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Department of Aviation Science

Annual Undergraduate Assessment Report

2017 – 2018

B.S. in Aeronautics, Concentration in Flight Science

To perform the undergraduate program assessment of the B.S. in Aeronautics, Flight Science concentration, the Department of Aviation Science performed undergraduate program assessment and individual course assessments and at the end of the fall 2017 and spring 2018 semesters. This process included the program-level SLO's which were scheduled to be assessed at the end of the fall 2017 and spring 2018 semesters as well as the assessment of individual courses to meet certain Student Learning Outcomes (SLO's) as determined by the department.

The program-level SLO's assessed during the 2017-2018 academic year were:

Fall 2017

A. Apply mathematics, science, and applied sciences to aviation related disciplines.
B. Analyze and interpret data.
C. Work effectively on multi-disciplinary and diverse teams.

Spring 2018

D. Make professional and ethical decisions.
E. Communicate effectively, using both written and oral communication skills.
F. Engage in and recognize the need for life-long learning.

Note: The department's flight courses were assessed at the end of the spring 2018 semester.

Results of the fall 2017 assessment of undergraduate program-level SLO's

The following program-level SLO'S assessed after the fall 2017 semester were:

A. Apply mathematics, science, and applied sciences to aviation related disciplines.
B. Analyze and interpret data.
C. Work effectively on multi-disciplinary and diverse teams.

Program-level SLO	Recommendation
A. Apply mathematics, science, and applied sciences to aviation related disciplines	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the FSCI 4022 Jet Flying Techniques II course as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.
B. Analyze and interpret data	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the FSCI 4022 Jet Flying Techniques II course as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.
C. Work effectively on multi-disciplinary and diverse teams	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the ASCI 4350 Team Resource Management course as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.

NOTE: The performance indicator rubrics and course evidence as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the individual courses can be found in ***Appendix A: Fall 2017 Flight Science Program and Course Assessment Data***, of this report.

The department will work to ensure that all full-time and adjunct faculty submit evidence of student work in their respective courses to enable the department to perform a more thorough assessment of this program/concentration.

Results of the spring 2018 assessment of undergraduate program-level SLO's

The following program-level SLO'S assessed after the spring 2018 semester were:

D. Make professional and ethical decisions.
E. Communicate effectively, using both written and oral communication skills.
F. Engage in and recognize the need for life-long learning.

Program-level SLO	Recommendation
D. Make professional and ethical decisions.	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the results of the ASCI 4250 Applied Ethics and Standards course as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.
E. Communicate effectively, using both written and oral communication skills.	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the results of the ASCI 4350 Team Resource Management course as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.
F. Engage in and recognize the need for life-long learning.	There were no prior recommendations from previous program-level assessments of this SLO to assess during this cycle. The department used the results of the ASCI 1010 Professional Orientation and ASCI 4350 Team Resource Management courses as evidence of student ability to meet this program-level SLO. The department determined that students have satisfactorily met this program-level SLO and makes no recommendation for improvement at this time. In future assessment cycles the department will assess if course-level recommendations/improvements have improved student performance in this SLO.

NOTE: The performance indicator rubrics and course evidence as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the individual courses can be found in ***Appendix B: Spring 2018 Flight Science Undergraduate Program and Course Assessment Data***, of this report.

The department will work to ensure that all full-time and adjunct faculty submit evidence of student work in their respective courses to enable the department to perform a more thorough assessment of this program/concentration.

Results of the fall 2017 undergraduate assessment of individual courses

Course Number	Course Name	Recommendation based on the Assessment Process
ASCI 1010-01	Professional Orientation (On-site)	Provide better examples of oral presentation techniques/styles to improve the group presentations. Devote additional time to topics covered.
ASCI 1010-10	Professional Orientation (Online)	Provide better examples of oral presentation techniques/styles to improve the student presentations; consider requiring students to provide an audio/visual presentation to be able to determine oral communication skills.
ASCI 1300-01	Aviation Weather (On-site)	None.
ASCI 1300-10	Aviation Weather (Online)	None.
ASCI 2200-01	Concepts in Aerodynamics	This year a series of quizzes was introduced to replace the homework assignments from prior years. First the homework was issued without a submission requirement, the material was covered in class, and an in-class multi-choice quiz was given. Quiz 1 solely covered basic mathematics which was required in the rest of the course. Quiz 8 solely aerodynamic concepts. The final exam was partitioned into a short answer numerical operations section, a multi-choice science section consisting of five questions, and a multi-choice aerodynamics section. The time taken for the quizzes reduced the net amount of time available in the course. Some non-essential material was omitted along with two review periods. It was noted that two questions contained in the final exam were answered incorrectly by all students. It was assumed as an instructor teaching oversight and the questions were removed from the final grades.
ASCI 3010-01	Jet Transport Systems I	Devote additional time to and use alternative teaching methods such as videos of the topics covered.
ASCI 4012-01	Jet Flying Techniques I	None.
ASCI 4013	Jet Flying Techniques I Lab	Use ASCI 4013 Jet Flying Techniques Final Flight Evaluation Form to better grade the final exam.
ASCI 4050-01	Human Factors (On-site)	None.
ASCI 4050-10	Human Factors (Online)	None.
ASCI 4250-01	Prof. Ethics & Standards (On-site)	As in any seminar setting, the students developed over the course of the semester to higher-level thinking skills. In the first four seminars students struggled with identifying the dilemmas and ethical principles or discussions lead to trivial or inappropriate solutions. Following mid-term break the final six sessions saw students meeting or exceeding expectations. Recommendations for fall 2018 course offering: (1) Revise/improve/update the seminar topics (2) consider addressing the issue of “moral hazard” (3) consider addressing the issue of “ethical relativism”

