

AABInternational

LIBERTY UNIVERSITY SCHOOL of AERONAUTICS	LIBERTY UNIVERSITY
	SCHOOL OF AERONAUTICS
	B.S. AERONAUTICS, UNMANNED AERIAL SYSTEMS (UAS)
April 15, 2020	STUDENT ACHIEVEMENT DATA

Program Objectives

Our Vision: To Impact the World for Christ as the Preeminent Center of Aerospace Education.

Our Mission: To Equip, Mentor, and Send Champions for Christ into the Aerospace Community.

B.S. Aeronautics, Unmanned Aerial Systems (UAS) Cognate

The LU School of Aeronautics has established many educational goals that align with its mission to equip students with the knowledge and skills they need to serve with excellence in their chosen professions and mentor them in their development as aviation professionals, leaders, and disciples of Jesus Christ. All of the school's goals are intended to contribute to its mission of sending qualified and competent professionals into the aerospace community as Champions of Christ. This is in support of the University's overarching mission to educate men and women who will make important contributions to their workplaces and communities, follow their chosen vocations as callings to glorify God, and fulfill the Great Commission.

In 2014, the SOA developed a new list of program learning outcomes (PLOs) that describe the top-level educational goals of each program offered by the school. These outcomes describe what students should be able to do upon completion of their applicable degree program. The list of PLOs is revised through collaboration among the LUSOA Faculty, the Dean, and the university's Office of Institutional Effectiveness. The master list of PLOs is published in the LUSOA Assessment Plan along with the specific date, based on a three year cycle in which each PLO will be assessed as depicted in the following excerpt:

DEGREE TITLE	PROGRAM LEARNING OUTCOME (PLO)	CLUSTER 1 ASSESSMENT TERM FALL 2017 FALL 2020	CLUSTER 2 ASSESSMENT TERM FALL 2018 FALL 2021	CLUSTER 3 ASSESSMENT TERM FALL 2019 FALL 2022
BS - Aeronautics	The student will be able to:			
	Apply biblical principles within the professional aviation environment.			X
	Apply science, technology, and mathematics to aeronautical disciplines.			X
	Promote a healthy organizational safety culture in aviation.		X	
	Assimilate the healthy lifestyle required to meet the unique physical and cognitive demands of an aviation career.		X	
	Apply written and oral communication skills as they pertain to the aviation industry.	X		
	Mentor others in leadership skills and qualities as it relates to aviation.	X		

1. PLO: Apply biblical principles within the professional aviation environment.

This measurement design is intended to assess the Program Learning Outcome (PLO): Students will be able to apply biblical principles within the professional aviation environment.

Proposed Research Question:

Is the student able to apply a biblical world-view in responding to an aviation co-worker struggling with stress and fatigue?

Why is the LUSOA addressing this issue (what is the background) and where are these skills developed in the program:

The LUSOA experience includes intentional focus, instruction, and classroom discussions involving mentoring and guiding friends, colleagues and co-workers in a role as difference makers. As followers of Christ, we teach students to integrate scripture into our testimony and contextualize it to life circumstances, including those in aviation environments. Various course experiences include students giving their own testimony in class, having students research an aviation leader and comparing to a biblical leader, students writing their own identity statement as it relates to aviation safety and an issue they are passionate about, including some students identifying a relevant or special verse from scripture. During AVIA 491 (with a ‘capstone’ perspective) students will be challenged to reflect upon seminal assignments and artifacts from their coursework at LU, and to discuss it in class. These assignments include meaningful lessons-learned from the Bible.

Target Group (Participants in the Study):

Assignment responses from ten randomly selected B.S. Aeronautics Students in AVIA 491 during the fall 2019 Semester will be assessed. If fewer than 10 B.S. Aeronautics students are enrolled in the course then the responses from all such students will be assessed.

Instrument, Assignment, or Activity:

Students will provide a written response to the following scenario, which will be posed to them as either a test/quiz question/prompt or a separate assignment to be completed at home and turned in for a grade:

Scenario:

One of your aviation co-workers has been struggling with stress and fatigue. The co-worker knows you are a Christian and turns to you for help. He/she sends you a note asking you the following questions: “As a Christian, how do you cope with stress and fatigue in your life and at work? What help does the Bible provide for that?”

