

**Parks College of Engineering, Aviation and Technology  
Saint Louis University**

**Graduate Programs in  
Engineering and Aviation**

**POLICIES AND PROCEDURES**

**Approved June, 2018**

**Graduate Programs in Engineering and Aviation**

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# I. INTRODUCTION

The Parks College graduate engineering and aviation programs are organized around a unique curriculum that prepares students with a solid theoretical and practical foundation to become effective leaders in all facets of their chosen discipline. By involving students in fundamental and applied research, encouraging collaboration across departments, and partnering within and outside institutions and organizations, Parks College of Engineering and Aviation graduate students gain a rich education in their chosen discipline. The college offers Master of Science and Doctoral of Philosophy degrees in Aviation Science and Engineering with courses in the areas of Aerospace and Mechanical Engineering, Biomedical Engineering, Civil Engineering, Electrical and Computer Engineering, Engineering Physics, and Aviation Science.

The dedicated Parks College faculty and staff are prepared to mentor, guide, and support your graduate education activities. Your graduate program will be uniquely structured to provide a multi-disciplinary approach, curriculum design flexibility, and customized research opportunities to meet your specific career goals. Innovation and leadership will be emphasized throughout, producing highly-skilled professionals, well-prepared to pursue careers at multi-national firms, competitive government agencies, or prestigious academic institutions.

In parallel with these objectives and reflective of its mission, Saint Louis University also strives to engage its students in five interrelated dimensions: scholarship and knowledge; intellectual inquiry; community building; leadership and service; and spirituality and values. Graduates will be a part of the future workforce finding ethical solutions, meeting the needs of the society with emerging technologies, and educating leaders who are aware of their impact on the surrounding world from technical and ethical perspectives.

The University website is the primary source of graduate education policies and procedures. This document will be utilized to highlight information unique to Parks College of Engineering, Aviation and Technology. Otherwise applicants are directed to the Saint Louis University Graduate Education Catalog:

<http://www.slu.edu/graduateeducation/graduate-education-catalog>

## II. CRITERIA FOR ADMISSION

### Submission Deadlines

Deadlines for applications for admission and financial aid are defined annually in the Graduate Course Catalog.

### Admission Requirements

- 1) Online application at [www.slu.edu/graduate-admission-home/apply-now](http://www.slu.edu/graduate-admission-home/apply-now)
- 2) Non-refundable application fee
- 3) Official GRE quantitative score
- 4) Official transcripts of all previous degrees
- 5) Three letters of recommendation
- 6) Curriculum Vitae (CV)
- 7) Professional goals statement
- 8) Evidence of English language proficiency (when native language is not English) -  
Minimum scores: TOEFL PBT 550, TOEFL IBT 80, or IELTS 6.5

### Criteria for Acceptance

A four-year undergraduate degree in engineering or a related field may be appropriate for admission to the engineering graduate program. A four-year undergraduate degree in aviation or a related field may be appropriate for admission to the aviation graduate program.

When the Park's Office of Graduate Education and Research has a completed application, it will be forwarded to the appropriate department for further consideration

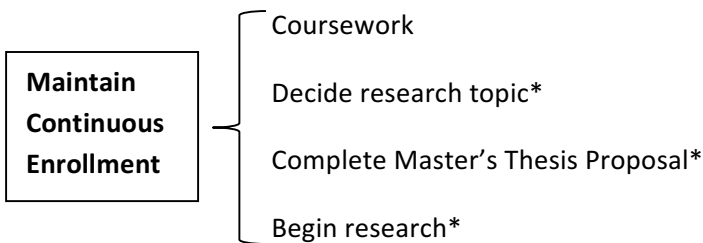
Admission decisions are made by the appropriate Department, using an internal review process. After evaluating a candidate's application, the Department Graduate Coordinator has the discretion to admit the applicant to the M.S. or the Ph.D. program.

