam and present a written dissertation proposal to your Supervisory Committee. After you pass the doctoral Comprehensive Exam and your Supervisory Committee approves your research proposal, you begin working on the dissertation.

The dissertation is an independent research project that makes an original contribution to the body of knowledge in the discipline. Students in this Ph.D. program must conduct research to advance their knowledge in 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 Doctor of Philosophy in Engineering Education degree 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 consider the following nine key statements carefully and whether you can commit to them before 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 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 completing 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 before 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 this commitment.

Student Name (printed) _____

Signature _____

Date _____

Section 3. Graduate Research Assistantship (GRA) and Graduate Tutorship (GT)

Graduate Research Assistantship (GRA) and Graduate Tutorship (GT) are different types of graduate assistantships that provide students with the financial support needed to commit to their academic programs. Students must be enrolled in at least 9 semester hours and be in good academic standing each semester they are appointed. GRA and GT appointments are meant to provide students with invaluable experiences in research and teaching, as well as to enable them to engage in an optimal full-time graduate school experience. In this program, some students who assist with both research and teaching qualify as both GRA and GT.

Graduate Research Assistants are typically employed for an average of 20 hours per week and focus on assisting their faculty mentor's research efforts in ways that align with the student's educational objectives. Graduate Research Assistants are typically paid from individual research awards or from externally funded contracts and grants. The Principal Investigator of the award will direct and supervise Graduate Research Assistants' research activities. Appointments and reappointments are subject to several factors and are evaluated on a semester-by-semester or yearly basis.

Graduate Tutors are employed for various hours each week to help meet instructional needs. Graduate Tutors are under the direction of an assigned faculty member and are paid from

students' departmental funds. Appointments and reappointments are subject to several factors and are evaluated on a semester-by-semester or yearly basis.

As new Graduate Research Assistants and Graduate Tutors, graduate students take on multiple roles in the university. First, as employees, they are responsible for compliance with rules of conduct, regulations, and appropriate human resources procedures. Second, as new graduate students, they learn about available resources to help them navigate the inherent challenges of juggling 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-cultural university, and fulfilling faculty expectations of Graduate Research Assistants and Graduate Tutors.

Section 4. Program Requirements

4.1 Ph.D. Program Requirements

The Ph.D. program requirements can be found in the table several pages later in this sub-section. As a Ph.D. student,

1. You must maintain a minimum cumulative GPA of 3.0 during your graduate study. A course grade of C- or lower is considered unacceptable in the Program of Study. In this latter case, you are allowed to repeat no more than two courses, with each course repeated one time, or to repeat the same course two times during your graduate study.

2. Per the university policy, if your GPA drops below 3.0, you will be placed on academic probation. If your GPA drops below 3.0 for more than one semester, you may no longer be eligible to continue your Program of Study in Ph.D. in Engineering Education.

3. You need to identify courses with prerequisites (such as STAT 5200 and EDUC 6570) and discuss them in advance with your Faculty Advisor (Major Professor). They will help solve relevant issues.

4. 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 courses 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 PSY 7030 Instrument Development, PSY 7070 Advanced Measurements Theory and Practice, and EDUC 7610 Research Design & Analysis II, are currently listed on the approved electives list. See the annual USU course catalog to find other courses of interest for elective credit. **Some courses**

offered by the USU College of Education and Human Services, including course schedules and prerequisites, can be found at https://cehs.usu.edu/research/courses/index.

4.2 Additional 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 ** included in this sub-section**.

- 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 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 (spring or fall semester):*

  1) If you are a domestic student and receive research and/or teaching assistantship, register for at least 3 graduate credits - EED 7900 Independent Study, or EED 7970 Dissertation Research, or EED 7990 Continuing Graduate Advisement (CGA) – to maintain full-time student status.

  One exception for the semester of the final dissertation defense: If you are a domestic student, 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).

  2) If you are an international student and receive research and/or teaching/tutoring assistantship, register for at least 3 graduate credits - EED 7900 Independent Study, or EED 7970 Dissertation Research, or EED 7990 Continuing Graduate Advisement (CGA) – to maintain full-time legal status. You must file a **Reduced Course Load Form to** get approval to take less than a full course load: https://www.usu.edu/global-engagement/current-students/student-forms

- *After the final dissertation defense:*

  You are not considered as officially graduated from USU if you have not completed the submission of all required forms to the School of Graduate Studies by the end of the

semester when you hold your final dissertation defense. In this case, the subsequent semester will be a grace semester for you to submit all required forms. In the grace semester, domestic students do not need to register for any courses, and international students need to register for a zero-credit USU 7777 "course" (with no instructor) to keep their visa status. The USU 7777 "course" requires students to pay for health insurance fees (such as $917) and student fees (such as $125). The health insurance fees can be dropped if students can provide their health insurance proof. For details about the grace semester, please visit https://usu.service-now.com/aggies?id=kb_article_view&sysparm_article=KB0014407&sys_kb_id=b8de7cea4fb6474073394e328110c700&spa=1

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 the summer for whatever reasons, check with your Faculty Advisor because the college and USU may NOT provide tuition waivers even if you are on a graduate teaching or research assistantship during summer.