You are to prepare a thoughtful, caring written response to this co-worker in accordance with a biblical worldview. This response is to include a summary of what you understand about how the Bible addresses this topic and to provide your co-worker with biblical references that support your viewpoints.

Below your response message, briefly describe any follow-on support you will provide to your co-worker and how this support aligns with biblical principles.

Administering the Assessment:

The assessment instrument will be administered to participants during the fall 2019 semester in the AVIA 491 Course as determined by the course professor. Two faculty members will grade written responses independently using the grading rubric (see below). The results of the assessment will be analyzed and reported on before the end of the 2019-2020 assessment cycle.

Target Description

The target for this assessment is for 80% of the sampled students to earn a rating of 3 or 4 in each of the three categories in the assessment rubric. (See rubric attached.)

Grading Rubric

STUDENT NAME/PARTICIPANT NUMBER/:					
CATEGORY	LEVEL				
	Advanced (4)	Proficient (3)	Developing (2)	Inadequate (1)	Score
Quality of Response	<ul style="list-style-type: none"> •Highly positive tone, •Strong level of encouragement, instruction, information, and/or suggestions included •Strong evidence of a loving/caring/servant attitude toward co-worker 	<ul style="list-style-type: none"> •Moderately Positive tone •Moderate level of encouragement, instruction, information, and/or suggestions included •Some Evidence of a loving/caring/servant attitude toward co-worker 	<ul style="list-style-type: none"> •Tone is neutral or potentially negative •Minimal level of encouragement instruction, information, and/or suggestions included •Minimal evidence of a loving/caring/servant attitude toward co-worker 	<ul style="list-style-type: none"> •Tone is negative •Overall lack of encouragement, instruction, information, and/or suggestions included •No evidence of a loving/caring/servant attitude toward co-worker 	

Inclusion of Biblical References/Support	<ul style="list-style-type: none"> •Outstanding use of biblical references to support main elements of response •Highly appropriate and relevant verses used •Abundance of evidence of Christian worldview 	<ul style="list-style-type: none"> •Good use of biblical references to support main elements of response •Appropriate and relevant verses used •Good evidence of Christian worldview 	<ul style="list-style-type: none"> •Biblical principles loosely included, but not tied in very well. •Biblical versus somewhat irrelevant •Christian worldview is difficult to discern 	<ul style="list-style-type: none"> •No connection with Scripture included or biblical verses are completely unrelated or poorly connected •No evidence of Christian worldview 	
Application of Biblical Principles to Assist others in Need	<ul style="list-style-type: none"> •Outstanding evidence of the application of biblical principles to serve others. •Exemplary follow-up action plan that clearly aligns with cited biblical principles 	<ul style="list-style-type: none"> •Good evidence of the application of biblical principles to serve others. •Good follow-up action plan that aligns with cited biblical principles. 	<ul style="list-style-type: none"> •Little or weak evidence of the application of biblical principles to serve others. •Difficult to discern how the follow-up action plan aligns with biblical principles. 	<ul style="list-style-type: none"> •No evidence of the application of biblical principles to serve others. •No evidence of an attempt to apply biblical principles to the follow-up action plan. 	
Total Score					

2. PLO: Apply science, technology, and mathematics to aeronautical disciplines

This measurement design is intended to assess the Program Learning Outcome (PLO): Students will be able to apply science, technology, and mathematics to aeronautical disciplines.

Proposed Research Question:

Is the student able to solve mathematical computation related to aircraft aerodynamics?

Why is the LUSOA addressing this issue (what is the background) and where are these skills developed in the program:

Throughout a pilot’s education and in association with their FAA Pilot Certification process, students (pilots) learn and demonstrate various elements of science and mathematics expertise associated with aerodynamics and time/distance/weight calculations. This occurs in MATH 130, PHYS 101/103, AVIA 102, AVIA 210/215, AVIA 220/225, AVIA 310, AVIA 320, AVIA 325 and others. Most students in the B.S. Aeronautics complete these courses prior to or in conjunction with taking AVIA 305-Aerodynamics. In the course of academic instruction associated with AVIA 305 (Aerodynamics), each student will be quizzed regarding scientific principles associated with flight and quizzed regarding essential mathematical principles associated with the flight environment.