### III. TENTATIVE GRADUATE PROGRAMS TIMELINE

All admitted graduate students must complete a Graduate Student Orientation conducted by the Office of Graduate Education and Research during the first week of classes in their admitted entry term.

#### ***Suggested Timeline for Master of Science students***

- FREQUENTLY** Meet with your Advisor
- 1<sup>st</sup> Semester** Proposed M.S. Program of Study
- ANNUALLY** Annual Student Review (January for new Fall students; May for all other students)



- Last semester**
- Apply for graduation
  - Final M.S. Program of Study
  - Degree Audit
  - Thesis Defense\*
  - Exit Examination (Aviation, Course option)
  - Appointment with Master's Candidacy Specialist
  - Submit Thesis to ProQuest\*

\*For students pursuing Thesis option

\*\*For students pursuing the Project option, please see your Advisor.

## ***Suggested Timeline for Doctor of Philosophy students***

<b>FREQUENTLY</b>	Meet with your Advisor
<b>1<sup>st</sup> Semester</b>	Proposed Ph.D. Program of Study  Evaluation of Advanced Standing of a Doctoral Student (when applicable)
<b>ANNUALLY</b>	Annual Student Review (January for new Fall students; May for all other students)
<b>End of 1<sup>st</sup> Year</b>	PhD Qualifying Exam Petition Form (Engineering)
<b>End of 2<sup>nd</sup> Year</b>	PhD Qualifying Exam Petition Form (Aviation)
<b>Maintain Continuous Enrollment</b>	Coursework Decide research topic Complete Dissertation Proposal Begin research
<b>When Ready</b>	Doctoral Oral Examination Form  Upon passing Oral Examination, student is awarded Ph.D. Candidacy Status  Degree Audit
<b>Last semester</b>	Apply for graduation  Final Ph.D. Program of Study  Notification of Readiness for the Public Oral Presentation of the Ph.D. Dissertation  Defend Dissertation  Appointment with Doctoral Candidacy Specialist  Submit Dissertation to ProQuest

## IV. PRORAM REQUIREMENTS - MASTER OF SCIENCE DEGREES

The Master's Degree requires minimum of 30 credits beyond a Bachelor's degree. For students pursuing the research option, 6 of the total credit hours to the degree must be in Thesis Research. For students pursuing the project option, 3 of the total credit hours to the degree must be devoted to carrying out a project, approved by the student's Faculty Advisor. Up to 6 credit hours may be transfer credits. Each graduate student is expected to maintain a cumulative grade point average (GPA) of 3.0; a lower GPA may result in probationary status and/or dismissal from the program due to unsatisfactory academic performance. Lastly, all graduate students are required to enroll each semester until degree is received.

Students pursuing a Master of Science in Aviation have additional graduation requirements as follows:

- Internship with Industry
  - In addition to the 30 credit hours required for the M.S. degree, the student must complete a 2-credit hour Internship with Industry, bringing the total number of credit hours required for graduation to 32 credit hours. Students that have significant aviation commercial/industrial experience may request a waiver of this requirement from the chairperson of the Department of Aviation Science.

Each Master's Degree student prepares a program of study that must be approved by his/her Faculty Advisor, Department Graduate Coordinator, and the Parks College Office of Graduate Education and Research. This program of study is developed within the context of the student's background and career goals allowing the student to customize his/her graduate program to suit his/her professional goals.

For additional questions regarding Master of Science degree procedures, contact the Parks College Office of Graduate Education and Research or the SLU Master of Science Advisor.

### **Major Milestones**

Upon completing the graduate student orientation, the student should make initial contact with the chosen program Department Graduate Coordinator. Then, the student needs a Faculty Advisor who can assist the student in planning courses and research. The student may have already selected a Faculty Advisor; if not, then the Department Graduate Coordinator will appoint a temporary Faculty Advisor.

The student and Faculty Advisor will write a tentative program of study. The choice of courses depends on the student's past academic experience and career goals.