- If you have completed all required 30-credit coursework, you do not need to be registered in summer for dissertation research.
- 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 the 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 for 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://www.usu.edu/global-engagement/current-students/student-forms

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 7920 Teaching Assistant Workshop for Graduate Teaching Assistants**: If you receive a Graduate Teaching Assistantship, you must register for this zero-credit mandatory course before your funding can be processed. This course is online and is offered every semester. See https://gradschool.usu.edu/trainings/teaching-assistant-training. Graduate Teaching Assistants are required to take this course only once. Therefore, you do not need to take it again if you have already taken it at USU.

7. **USU 6900 Research Integrity for Graduate Research Assistants and Undergraduate Researchers:** 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.

   These 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.

   This 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.

8. **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/

9. **Graduate Student Leave of Absence/Continuous Registration**: A leave of absence, during which you are not required to register for graduate credits, may be granted under the following circumstances:

    1) Illness, required military service, or other extenuating circumstances;
    2) Lack of availability of courses on an approved Program of Study at a regional campus or via Distance Education, or
    3) An approved Program of Study that is based primarily on summer semester courses.

    If your reason for not registering is not due to one of the three circumstances listed above, your absence is classified as continuous registration. In this case, the continuous registration fee of $100 per semester (fall and spring) will be assessed to your student account. For details, see https://gradschool.usu.edu/

10. **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://www.usu.edu/equity/trainings/student-prevention

11. **Motor Pool 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.**

12. **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://www.usu.edu/equity/. Graduate students teaching classes are required to report any student disclosure of sexual harassment, misconduct, or violence to the Affirmative Action office.

13. **Laboratory Safety:** The Office of Environmental Health and Safety (OSHA) requires training for anyone working in a chemical laboratory including principal 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/.

Program Requirements for Ph.D. in Engineering Education

Engineering Education Core (16 Credits)

EED 6090	Developing an Engineering Education Curriculum	3 cr
EED 6150	Teaching, Learning & Assessment in Engineering Education	3 cr
EED 7010	The Role of Cognition in Engineering Education	3 cr
EED 7230	Foundations of Engineering Education	3 cr
EED 7460	Finance & Grant Writing	3 cr
EED 7810*	Research Seminar	1 cr

Elective – Area of Specialization (Minimum 5 Credits)

EDUC 7610	Regression Analysis	3 cr
EED 6250	Academic Writing	2 cr
EED 6910	Special Topics in Engineering Education	3 cr
PSY 7070	Advanced Measurement Theories and Practice	3 cr
PSY 7650	Multilevel and Marginal Models for the Social Sciences	3 cr
SPED 7700	Single-Subject Research Methods and Designs	3 cr
TEAL 6150	Foundations of Curriculum	3 cr
TEAL 6410	Social Foundations of Education	3 cr
TEAL 7300	Historical, Social, and Cultural Foundations of Education	3 cr

Other alternative elective courses (including 5000-level courses) must be approved by your Faculty Advisor.

Research Theory Core (9 Credits)

EDUC 6570 or PSY 6560	Introduction to Educational & Psychological Research	3 cr
EDUC/PSY 6600	Statistical Foundations	3 cr
or STAT 5200	Analysis of Designed Experiments	3 cr
EED 7040	Qualitative Methods in Engineering Education	3 cr

Dissertation (Minimum 12 Credits)

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 by the Program

1. Successful Comprehensive exam
2. Successful Dissertation Research Proposal Defense
3. Successful 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 the supervision of the student's Faculty Advisor during 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 must register for this course only once while in the Ph.D. program.
6. Teaching experience including one or more of the following:

- Two semesters of guided teaching experience
- Experience as a K-12 teacher
- Experience as university/college/community college faculty
- Other equivalent experience approved by the program director and the student's graduate committee.

Additional Degree Requirements by the School of Graduate Studies

1. Must maintain a minimum of 3.0 term GPA for each semester
2. A minimum of 3.0 cumulative GPA is required for graduation
3. Grades of C- or lower are not permitted on the program of study
4. A doctorate must be completed within eight years of entering the degree program.
5. Coursework over eight years old at the time of degree completion may not be used for a graduate degree unless it is revalidated
6. Approval of academic forms required for doctoral students by the School of Graduate Studies
    - Supervisory Committee
    - Program of Study
    - Application for Candidacy
    - Appointment for Examination
    - Record of Examination
    - SGS and library review and approval

