

## USU Mechanical & Aerospace Engineering Department Checklist for Mechanical Engineering PhD Degree Beyond the MS Degree

Name \_\_\_\_\_ Student A# \_\_\_\_\_

1. **Choose courses satisfying requirements below, and add to checklist.** Course descriptions and schedules on MAE website.
2. Review checklist with major professor, make changes if needed, and discuss who to ask to serve on your committee.
3. Add names of faculty who have agreed to serve on your supervisory committee.
4. Email checklist to MAE Graduate Advisor before end of third semester. DocuSign will be used for signature approval.

Mechanical Engineering PhD Beyond the MS Credit Requirements (42 minimum)												
<input type="checkbox"/>	9 credits MAE coursework 6000-level, or above. Excludes MAE 6930/7930 (self-study)*, 6950, 6970/7970, 6990/7990.											
<input type="checkbox"/>	3 credits Advanced Math Supervisory committee approval required if not on approved Math list on page 2.											
<input type="checkbox"/>	30 credits MAE 7970 Dissertation Research (List credits below.) Up to 6 credits of MAE 7970 may be replaced by 3000** to 5000-level coursework, if approved by student's committee.											
List schedule of courses/credits including courses for MS option, if pursuing.												
Course	Cr	Semester	Gr	Course	Cr	Semester	Gr	Course	Cr	Semester	Gr	
USU 6900 RCR	0											
For eligible students, tuition awards are for approved Program of Study credits, and limited to 9 credits each fall and spring semesters, and for summer, if needed, up to 6 coursework credits or 3 research credits if doing final dissertation defense.												
Other Requirements												
<input type="checkbox"/>	PhD Qualifying Exam passed by end of third semester. List subject areas and dates in table on second page.											
<input type="checkbox"/>	Completion of USU 6900 and Research Scholars Certificate Program.											
<input type="checkbox"/>	Oral Research Presentation – Dissertation Proposal Defense.								Date:			
<input type="checkbox"/>	Submission of Application for Candidacy and Dissertation Proposal.								Date:			
<input type="checkbox"/>	Submit paper for publication in refereed journal prior to scheduling final defense (related to dissertation and student first author.)											
<input type="checkbox"/>	Title:				Journal:				Date Submitted:			
<input type="checkbox"/>	Successful dissertation defense. Submit dissertation to committee 4 weeks prior to scheduled defense.											

List faculty who have agreed to serve on your supervisory committee.				
Major Professor	Committee Members			Outside Member

\* Competitively graded 6930 or 7930 courses are allowed. They have an assigned room and class schedule; enrollment is open to all students who have completed the proper prerequisites; a course syllabus is given to students; and assignments and tests are competitively graded.

\*\*If research requires interdisciplinary work, MAE 7970 Dissertation Research credits may be replaced by a 3000-level different department course. Full supervisory committee approval required before registering for it. Additional 3000-level courses, approved by the committee, may be added but not replace other requirements. (Policy approved 1/11/2016)

# PhD Qualifying Examination

The PhD qualifying examination **consists of three exams**: a **required mathematics** exam and **two subject area exams** **chosen by the student** from the list of subject areas below. All exams are based on undergraduate-level coursework.

- **All three exams must be taken on the first attempt**, and a **maximum of two attempts are allowed** to pass the exams. Any exam(s) not passed on the first attempt must be retaken on the next scheduled exam date. For summer and fall admits, the first attempt will be no later than the week before the first spring semester, and for spring admits, it will be no later than the week before the first fall semester.
- **A minimum grade of 80/100 is required to pass an exam**, and passing grades must be obtained on each exam.
- The three exams **must be passed before completing three semesters** (not counting summer) as a PhD student.
- Exams are given as necessary according to the schedule below. To register, email the MAE Graduate Academic Advisor the subject area exams you will take. For fall exams, email by April 1, and for spring exams by Oct.1.
- The **time limit on each exam is three hours**, with one exam given per day. If necessary, a maximum of two exams may be taken in any one day.
- The MAE Graduate Academic Advisor is the point of contact for questions about the exams.

Schedule by Semester		
Fall	Spring	Late Spring
Week before fall semester begins for previous spring admits.	Week before spring semester begins for previous fall admits, and those repeating fall exams.	Week after spring semester ends for those repeating spring exams.

Subject Area	Based on USU Course	1 <sup>st</sup> Date Taken	Pass or Fail	2 <sup>nd</sup> Date Taken	Pass or Fail
Mathematics (required)	MATH 2210/2250				
Numerical Methods	MAE 3210				
Fluid Mechanics	MAE 3420				
Heat Transfer	MAE 3440				
Solid Mechanics	MAE 3040				
Dynamics	ENGR 2030				
Aeronautics	MAE 5500/5510				
Astronautics	MAE 5560				

### Approved Mathematics Courses

**Fall Semester**

- MATH 5410 Methods of Applied Mathematics
- MATH 5760 Stochastic Processes
- MATH 6410 Ordinary Differential Equations I
- ECE 6010 Stochastic Processes in Electronic Systems

**Spring Semester**

- MATH 5270 Complex Variables
- MATH 5420 Partial Differential Equations
- MATH 5460 Intro to Theory/Application of Nonlinear
- MATH 6270 Complex Variables
- MATH 6420 Partial Differential Equations I

**Spring Semester** continued

- MATH 6440 Ordinary Differential Equations II
- MATH 6450 Partial Differential Equations II
- MATH 6470 Advanced Asymptotic Methods
- MATH 6610 Matrix Computations
- MATH 6620 Numerical Analysis
- MATH 6640 Optimization
- ECE 6030 Math Methods for Signals and Systems
- STAT 5200 Design of Experiments

**Summer Semester**

- MAE 7560 Optimal Estimation for Aerospace Systems

Semester Graduating: \_\_\_\_\_

Student: \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

MAE Grad Advisor: \_\_\_\_\_

Major Professor: \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_