### **Course only option**

Prior to registration, an admitted student, in consultation with his/her Faculty Advisor, will prepare a program of study. The program of study should include tentative courses to fulfill the requirement of 30 credit hours for an MS Degree.

### Additional requirements for the Master of Science in Aviation (Course only option)

- Comprehensive Degree Examination
  - Ordinarily during the final academic term, the Master's degree student must take and pass a comprehensive oral examination. The Master's degree student is required to register for a Special Study for Examination (zero credit) course during that term. A Master's degree student may enroll not more than twice in Special Study for Examination without permission of the Parks College Office of Graduate Education and Research.
  - The comprehensive oral examination is administered by a committee of three or more faculty recommended by the major-field chairperson and approved by the Parks College Office of Graduate Education and Research. The final examination covers the major field.
  - In order to pass the comprehensive oral examination, the student must receive satisfactory evaluation from two-thirds of the examiners. Official transmission of the outcome of the examination is by letter to the student from the Associate Provost.
  - If a student fails the comprehensive oral examination, the examination may be repeated, but only once, provided that a second exam is recommended by the committee and is approved by the Parks College Office of Graduate Education and Research. Ordinarily, a second examination will not be scheduled during the same academic term as the first.

### Project Option

Prior to registration, an admitted student, in consultation with his/her faculty advisor, will prepare a program of study with tentative courses, to be taken over the course of the coming semesters, to fulfill the minimum of 30 credits required for an MS Degree. Three of the total credit hours will be dedicated to a project. Project details will be decided at a later date, in consultation with the student's Faculty Advisor.

### Research Option

#### **First Semester in the MS Program**

In the first semester, the MS student will begin taking courses as indicated in the program of study. In parallel, the student may also begin research in an identified research area, under the guidance of a Faculty Advisor.

The Faculty Advisor and the student will form a **Guidance Committee** of at least three members. The Committee members should be persons who will provide expertise and guidance that will assist the student in research. At least one member must be in the student's home Department. If the Faculty Advisor is in another department, then one Guidance Committee member in the home Department will be designated as the Guidance Committee Chair.

By the end of the first semester, the program of study should be approved by the Faculty Advisor or Guidance Committee Chair, and the student will send a copy of the approved program of study to the home Department Graduate Coordinator.

The program of study and Guidance Committee membership are not necessarily fixed. For various reasons, the student may wish to alter the course selection or membership on the Guidance Committee. For example, if the research direction shifts, then the student may benefit from



additional Guidance Committee members or from replacing one member for another. All changes must be communicated and approved by the Department Graduate Coordinator and the Office of Graduate Education and Research.

### **Thesis Proposal**

A Thesis Proposal is prepared by the student before the end of the first year of graduate level activities. The title and outline for this proposal are approved by the Guidance Committee and reported on the Master's Thesis Proposal/Prospectus form. After completing the thesis proposal, the student meets with the Guidance Committee at least once every semester.

### **Thesis Defense**

An oral thesis defense must be completed before graduation. The defense typically includes a seminar that is open to the public. Following the open session, the student and Guidance Committee continue the defense in a closed session. A written thesis is submitted ~2 weeks prior to the oral defense. The Guidance Committee evaluates the oral and written components of the defense and then conveys its decision to the Department Graduate Coordinator and the Office of Graduate Education and Research.

### **Independent Studies and Special Topics Courses**

For all independent studies and special topics courses an outline of the topic(s) covered and the student evaluation process must be submitted and approved by the student Faculty Advisor and the Department Graduate Coordinator prior to registration.

### **Annual Student Review**

Admitted graduate students are expected to meet with their Faculty Advisors at least once each semester. Students must have their Faculty Advisor's permission to enroll in new academic work in anticipation of a new academic term.

For all M,S. students, an annual student review must be completed in consultation with the Faculty Advisor and submitted to the respective Department Graduate Coordinator and the Office of Graduate Education and Research.

The annual student review form may be found at the Parks College Graduate Programs website or at the Office of Graduate Education and Research.