Section 5. Course Schedule

Engineering Education Core		Prerequisites (if applicable)	
EED 6090	Developing an Engineering Education Curriculum Spring, odd years		3 cr.
EED 6150	Teaching, Learning & Assessment in Engineering Education Fall, even years		3 cr.
EED 7010	Role of Cognition in Engineering Education Spring, even years		3 cr.
EED 7230	Foundations of Engineering Education Fall, odd years		3 cr.
EED 7460	Finance & Grant Writing Fall, odd years		3 cr.
EED 7810	Research Seminar Spring, each year		1 cr.
Research Theory Core			
EDUC 6570 or PSY 6560	Introduction to Educational & Psychological Research EDUC Spring/Summer/Fall, each year, (online) Fall, each year PSY Fall, each year		3 cr.
EDUC/PSY 6600	Statistical Foundations Spring/Fall, each year Fall, each year (Distance Ed.)	EDUC 6570/PSY 6560, passing score on 6600 pretest, & instructor perm.	3 cr.
or STAT 5200	Analysis of Designed Experiments Spring/Fall, each year	STAT 2000, STAT 2300, or STAT 3000	3 cr.
EED 7040	Qualitative Methods in Engineering Education Spring, even years		3 cr.
Engineering Elective – Area of Specialization			
EDUC 7610	Research Design & Analysis II Spring/Fall, each year Spring, even years (Distance Ed.)	EDUC 6600 or PSY 6600 & STAT 5200	3 cr.
EED 6250	Academic Writing Spring, each year, depending on the need and enrollment		2 cr.
EED 6910	Special Topics in Engineering Education Spring/Fall, each year, depending on the need and enrollment		3 cr.
PSY 7070	Advanced Measurement Theories & Practice Spring, even years	EDUC 6600 or PSY 6600	3 cr.
PSY 7650	Multilevel and Marginal Models for the Social Sciences Fall, each year	PSY 7610 or EDUC 7610	3 cr.
SPED 7700	Single-Subject Research Methods & Designs Fall, each year	SPED 6700 or instructor permission	3 cr.
TEAL 6150	Foundations of Curriculum Summer/Fall, each year		3 cr.
TEAL 6410	Social Foundations of Education Spring/Fall, each year		3 cr.
TEAL 7300	Historical, Social, & Cultural Foundations of Education Fall, each year	Admission to any doctoral program	3 cr.

Course Schedule by Two-Year Cycle
Subject to change

Semester	EED		PSY/STAT/TEAL [1]		EDUC [1]	
	Courses	Time	Courses	Time	Courses	Time
Fall 2026	EED 6150 EED 7900 [2] EED 7970 [2]	M 1:30-4:20 pm	PSY 7650 SPED 7700 STAT 5200 TEAL 6150 TEAL 6410 TEAL 7300		EDUC 6570 EDUC 6600 EDUC 7610	
Spring 2027	EED 6090 EED 7810 EED 7900 [2] EED 7970 [2]	W 1:30-4:20 pm T 12:00-1:15 pm	STAT 5200 TEAL 6410		EDUC 6570 EDUC 6600 EDUC 7610	
Summer 2027 [3]			TEAL 6150		EDUC 6570	
Fall 2027	EED 7230 EED 7460 EED 7900 [2] EED 7970 [2]	T 3:00-5:50 pm M 3:30-6:00 pm	PSY 7650 SPED 7700 STAT 5200 TEAL 6150 TEAL 6410 TEAL 7300		EDUC 6570 EDUC 6600 EDUC 7610	
Spring 2028	EED 7010 EED 7040 EED 7810 EED 7900 [2] EED 7970 [2]	M 1:30-4:20 pm TR 9:00-10:50 am T 12:00-1:15 pm	PSY 7070 STAT 5200 TEAL 6410		EDUC 6570 EDUC 6600 EDUC 7610	
Summer 2028 [3]			TEAL 6150		EDUC 6570	

[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.

Typical Academic Activities							
First Year		Second Year		Third Year		Fourth Year	
Semester 1	**Semester 2**	**Semester 3**	**Semester 4**	**Semester 5**	**Semester 6**	**Semester 7**	**Semester 8**
• 9 credits coursework	• 9 credits coursework • Form Graduate Committee • POS[1] meeting	• 9 credits coursework • IRB[2] (Institutional Review Board) training	• 3 credits coursework • 6 credits dissertation • Compre-hensive exam • Proposal defense • IRB[2] Application	• 6 credits dissertation • Data collection/ analyses /write up	• 3 credits CGA[3] • Data collection/ analyses /write up • Final defense • Graduate	• 3 credits CGA[3, 4] • Data collection/ analyses /write up[4] • Final defense[4] • Graduate[4]	• 3 credits CGA[3, 4] • Data collection/ analyses /write up[4] • Final defense[4] • Graduate[4]

[1]POS = 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.

[2]IRB = 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.

[3]CGA = Continuing Graduate Advisement

[4]Only if necessary

Section 7. Checklist for Degree Completion and Program Requirements

During graduate study, students must meet program requirements and submit pertinent forms **at various due dates** to the USU Graduate School for approval. The Graduate School website https://gradschool.usu.edu/academics/doctorate-plan describes Steps to Degree Completion, including a variety of forms that must be submitted to the Graduate School.

The following table summarizes what students are supposed to complete at different stages of their graduate study. Students should provide relevant data to the Graduate Program Coordinator

(GPC) as **in most cases, the GPC will submit relevant forms to the School of Graduate Studies**.

