Assessment Plan for the Ph.D. in Aerospace Sciences

This doctoral degree program is administered jointly between the departments of Aviation and Space Studies in the John D. Odegard School of Aerospace Sciences.

Mission Statement and Student Outcome Goals

The mission of the Aerospace Sciences PhD program is to provide interdisciplinary teaching and research at the highest academic levels. The goal is to provide highly educated scholars and leaders with the skills necessary to mix technology and science with an understanding of the politics and economics of the aerospace fields.

1. Students will develop a thorough knowledge of the aerospace elements specifically related to the Aviation and Space Studies disciplines that will allow them to be successful leaders in the industry by applying solutions gained through theory and applied research.
2. Students will enhance their analytical, technical, research and communication skills through classroom and research activities to further develop an ability to carry out independent, original and applied research.
3. Students will further develop the critical skill set needed to enable them to fill leadership roles within government and research agencies, educational institutions or private aerospace and aviation sector companies.

The student outcome goals will be assessed as the student takes courses in both the Aviation and Space Studies departments as a part of the regular assessment process already established by the faculty members that teach the individual courses. Along with that assessment, the student will be formally assessed at the time of the oral comprehensive examination and formal topic proposal by the faculty in attendance.

The next assessment will take place at the time of the student’s dissertation defense and the faculty in attendance will score the student in relation to the three student outcome goals listed above. The final source of assessment will come from the student once they have graduated and moved into the industry. The alumni will be contacted at the one and five year mark post-graduation to assess the usefulness and relevancy of their degree in relation to the Aerospace industry.

There will be four intentional points of data gathering for the PhD student/graduate.
1. Written comprehensive examination and topic proposal
   1.1 Assesses student outcome goals #1, #2 (above)
   1.2 Scoring Rubric (appendix A)
1.3 Satisfactory/Unsatisfactory report filed to the School of Graduate Studies (SGS)

2. Oral comprehensive examination and topic proposal (appendix B)
   2.1 Assesses student outcome goals #1, and #2 (above)

3. Oral dissertation defense (appendix B)

4. Post-graduation Year 1 (appendix C).

5. Post-graduation Year 5 (appendix D).

**Student Outcome Goals**

1. Students will develop a thorough knowledge of the aerospace elements specifically related to the Aviation and Space Studies disciplines that will allow them to be successful leaders in the industry by applying solutions gained through theory and applied research.

   **Objective**
   1.1 The Student can engage in a high level recitation with the faculty members surrounding relevant issues in the Aerospace Industry and apply concepts/theories learned through their coursework to frame the conversation.

2. Students will enhance their analytical, technical, research and communication skills through classroom and research activities to further develop an ability to carry out independent, original and applied research.

   **Objective**
   2.1 The Student has the ability to apply the skills learned in the Scholarly tools course requirements of the program to design an appropriate research methodology to address an industry problem or issue.
   2.2 The student can synthesize information and use analytical skills to develop solutions to problems presented.

3. Students will further develop the critical skill set needed to enable them to fill leadership roles within government and research agencies, educational institutions or private aerospace and aviation sector companies.

   **Objective**
   3.1 The student is able to speak and write at an advanced academic level
   3.2 The student possesses an ability to present their ideas using a variety of media and mediums.
   3.3 The student is able to think, analyze, and evaluate all types of information in today’s global society.
Limitations
Due to the very small number of student admissions (2-4) per year and an average of 4-5 years to degree completion, a formal assessment report will be generated every five years, so there is an adequate sample size from which to draw upon. The first graduate was in 2014, so the first formal assessment report to the University will be in 2019.

Implementation

The co-directors will share the assessment evidence with the graduate faculty of both departments and determine the appropriate areas for improvement based upon the data gathered in the assessment plan every two years.

Current Date: AY2016
Revision Date: AY2020
Appendix A

Ph.D. Written Comprehensive Examination
Grade and Assessment Worksheet

Semester:

Instructor:

<table>
<thead>
<tr>
<th>Exam</th>
<th></th>
<th></th>
<th></th>
<th>Assessment of individual student mastery of: (Score: 0 – 4)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Thorough knowledge/understanding of Aerospace Issues (#1)</td>
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Rating Scale

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<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>4</td>
<td>Pass (High)</td>
</tr>
<tr>
<td>3</td>
<td>Pass</td>
</tr>
<tr>
<td>2</td>
<td>Pass (Low)</td>
</tr>
<tr>
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<td>Fail</td>
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<tr>
<td>0</td>
<td>Fail</td>
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Rating for Assessments

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<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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</tr>
<tr>
<td>2</td>
<td>Acceptable</td>
</tr>
<tr>
<td>1</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>0</td>
<td>Substantially unacceptable</td>
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</table>
Appendix B
Rubric for Assessment: Aerospace Sciences Ph.D.
Oral Comprehensive Examination and Dissertation Defense

Semester/Year_______________________ Rank using the following scale
Faculty Member______________________ 1= Unacceptable
Student Name_______________________ 2= Acceptable
                                      3= Good
                                      4= Noteworthy
                                      N/A = Not Applicable

Instructions: These objectives map to the program’s Student Outcome Goals and Objectives, please rank the student for each objective.

Objective
1.1 The Student can engage in a high level recitation with the faculty members surrounding relevant issues in the Aerospace Industry and apply concepts/theories learned through their coursework to frame the conversation.

Oral Comprehensive Exam___________ Dissertation Defense__________

Objective
2.1 The Student has the ability to apply the skills learned in the Scholarly tools course requirements of the program to design an appropriate research methodology to address an industry problem or issue.

Oral Comprehensive Exam___________ Dissertation Defense__________

2.2 The student can synthesize information and use analytical skills to develop solutions to problems presented.

Oral Comprehensive Exam___________ Dissertation Defense__________

Objective
3.1 The student is able to speak and write at an advanced academic level.

Oral Comprehensive Exam___________ Dissertation Defense__________

3.2 The student possesses an ability to present their ideas using a variety of media and mediums.
3.3 The student is able to think, analyze, and evaluate all types of information in today’s global society.
Appendix C
Alumni Survey
Year 1

1= strongly agree   2=agree   3=neutral   4=disagree   5=strongly disagree   6=N/A

1. I was provided advising as a graduate student
2. My academic advisor was available when I needed academic advisement
3. My academic advisor is knowledgeable regarding the Graduate School’s policies and procedures as they apply to my degree program
4. My advisor/chair provided a level of expertise and understanding of my scholarly project, supporting the development of my dissertation
5. My advisor/chair provided quality and timely feedback on my dissertation
6. The quality of classroom instruction for graduate level courses met my expectations for graduate level work.
7. The courses required to complete my graduate degree were offered on a regular schedule and at intervals that did not delay my progress.
8. The library resources available to me are sufficient to support my graduate study.
9. There is an adequate number of faculty available to provide me with the level of instruction and research support required to complete my degree
10. The Ph.D. in Aerospace Sciences degree helped me attain a higher status in my career
11. I am satisfied with my Doctoral degree
12. I would recommend the Ph.D. in Aerospace Sciences degree to a friend/colleague
13. What are the program’s
   a. Strengths
   b. Weaknesses
   c. Opportunities
   d. Threats
14. Please provide any other comments that would be helpful to the program.
Appendix D
Alumni Survey
Year 5

The program director shall interview each of the graduates at post-graduation year five and ask the following questions:

How useful has your PhD been for?
   a. Professional advancement
   b. Knowledge and appreciation of the Aerospace Industry
   c. Degree of recognition in professional organizations

This will enable the program director to gain an understanding of the third student outcome goal of the Aerospace Sciences Ph.D. program.