ASCI 4250-10	Prof. Ethics & Standards (Online)	None.
ASCI 4450-01	Aviation Law (On-site)	All students orally presented two case briefs in the course. However, no rubric was developed to measure these oral case briefs. This course did not fully address this learning outcome. For fall 2018 course offering: (1) Revise/improve/update the seminar topics to ensure oral and written communication skills are evidenced and measured (2) Assign and develop a rubric for "case briefs" (3)Assign and develop a rubric for a "research paper"
ASCI 4450-10	Aviation Law (Online)	None.

NOTE: The performance indicator rubrics and the course evidence provided by the instructor of the courses listed above which were used by the department to assess the individual courses can be found in ***Appendix A: Fall 2017 Flight Science Undergraduate Program and Course Assessment Data***, of this report.

Results of the spring 2018 undergraduate assessment of individual courses

Course Number	Course Name	Recommendation based on the Assessment Process
ASCI 1850-01	Safety Management Sys. (On-site)	The instructor determined that the strategy for developing rubrics to evaluate whether the instructor was successful in achieving certain metrics was somewhat ill-advised. Rather than including these assignments as distinct and separate or including the material within the context of a test, the instructor decided to assign them as optional homework assignments. The incentive for the students was a few additional points added to their grade. Regrettably, only a handful of students responded. The data provided in the above table is fictitious but represents my understanding of the potential outcomes. The instructor utilized an assignment that attempted to capture the outcomes in a narrative form. The instructor's thought process was that while a quantitative assessment would provide precision, a qualitative assessment would better enable the instructor to better understand how well the students understood the data. Overall, the instructor was surprised by the appearance spread in the quality of the work submitted. Recommendations: 1. Assessment materials will be required as opposed to optional 2. The instructor will consider additional quantitative measures to obtain more precision Similar to other outcome rubrics in this report, SLO D was evaluated using an optional, qualitative assignment. Consequently, the number of assignments that were returned was somewhat disappointing. Of the relatively small number of returns n=7, I was somewhat disappointed with the results of this (SLO D) assessment. Students seem to have a hard time articulating the meaning of both professionalism and ethical behavior. Although this course is taught in the freshman year of both the Flight Science and Aviation Management programs, the instructor had higher expectations given the discussions in class regarding professionalism and ethical behavior. Recommendations: 1. Additional discussion of the roles of professionalism and ethics in aviation 2. One or more take-home assignments aimed at reinforcing a better understanding of professionalism and ethics. 3. Assessment materials will be required as opposed to optional 4. I will consider additional quantitative measures to obtain more precision SLO H was evaluated using an optional assignment to which the feedback was somewhat disappointing. The way in which the instructor graded the narrative/qualitative data was to use the "needs improvement," "meets expectations," or "exceeds expectations" as noted in the assessment rubric. The qualitative assessment does not

		necessarily provide me with sufficient granularity to develop a broad enough insight on the effectiveness of the course. Recommendations: 1. Assessment materials will be required as opposed to optional 2. The instructor will consider additional quantitative measures to obtain more precision.
ASCI 1850-01	Safety Management Sys. (Online)	None.
ASCI 3020-01	Jet Transport Systems II	Provide more class time on topics in which students need improvement so that more of the students will be capable of at minimum, meeting the expectations while reinforcing the abilities of those students currently meeting and exceeding expectations. Consider the use of alternative teaching methods such as videos of the topics covered.
ASCI 3062-01	Turbine Aircraft Transition	None.
ASCI 3100-01	Air Carrier Operations (On-site)	Most students have some sense of the basic ethical (and legal) issues surrounding the FAA's various tests for analyzing an operation. When presented with a website development scenario, most students are unable to identify the ethical principles involved and are unable to decide the correct action when presented with a scenario illustrating the development of a website that may be "acting" as an air carrier in common carriage in violation of the law and good ethical practices. Most students had a flawed analysis or insufficiently addressed the question: *"What is your interpretation of this scenario?"* For spring 2019 course offering: (1) Revise the approach to teaching chapter 1, "what is an air carrier?" (2) Consider addressing this SLO in a different topic/context within this course (3) Ensure this material is taught (repeated) in ASCI 4450 Aviation Law using court cases
ASCI 3100-10	Air Carrier Operations (Online)	Most students have some sense of the basic ethical (and legal) issues surrounding the FAA's various tests for analyzing an operation. When presented with a website development scenario, most students are unable to identify the ethical principles involved and are unable to decide the correct action when presented with a scenario illustrating the development of a website that may be "acting" as an air carrier in common carriage in violation of the law and good ethical practices. Most students had a flawed analysis or insufficiently addressed the question: "What is your interpretation of this scenario?" For spring 2019 course offering: (1) Revise the approach to teaching chapter 1, "what is an air carrier?" (2) Consider addressing this AABI learning outcome in a different topic/context within this course (3) Ensure this material is taught (repeated) in ASCI 4450 Aviation Law using court cases