Activities	Due date	Notes
Submit Supervisory Committee Approval Form (SCAF) 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 student's department. The SCAF form is available at https://gradschool.usu.edu/resources/all-forms/supervisory-committee	The SCAF form is due to the Graduate School **by the end of the third semester.**	Students ask the GPC to submit the SCAF form.
Hold the Program of Study (POS) Meeting and Submit POS Form to Graduate School (see Section 8) **Step 1**: Request the Program of Study (POS) template from either the Graduate Program Coordinator (GPC) 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. Do not enter your POS directly into Degreeworks. The GPC will enter your final POS into Degreeworks in Step 5 to save you time. **Step 2:** Fill out the template by entering all courses you have taken in the past and will take in the future. The template contains texts highlighted in blue, which provide instructions and examples. You need to remove those blue texts before sending the filled "clean" document to your Faculty Advisor. *The document 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. **Step 3**: Send the filled "clean" document to your Faculty Advisor for review and possible revisions to ensure all credit requirements toward graduation can be met. **Step 4**: Schedule the Program of Study (POS) Meeting with your Supervisory Committee to approve your POS. At your POS meeting, you can also briefly present your dissertation research to receive the first initial feedback from the Committee. **Step 5**: Send the Committee-approved version of your document to the GPC. The GPC will enter into Degreeworks all courses listed on your Committee-approved document and	Submit the POS template **by the end of your second or third semester**, after the Supervisory Committee approval.	**Students** fill out the POS template. After the Supervisory Committee approval, students submit the final document to the **Graduate Program Coordinator** (GPC) for GPC to enter into Degreeworks and submit POS request to the Graduate School via ServiceNow.

Activities	Due date	Notes
submit the POS request to the Graduate School via ServiceNow. The Graduate School will get signatures from your Supervisory Committee and the Department Head. If later you need to make changes to the POS, follow Steps 1-5 described above to document the changes. The changes must be approved by your Faculty Advisor first and then by your Supervisory Committee. A meeting with the Supervisory Committee might not be necessary. Submit the approved updated POS to the GPC to submit the ServiceNow POS request to the Graduate School. For further information, please see section 7 of this manual and visit: https://gradschool.usu.edu/resources/forms		
Complete Core Courses (25 credits) The program requires each student to complete 25 core course credits prescribed in the Ph.D. curriculum and maintain a cumulative GPA of 3.0. For further information visit: https://engineering.usu.edu/eed/		
Complete Elective Courses (minimum 5 credits) The program requires each student to complete a minimum of 5 elective course credits prescribed in the Ph.D. curriculum and maintain a cumulative GPA of 3.0. For further information visit: https://engineering.usu.edu/eed/		
Complete the Required Research Training 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). For further information visit: https://research.usu.edu/irb/training		
Complete Comprehensive Exam (see Section 9) After completing, at the minimum, all but one course in the doctoral program, each student must take the Qualifying Exam. For details, see section 9 of this manual.		
Develop Dissertation Research Proposal (see Section 10)		

Activities	Due date	Notes
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. *The cover page of the 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*. This cover sheet should be signed by all committee members after defending the dissertation research proposal. Students should submit their Dissertation Research Proposal **at least two weeks** prior to the scheduled proposal defense date. For details, see section 10 of this manual.		
Defend Dissertation Research Proposal 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. Based on discussions with and approval from their Faculty Advisor (Major Professor), students can defend their dissertation research proposal *either* one semester immediately before their scheduled Comprehensive Exam *or* any time after their Comprehensive Exam. For instance, if Comprehensive Exam is scheduled in August 2025, students can defend their dissertation research proposal in the Spring semester (January-April 2025) immediately before August 2025, or any time after August 2025. If Comprehensive Exam is scheduled in January 2026, students can defend their dissertation research proposal in the Fall semester (August-December 2025) immediately before January 2026, or any time after January 2026.		
Apply for IRB Approval for Dissertation Research After the Dissertation Research Proposal is defended and approved by the Supervisory Committee, and *before* students can conduct their dissertation research, the Faculty Advisor, on behalf of his students, must submit a research protocol to		**Student's Faculty Advisor** who indicates this IRB application is

Activities	Due date	Notes
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. 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 build 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: https://research.usu.edu/irb/		for his/her student's dissertation research.
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/resources/forms The requirements for Ph.D. candidacy are: 1) Responsible Conduct of Research and Research with Human Subjects training is completed; 2) Comprehensive Exam is completed with a PASS;	Submit the ACDD Form to the Graduate school 1) as soon as students complete their dissertation proposal defense and submit their IRB application	Students should notify Graduate Program Coordinator (GPC) as soon as they complete their dissertation proposal defense and get IRB approval for their

Activities	Due date	Notes
3) Dissertation Proposal defense is completed and approved by the Supervisory Committee and the dissertation proposal coversheet is signed; and 4) IRB protocol for dissertation research is approved, or submitted with a pending IRB protocol number. 5) Responsible Conduct of Research (RCR) Training is required. 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 (or a pending IRB protocol) 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 a student is ready to conduct independent dissertation research. For further information visit: https://gradschool.usu.edu/resources/forms	for their dissertation research, and 2) *no later than 3 months prior to their final dissertation defense*.	dissertation research. The GPC will then submit the ACDD form to the Graduate School.
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 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/resources/forms	The GPC submits the AFE form to the Graduate School **at least 10 business days before the final dissertation defense.**	Students should notify the GPC before the final dissertation defense for the GPC to submit the AFE form.
Final Dissertation Defense Students need to discuss with their Faculty Advisor (Major Professor) before scheduling for a defense. The Faculty Advisor (Major Professor) must read and approve the		