<http://parks.slu.edu/academics/grad-programs/forms-and-petitions/>

## V. PROGRAM REQUIREMENTS – Ph.D. DEGREES

Generally, Ph.D. programs focus on a specific research topic. Students are expected to conduct original academic research that culminates in a dissertation with the potential for peer-reviewed publications. Additional coursework related to the chosen research area is also required.

In consultation with their Faculty Advisor, each Ph.D. student prepares a program of study that must be approved by the Department Graduate Coordinator and the Parks College Office of Graduate Education and Research. This program of study is developed and then reviewed within the context of the student's background and career goals, allowing the student to customize his/her graduate program to suit his/her professional goals.

- **The engineering Ph.D. degree** requires a total of 60 credit hours beyond the Bachelor's degree including 12 to 18 credit hours of dissertation research. Of the 60 credit hours, a maximum of 9 credit hours may consist of coursework at the 4000 level; all other course credits must be at the 5000 and 6000 level. Those students who earn a Master of Science degree may include the associated Master of Science degree coursework credits, but not the thesis or project credits, in the 60 credit hours which are needed for the Ph.D. degree. The transfer of credits into the Ph.D. program must be consistent with university policies.
- **The aviation Ph.D. degree** requires a total of 63 hours beyond the Bachelor of Science degree, including a minimum of 12 credit hours of dissertation. The curriculum will include a minimum of 9 credit hours of coursework in research methodologies. Students will work with their advisor and Ph.D. committee to determine the specific coursework to complete the program. Those students holding an appropriate Master of Science degree may include a maximum of 27 credit hours of the associated Master of Science degree course credits, but not the thesis or project credits, in the 63 credit hours required for the Ph.D. degree.

### **Major Milestones**

Upon completing the graduate student orientation, the student should make initial contact with their chosen program Department Graduate Coordinator. Then, the student needs to identify a Faculty Advisor who can assist the student in planning courses and research. The student may have already selected a Faculty Advisor; if not, then the Department Graduate Coordinator will appoint a temporary Faculty Advisor.

The student and Faculty Advisor will write a tentative program of study. The choice of courses depends on the student's past academic experience and career goals.

### **First Semester in Ph.D. Program**

In the first semester, the Ph.D. student will begin taking courses as indicated in the program of study. In parallel, the student may also begin research in an identified research area under the guidance of a Faculty Advisor.

The Faculty Advisor and the student will form a Guidance Committee of at least five members. The Committee members should be persons who will likely provide expertise and guidance that will assist the student in research. Unless approved by the Office of Graduate Education and

Research, at least two members, must be in the student's home Department. If the Faculty Advisor is in another department, then one Guidance Committee member in the home Department will be designated as the Guidance Committee Chair.

By the end of the first semester, the program of study should be approved by the Faculty Advisor or Guidance Committee Chair, and the student will send a copy of the approved program of study to the home Department Graduate Coordinator.

Both the program of study and the Guidance Committee membership are not necessarily fixed. For various reasons, the student may wish to alter the course selection or membership on the Guidance Committee. For example, if the research direction shifts, then the student may benefit from additional Guidance Committee members, or replacing one member for another. All changes must be approved by the Department Graduate Coordinator and the Office of Graduate Education and Research.

### **Qualifying Exam**

A Qualifying Exam will be administered according to the expectations of the academic discipline. For example, in engineering a Qualifying Exam may be administered relatively early in the student's doctoral studies. In aviation, the Qualifying Exam is structured to assess comprehensive knowledge of the discipline after all or nearly all of the student's academic work has been completed and is thus administered closer to the completion of the degree.

The student's Guidance Committee will advise the student on preparation for the Qualifying Exam.

The Qualifying Exam is designed to determine whether a student is able to demonstrate graduate-level knowledge of the relevant subject matter and the capability to conduct graduate-level research. The details of the exam are determined by the home Department.