		The Colgan Air Flight 3407 case--and the assigned questions--was used to highlight material from at least three textbook chapters and present the topics in a meaningful way; students learned how and why new regulations affecting virtually all units of an air carrier's operations were developed. Students were highly engaged in the topics. (1) This was a very effective vehicle for teaching students to identify, understand and reflect on today's issues that impact air carriers and their operational units. (2) Use the case again, with improvements, in the spring 2019 offering; for example, improve the "research questions" section. Questions were issued as an assignment to all students. Few students researched documents for evidence to support the responses to five questions. Many individuals were unable to apply previously learned facts and concepts to the five questions. Most students could not see the implications of sustainability for the regional air carrier industry and apply these to their future place within the industry. For spring 2019: (1) While this is a very useful topic and one introduced into this course for the first time, consider a different approach to addressing air carrier business models and sustainability. (2) Find a means of holding students accountable for research and developing their ability to apply facts and concepts to solve problems
ASCI 4022-01	Jet Flying Techniques II	Given that this is the first time that this assessment tool has been used in this course, some questions were raised concerning implementation. The primary issues were that the assessment rubric only contained three levels and that the rubric categories had to be mapped to existing criteria. In the context of ASCI 4022, a block of questions from the final comprehensive exam was taken to meet the two categories of this assessment rubric. There is significant overlap between the categories and the skills necessary to answer the questions with the block titled "principles of flight." This block contained 17 questions which were aligned with the rubric as follows: where <11=NI, 11-14=ME, and >14=EE. There is significant overlap between the categories and the skills necessary to answer the questions with the block titled "mental math." This block contained 10 questions which were aligned with the rubric as follows: where <7=NI, 7-9=ME, and >9=EE. Since this same exam format has been refined over the course of several years, no

		change is recommended. However, grades show that ¼ of the class had issues with basic interpretation and calculation questions related to professional practice. Since these skills are first introduced during the sophomore year, it is recommended that practice continue into the junior year. Recommendations 1. No change is recommended to this course that relates to this outcome. 2. Mental math for professional practice may be incorporated into ASCI 3010 & 3020.
ASCI 4023	Jet Flying Techniques II Lab	None.
ASCI 4350-01	Team Resource Management	The instructor noted that the development of a survey tool will better enable assessment of the student performance in this course.
FSCI 1150-01	Flight 1	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations.
FSCI 1250-01	Basic Flight Foundations	Recommendations: 1. Greater emphasis should be placed on preparing students to apply the information presented in class. 2. Consider the inclusion of a greater number of examples, scenario-type questions, and individual or group problem-solving projects.
FSCI 1550-01	Flight 2	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations. 3. All stage check flight deficiencies that occurred were during the Private Pilot End-of-Course exam. Therefore, student and instructor training should be improved to better focus on tasks included in Module 3 (cross-country operations, short and soft field takeoffs and landings, and Private Pilot checkride flight preparation).
FSCI 1560-01	Flight 2 Transition	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations.
FSCI 2150-01	Flight 3	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors

		with greater detail regarding lesson content, training standards, and student expectations.
FSCI 2250-01	Instrument Flight Foundations	Recommend that student performance could be increased by adding more examples and homework problems. Students struggled to adequately apply scientific principles of instrument flying. Recommend that the instructor provide more in-class mathematics challenges and practice questions.
FSCI 2550-01	Flight 4	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations.
FSCI 2650-01	Navigation Foundations	
FSCI 3550-01	Flight 5	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations. 3. Deficiencies occurred during the Commercial Airplane Single-Engine and Multi-Engine End-of Course Flight Checks. Therefore, student and instructor training and syllabus revisions should better incorporate Commercial Pilot procedures and maneuvers as well as Multi-Engine emergency procedures.
FSCI 3700-01	Principles of Flight Instruction I	None.
FSCI 3750-01	Flight Instruction Preparation I	Recommendations: 1. In future semesters, increase time spent training new-hire instructors to improve standardization of flight and ground training. 2. Expand upon course syllabus and training course outlines to provide instructors with greater detail regarding lesson content, training standards, and student expectations.

NOTE: The performance indicator rubrics and the course evidence provided by the instructor of the courses listed above which were used by the department to assess the individual courses can be found in ***Appendix B: Spring 2018 Flight Science Undergraduate Program and Course Assessment Data***, of this report.

Course evidence collected as part of this assessment process is contained in a large file and is not posted on this website. The information can be found in ***Appendix C: 2017-2018 Flight Science Undergraduate Program and Course Evidence***, of this report and can be obtained by contacting Stephen G. Magoc, chairperson of the Department of Aviation Science stephen.magoc@slu.edu or at 314-977-8333.