Activities	Due date	Notes
dissertation document before circulating it to the committee members. Students should submit their dissertation document, in the Word format rather than PDF format, to all Supervisory Committee members **at least 2 weeks** before the scheduled dissertation defense date.		
Submit Record of Examination (ROE) Form Immediately following Dissertation Defense The Graduate Program Coordinator (GPC) submits the ROE form to the Graduate School. Students must not handle the REO form once it is completed. The form is available at https://gradschool.usu.edu/academics/index	After the defense, Faculty Advisor informs the GPC of the results. The GPC will then submit the ROE via ServiceNow.	
Submit Other Four Forms After Dissertation Defense After dissertation defense, students must submit four forms: 1) Thesis/Dissertation Format and Style and Electronic Publishing Approval (F&S) 2) Authorship and Copyright (A&C) form 3) IRB-approved Protocol Closeout, and 4) Embargo Request All above forms are available at https://gradschool.usu.edu/academics/doctorate-plan The Graduate Program Coordinator (GPC) uploads the 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.		Students submit the forms asap after dissertation defense.
Grace Semester A student does not officially earn the title of "Dr." until he or she completes the submission of all forms and dissertation to the School of Graduate Studies and the Library. All dissertations, in the final format, must be in by the last day of a semester (Spring, Summer, or Fall) in order to be officially considered "graduated" in that particular semester, or students will have to wait until next Fall or Spring semester (grace semester, not including Summer) to be officially considered "graduated."		

Activities	Due date	Notes
In the grace semester, domestic students do not need to register for any courses, and international students need to register for a zero-credit USU 7777 “course” (with no instructor) to keep their visa status. The USU 7777 “course” requires students to pay for health insurance fees (such as $917) and student fees (such as $125). The health insurance fees can be dropped if students can provide their health insurance proof. See https://usu.service-now.com/aggies?id=kb_article_view&sysparm_article=KB0014407&sys_kb_id=b8de7cea4fb6474073394e328110c700&spa=1		
Commencement Utah State University holds a graduation ceremony once a year (typically in early May), see https://www.usu.edu/commencement/index.		

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 the program and at least one faculty member outside of the student’s 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/academics/doctorate-plan) 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 the department must be consulted and approved by your Faculty Advisor.

In selecting an outside committee member, keep in mind that they should provide specialized assistance in your overall research design but not have a primary role in chairing or co-chairing 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 you 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/resources/all-forms/supervisory-committee) and submit the form to the Graduate School at least 6 weeks prior to the final defense of your dissertation.

Section 9. Guidelines for Comprehensive Exam

9.1 The Purpose of Comprehensive Exam

The main purpose of Comprehensive Exam in the program 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 program as it will allow you to proceed to the next phase of your research program.

9.2 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.

9.3 Where, When, and How to Take Comprehensive Exam

Comprehensive Exam is offered twice a year: the fourth week in January and the week immediately before the start of the Fall semester in August. If students take courses in the fourth week on a certain day(s) in January, they need to make themselves available for a 3-hour

exam on that day(s). Comprehensive Exam will be proctored at an appropriate USU Testing Center. The exam consists of five problems addressed over a period of five days:

- Problem 1: Monday, any 3-hour time slot between 8:30 am – 5:00 pm
- Problem 2: Tuesday, any 3-hour time slot between 8:30 am – 5:00 pm
- Problem 3: Wednesday, any 3-hour time slot between 8:30 am – 5:00 pm
- Problem 4: Thursday, any 3-hour time slot between 8:30 am – 5:00 pm
- Problem 5: Friday, any 3-hour time slot between 8:30 am – 5:00 pm

As the Comprehensive Exam is not a standard Canvas course included in Banner, students cannot use the online appointment tool provided by the Testing Center to schedule their exams. Instead, students must schedule specific time slots for the 5-day exam at least 2 weeks in advance (before the first exam date on Monday) by calling or emailing the specific Testing Center where students will conduct their exams.

A list of email and phone numbers of all USU Testing Centers can be found at https://rcde.usu.edu/mats/public/usu-testing-centers. Note that although different testing centers have different operating hours, students must complete their exam before 5:00 pm on each exam day. In other words, students should schedule their exam to start no later than 2:00 pm on each exam day. Doing so will allow a 3-hour exam time on each exam day.

When checking in at the appropriate USU Testing Center location on the designated exam days, students must bring their student ID with them. Students will then log in to Canvas to access the Comprehensive Exam. The exam will be available through a passcode-protected Canvas course titled "Comprehensive Exam." The proctor at the Center will enter the passcode for students to access this Canvas course. Students are not permitted to access the internet or other electronic devices during the exam.

Once logged in, students will have 180 minutes (3 hours) to complete each problem. Students will be allowed to use a Word Processor and Excel to compose and format their responses to each exam problem and then upload their responses to Canvas. Student responses to each problem should be a Word document of **2 to 3 pages** (12 points, single space, and single column). After the allotted 3-hour time expires, students will no longer have access to that exam problem. Thus, do not wait until the last minute to submit the responses. In addition, before submitting their responses, students are expected to check if any grammatical errors exist and make necessary corrections.

Students are not permitted to bring to the exam the full photocopies of references. Instead, students can bring the reference list (physical document) with them to the exam. Students do not need to spend time typing in the full reference at the end of my response. **Instead, students only need to include the citations (such as Author1, Year; Author et al., Year) in their response to the exam questions**. Student response to the exam questions is 2-3 pages without fully listing the references at the end.