Qualifying Exams are arranged and administered by the home Department. The result of the exam may be a pass, no-pass, or conditional-pass. The conditional-pass will normally require that the student correct specific weaknesses and may require modifications to the program of study.

The Department Graduate Coordinator reports the Qualifying Exam results to the Office of Graduate Education and Research.

Qualifying Exam procedures and forms are found on the Parks College Graduate Programs website.

<http://parks.slu.edu/academics/grad-programs/doctoral-degree-programs/>

### **Dissertation Proposal Exam (Doctoral Oral Examination)**

After the Qualifying Exam, the student will present and defend a Dissertation Proposal. The Proposal Exam is based on the student's written proposal, and the student's oral defense of the proposal. Both components will be evaluated by the Guidance Committee. The Guidance Committee then conveys its decision to the Department Graduate Coordinator, who in turn reports the results to the Office of Graduate Education and Research.

Doctoral Candidate status will be given to the student after successful completion of the Dissertation Proposal Exam. In aviation, the Guidance Committee is reduced to three members after Candidate status is awarded, while in Engineering the committee size is unchanged.

### **Dissertation**

The candidate for a Ph.D. must prepare a dissertation and present and defend this original and independent research. At least twelve credits of Dissertation Research are required of students pursuing the Ph.D. within the ordinary time period to the degree.

The written work must follow a composition format within guidelines established by the major field and the Formatting Guide.

### **Dissertation Format Requirements - Engineering**

Given departmental and Graduate Committee approval, all University accepted formats for dissertations are allowed in the engineering programs.

### **Dissertation Format Requirements- Aviation Science**

The Department of Aviation Science requires a traditional dissertation format and does not permit either the three-article dissertation or any non-traditional dissertation format to be used to complete the Ph.D. in Aviation degree requirements.

### **Dissertation Defense**

At a time selected by the candidate and the Guidance Committee, the candidate presents his/her dissertation research in both written and oral format. The defense typically includes a seminar that is open to the public. Following the open session, the candidate and Guidance Committee continues the defense in a closed session. A written dissertation is submitted ~2 weeks prior to the oral defense. The Guidance Committee evaluates the oral and written components of the defense and then conveys its decision to the Department Graduate Coordinator and the Office of Graduate Education and Research.

### **Independent Studies and Special Topics Course**

For all independent studies and special topics courses, an outline of the topic(s) covered and the student evaluation process must be approved by the student Faculty Advisor and the Department Graduate Coordinator prior to registration and submitted to the Office of Graduate Education & Research for the student's file.

### **Annual Student Review**

Admitted graduate students are expected to meet with their Faculty Advisors at least once each semester. Students must have their Faculty Advisor's permission to enroll in new academic work in anticipation of a new academic term.

For all Ph.D. students, an annual student review must be evaluated and completed in consultation with the Faculty Advisor and submitted to a respective Department Graduate Coordinator or the Office of Graduate Education and Research.

Annual student review forms may be found at the Parks College Graduate Programs website or at the Office of Graduate Education and Research.

<http://parks.slu.edu/academics/grad-programs/forms-and-petitions/>

## **VI. DEGREE CANDIDACY PROCEDURES**

Information on Degree Candidacy Procedures for an Engineering degree or an Aviation degree is available from the SLU Candidacy office.

For additional questions regarding Ph.D. degree candidacy procedures, contact the Office of Graduate Education and Research, or the SLU Doctoral Candidacy Advisor.

## **VII. Approvals**

This Parks College policy was approved by the Parks College Faculty Assembly and the Dean of Parks College of Engineering, Aviation, and Technology.

Approved by Parks Faculty Assembly on March 1, 2017

Signature:

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Kyle Mitchell  
Chair, Parks Faculty Assembly

Date:

3-6-2018

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Approved by Dean on March 1, 2018

Signature:

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Michelle Sabick  
Dean, Parks College of Engineering, Aviation and Technology

Date:

3/1/2018

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