The format of the references should be authors, year, paper titles, journal titles or conference proceedings titles, volume/issue number, and page numbers. Students cannot include headings or subheadings of the references themselves (i.e., contents). To be clearer, the following is the example list that students can bring with them to the exam:

1. Bland, A. (2017, November). The implementation of a junior Samoan language programme in a South Island, New Zealand secondary school context [Paper

presentation]. Australian Association for Research in Education (AARE) Conference 2017, Canberra, Australia.
2. Bloom, B. S., Englehart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Addison-Wesley Longman Ltd.
3. Mazumder, Q. H., Sultana, S., & Mazumder, F. (2020). Correlation between classroom engagement and academic performance of engineering students. International Journal of Higher Education, 9(3), 240–247.
4. …..
5. …..

After the exam, when we (i.e., the Exam Review Committee) review student responses to an exam question, we will ask students to email us their reference list if we have any questions about the references students cited. Therefore, students should always keep their reference list before they hear from us about their exam results.

9.4 How to Prepare for the Comprehensive Exam

The following guidelines are provided to assist students in preparing for each of the five problems on the exam. Please note that "LO" stands for learning objectives in the following paragraphs. Please also note that in your responses to each exam problem, ***write complete sentences that synthesize and provide a rationale for your response rather than listing bullet points***.

Problem 1

Topic: Foundations of Engineering Education
Related Course: EED 7230

Depending on the question given to you, below is a list of major examination objectives that may help you prepare Comprehensive Exam for this topic.

LO1: Synthesize issues (e.g., theories, ideas, research findings, conclusions, and recommendations) in writing. For example:	
1	Early historical views on the nature of the engineering profession and who gets to be an engineer.
2	Views related to engineering science instruction in engineering education.
3	Views related to engineering design instruction in engineering education.
4	Challenges and benefits of integrating instructional technology into engineering education.
5	Contemporary views on the development of professional competencies (e.g., communication, teamwork, and leadership skills) in engineering education.
6	Contemporary views on internationalization and the development of global competencies in engineering education.
7	Contemporary views on equity, inclusion, and social justice in engineering education.
8	Challenges and benefits of remote and online instruction in engineering education.
LO3: Understand (e.g., identify, classify, describe, explain) the historical, philosophical, and psychological foundations of engineering education as the field has evolved within academic, social, political, and economic contexts. For example:	

1	Describe three varying approaches to engineering education employed in U.S. colleges during the Antebellum era.
2	Describe the Morill Act of 1862 and its effects on engineering education.
3	Describe and compare the findings/recommendations of the Mann (1918) and Wickenden (1930) reports.
4	Describe the findings/recommendations and outcomes of the Grintner (1955) report.
5	Describe the findings/recommendations and outcomes of the Neal (1986) report.
6	Define the term *outcomes-based accreditation* and describe how it differed from prior methods of accreditation in engineering education.
7	Define the term *Scholarship of Teaching and Learning (SoTL)* and explain its significance in engineering education.
8	Define the terms *capstone* and *cornerstone design* courses and explain their significance in the development of engineering education curricula circa 1990 and beyond.
9	Define the term *professional competencies* in engineering education and explain its significance.
10	Define the term *global competencies* in engineering education and explain their growing significance.
11	Define the terms *equity*, *inclusion*, and *social justice* as they relate to engineering education.
12	Define the term *emergency remote teaching (ERT)* and describe how ERT compares and contrasts with online learning.

Problem 2

Topic: Human Cognition
Related Course: EED 7010

Depending on the question given to you, below is a list of major examination objectives that may help you prepare Comprehensive Exam for this topic.

LO1: Synthesize issues (e.g., theories, ideas, research findings, conclusions, and recommendations) in writing. For example:	
1	Different views on knowledge deployment including skill acquisition and development between novice to expert.
2	Theories on how expert and novice solve problems.
3	Different views on self-regulated learning features and models.
4	Theories on self-regulated learning and its role in learning.
5	Theories on types of transfer.
6	Theories on knowledge deployment that promotes and hinders transfer of learning.
7	Theories on design process.
8	Theories on knowledge deployment that yields to successful design outcome and experience
LO2: Understand (e.g., identify, classify, describe, explain) major issues related to human learning including the nature of expertise, knowledge organization and deployment, transfer of learning, and assessment of cognitive skills. For example:	
1	Define expertise.

2	Identify and discuss the knowledge deployment including skill acquisition and development between expert and novice in solving problem.
3	Discuss the knowledge deployment including skill acquisition between expert and novice in solving ill-structured problem such as engineering design.
4	Define self-regulated learning.
5	Identify and discuss self-regulated learning features (or cognitive elements related to SRL) and models existed in literatures.
6	Discuss the role of those SRL features in learning.
7	Define transfer of learning.
8	Identify and discuss various types of transfer.
9	Discuss the knowledge deployment that contributes to successful and unsuccessful transfer.
10	Define and discuss how design problem-solving task is unique compared to any other types of problem solving.
11	Discuss about the engineering design process.
12	Discuss about the knowledge deployment that contribute to successful design outcome and experience.

Problem 3

Topic: Teaching, Learning, and Assessment in Engineering Curricula
Related Courses: EED 6150, EED 6090

Depending on the question given to you, below is a list of major examination objectives that may help you prepare Comprehensive Exam for this topic.

LO6: Understand (e.g., identify, classify, describe, explain, calculate) various methods to measure and evaluate student achievement within the cognitive, affective, and psychomotor domains. For example:	
1	Discuss and defend norm and criterion referenced assessment.
2	Discuss categories of reliability and validity and discuss how they would be determined on an assessment you design.
3	Interpret a table of specifications for test design.
4	Calculate a difficulty index and discrimination index for data provided.
5	Interpret an expectancy table for two assessment items.
6	Calculate validity coefficients for a provided instrument.
7	Interpret Z and T scores on student evaluations.
8	Calculate weighted grades provided appropriate student performance results.
LO7: Create (e.g., design, develop, formulate) and/or evaluate (examine, interpret, critique) learning objectives and relevant assessments. For example:	
1	Be capable of using data garnered from methods above to advise a teacher in a hypothetical situation.
2	Discuss the importance of and justify alignment in curriculum development.
3	Discuss the advantages/disadvantages to diagnostic, formative, summative, and ipsative assessments.

4	Develop specific types of assessment items. (selection, supply, and performance).
5	Discuss ABET learning outcomes and show how you would incorporate them into your curriculum.
6	Create and justify learning goals, objectives, and activities for a theoretical course. Use appropriate models such as the ABCD model. Declare which learning domain your objectives target (behavioral, psychomotor, affective, or cognitive).
7	Discuss, choose, and justify how a learning framework, model or *taxonomy* guides your development of learning objectives. E.g., Integrated Course Design, UDL, Traditional design, Backwards design, ADDIE, SAM, Kirkpatrick, *Blooms, revised Blooms, Finks*
8	Discuss the consequence of novice or expert learners upon your chosen objectives and assessment systems.
9	Define and discuss cognitive constructivism, cognitivism, behaviorism, social constructivism, humanism, and transformative paradigms of education and how they inform the development of your objectives.

Problem 4

Topic: Grant Proposal Writing
Related Course: EED 7460

Depending on the question given to you, below is a list of major examination objectives that may help you prepare Comprehensive Exam for this topic.

LO4: Apply (e.g., use, implement) the appropriate skills necessary to organize and prepare competitive grant proposals. For example:	
1	Outline the entire process of a grant proposal application from proposal preparation to handling rejection.
2	Identify private and public funding resources.
3	Identify major components of a grant proposal for private and public funding.
4	Explain effective techniques for writing each major component of a competitive grant proposal.
5	Outline the typical proposal review process at the National Science Foundation.

Problem 5

Topic: Research Design
Related Course: EDUC 6570, EDUC 6600 or STAT 5200, EED 7040

Depending on the question given to you, below is a list of major examination objectives that may help you prepare Comprehensive Exam for this topic.

LO5: Understand (e.g., identify, classify, describe, explain) basic principles and practices of research methodologies typically used in engineering education research. For example:	
1	Describe the specific objectives of the selected engineering education research study.

2	Identify the types of research question(s) or purpose statements used in the study to infer research design.
3	Describe the research paradigm (e.g., post-positivist, interpretivist, critical, pragmatic, etc.) that best fits the worldview used in the study.
4	Describe your positionality statement as the researcher and how it relates to the research context.
5	Identify and describe the quantitative, qualitative, or mixed methods research methodology used in the paper to conduct the study. Describe how the methodology aligns with the research purpose statement, research questions/hypotheses, and research paradigm.
6	Identify the data types, data collection methods, and analysis methods used to conduct the research. Describe how the data types, collection, and analysis align with the methodology.
7	Identify any limitations in the study and make suggestions on how to improve the study.

9.5 Evaluation of Comprehensive Exam

An Exam Review Committee, including your Faculty Advisor (Major Professor) and other faculty members, will read and review your exam to determine if the overall quality of the exam is satisfactory (Pass), partially satisfactory (Provisional Pass), or unsatisfactory (Fail). The Exam Review Committee will evaluate the quality of your Comprehensive Exam by examining the extent to which you have achieved mastery of knowledge and/or skills in the following learning objectives (LO):

LO1: Synthesize issues (e.g., theories, ideas, research findings, conclusions, and recommendations) in writing
LO2: Understand (e.g., identify, classify, describe, explain) major issues related to human learning including the nature of expertise, knowledge organization and deployment, transfer of learning, and assessment of cognitive skills
LO3: Understand (e.g., identify, classify, describe, explain) the historical, philosophical, and psychological foundations of engineering education as the field has evolved within academic, social, political, and economic contexts
LO4: Apply (e.g., use, implement) the appropriate skills necessary to organize and prepare competitive grant proposals
LO5: Understand (e.g., identify, classify, describe, explain) basic principles and practices of research methodologies typically used in engineering education research
LO6: Understand (e.g., identify, classify, describe, explain) various methods to measure and evaluate student achievement within the cognitive, affective, and psychomotor domains
LO7: Create (e.g., design, develop, formulate) and/or evaluate (examine, interpret, critique) learning objectives and relevant assessments.

The initial decision on your exam results will be based on the discussion and consensus made by the Exam Review Committee and will be announced to you approximately 30 days after the exam. If the Committee's initial decision is Provisional Pass, which means your manuscript is deemed to be partially satisfactory but not fully satisfactory, you are then required to rework the part(s) of the exam suggested by the Committee and submit your revised answer of the parts to the Committee within one month after you receive the Committee's decision.

If the Committee's final decision is Fail, you must retake the exam on the next available date. The exam can be retaken no more than two (2) times.

9.6 Tips for Preparing and Studying for the Comprehensive 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 Comprehensive Exam to the Graduate Program Coordinator for use during the 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 Comprehensive 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 begin 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 Program of Study, 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 <u>at least 2 weeks prior to the scheduled dissertation proposal defense date</u>**. 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 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 your Faculty Advisor (Major Professor), other actions you can take are to prepare thoroughly for your classes and participate actively 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 scheduled proposal defense date. 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 program. 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 https://gradschool.usu.edu/academics/index

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 students 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 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/resources/forms) 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 the minimum requirements stipulated by the program.

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]

[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

3. Show in your theoretical framework there is a gap in existing research and how your study will help fill this void.[1]
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.

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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.

[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.

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. 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 [2]

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.

11.3 Evaluation of Final Dissertation

At least two weeks prior to your scheduled dissertation defense date, you should submit your dissertation (in the Word format rather than PDF format) to your Supervisory Committee members. Your Supervisory Committee will evaluate the quality of your dissertation by examining the extent to which you have achieved mastery of knowledge and/or skills in the following learning objectives (LO):

LO1: Synthesize issues (e.g., theories, ideas, research findings, conclusions, and recommendations) in writing
LO2: Understand (e.g., identify, classify, describe, explain) major issues related to human learning including the nature of expertise, knowledge organization and deployment, transfer of learning, and assessment of cognitive skills
LO3: Understand (e.g., identify, classify, describe, explain) the historical, philosophical, and psychological foundations of engineering education as the field has evolved within academic, social, political, and economic contexts
LO4: Apply (e.g., use, implement) the appropriate skills necessary to organize and prepare competitive grant proposals
LO5: Understand (e.g., identify, classify, describe, explain) basic principles and practices of research methodologies typically used in engineering education research
LO6: Understand (e.g., identify, classify, describe, explain) various methods to measure and evaluate student achievement within the cognitive, affective, and psychomotor domains
LO7: Create (e.g., design, develop, formulate) and/or evaluate (examine, interpret, critique) learning objectives and relevant assessments.
LO8: Apply (e.g., use, implement, interpret) principles and practices of research methodologies typically used in engineering education research
LO9: Apply (e.g., use, implement, interpret) regulations, policies, statues, ethical issues, and guidelines that govern the conduct of research with human subjects

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 (such as RA) are expected to work an **average** of 20 hours per week (12 months per year for RA). 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 student's 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 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://www.usu.edu/student-conduct/.

- 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 the 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 coursework, project, and dissertation research. For additional information on authorship, you are encouraged to review:

  - APA's publication: "*A Graduate Student's Guide to Determining Authorship Credit and Authorship Order"* http://www.apa.org/science/leadership/students/authorship-paper.pdf
  - The responsible conduct of research, including responsible authorship and publication practices by *Ruth Ellen Bulger* http://edepot.wur.nl/137683
  - A Guide To Responsible Conduct In Research Third Edition http://www.nap.edu/read/12192/chapter/1

- 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:

- "Caught in the Trap: The Allure of Deceptive Publishers": http://naepub.com/predatory-publishing/2015-25-4-4/
- "Question / What to Look For / Red Flags" table: *https://onlinelibrary.wiley.com/doi/pdf/10.1111/jmwh.12273*

12.4 Program Check-In Procedures

- The USU School of Graduate Studies offers an optional in-person orientation session in addition to the required online orientation session one week prior to the class starting date. Find specific dates at https://gradschool.usu.edu/orientation.

- 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. The Office of Global Engagement offers a day-long International Orientation, usually on the Monday (e.g., August 21, 2023) before the Fall semester starts, and the Friday (e.g., January 6, 2023) before the Spring semester starts. Find specific dates at https://www.usu.edu/orientation/international/graduate. If you miss this orientation, you can still go to the Office of Global Engagement to get relevant information such as insurance.

- If you are receiving an assistantship through your 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 Graduate Program Coordinator.

- 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 Program Check-Out Procedures

- Clean out your office space; return the space to its original condition (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 your 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.

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

- If your new employer needs confirmation of your Ph.D. degree, you can send a request to the Vice Provost of the USU School of Graduate Studies, who will send you a confirmation letter.

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:
  https://catalog.usu.edu/

- USU Office of Global Engagement:
  https://www.usu.edu/global-engagement/

- 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, Seventh Edition
  https://apastyle.apa.org/products/publication-manual-7th-edition

- Engineering/Engineering Education Librarian, https://library.usu.edu/help/librarians

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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
Matt Pinner
Matt.Pinner@usu.edu
435-797-1266

Title IX Coordinator
Cody Carmichael
Cody.Carmichael@usu.edu
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 <u>proposal</u>

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 proposal 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 2027)

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. 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	Dean's name, Ph.D. Dean of the School of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

Year (four digits such as 2027)