Target Group (Participants in the Study):

All of the students enrolled in the AVIA 305 – Aerodynamics course during the fall

2019 semester will participate in the assessment of this PLO. It is estimated that 25 to 30 students will be enrolled in the course and meet this criteria.

Instrument, Assignment, or Activity:

Students will complete a 25 to 3-question aerodynamics exam requiring them to complete mathematical computations and solve problems associated with aerodynamic equations and scientific principles. Only the questions on the exam that require mathematical computations will be used for assessment purposes. This will likely be at least 10 to 20 questions.

Administering the Assessment:

The assessment will take place during the fall 2019 semester. All students enrolled in AVIA 305 will be administered a test that will incorporate essential elements of science and mathematics associated with flight science and the flight environment. The professor of the course will evaluate the students' responses to confirm the correct responses are provided given the specific set of circumstances and variables in accordance with a grading key. The results of the assessment will be analyzed and reported on before the end of the 2019-2020 assessment cycle.

Target Description

The target of this assessment is for at least 80% of the assessed students to correctly answer at least of the mathematical computation questions on the applicable aerodynamics test.

Admission Requirements

Admission decisions are competitive and are based primarily on the following factors:

- Cumulative (unweighted) GPA from high school or college
- GED scores (if applicable)
- Consistency and trends of grades
- Results from the SAT, ACT, or CLT
- Essay submission
- Other documentation such as reference letters or community service or leadership verification may also be helpful or required by the admissions committee.

Admission Standards:

- 50% of admitted students come from within the following mid-ranges:
 - High School GPA: 3.15-3.83
 - Old SAT** (math and critical reading only): 950-1170
 - New SAT (ERW* and math only): 1020-1220
 - ACT composite: 20-27
- At Liberty, we seek to cultivate a culture of respect and grace — one that reflects the biblical fruit of the Spirit (love, joy, peace, patience, kindness, goodness, faithfulness,

gentleness, and self-control, per Galatians 5:22-23).

- We value intellectual ability, academic achievement, and the personal qualities that demonstrate you'll be a good fit for our university mission and campus community.
- Liberty students come from everywhere, bringing with them various experiences, cultures, backgrounds, and dreams for the future. We strive to promote inclusiveness and impartiality throughout our institution and standing against all forms of unbiblical discrimination.
- The School of Aeronautics evaluates and validates the FAA pilot certificates of incoming students and helps them receive prior learning assessment (PLA) credit as applicable.

Program Assessment Measures

Procedures used to assure students meet all program requirements include:

- Incoming students take Math and English placement tests
- FAA medical certificate required for all flight course students
- Students complete courses in applicable DCP; monitored by advisors; tracked by ASIST (Automated Student Information Services Tool) tool
- Students must pass 100-200 level courses with a D grade or higher
- Students must pass 300-400 level courses with a C grade or higher

Annual Assessment Day

Likert scale surveys sent to first year SOA students and SOA Jr Sr classifications students built from questions used in the focus groups.

For each group, fifteen students are randomly selected and invited to attend the focus group discussion session.

- **First Year Students Focus Group** (*Focus group forum limited to one hour.*)
 - Focus group comprised of 10 to 20 first year students sampled from any student who has taken AVIA 102 in the 2019 Fall or 2020 Spring semester.
- **Upper Classmen Focus Group** (*Focus group forum limited to one hour.*)
 - Focus group comprised of 10 to 20 upper classmen sampled from AVIA 460 or AVIA 491.

The SOA Assessment Coordinator (AC) will appoint an impartial facilitator to guide the discussion and ask the students questions from the attached A-day question bank. During the focus group session, two note takers record the responses from the participants. The facilitator will collect the notes and summarize them in a descriptive report. The summarized notes will be reviewed and discussed by the SOA leadership team and faculty.

Dissemination of Assessment Day Data

Likert scale surveys will be created based on the questions given in the group sessions. The First Year Survey will be sent to all students who have taken AVIA 102 in the 2019 Fall or 2020 Spring semester. The Upper Classmen Survey will be sent to all students currently taking AVIA 460 and AVIA 491 in the Spring 2020 semester. These surveys will be required to be completed by the professor of the course. When combined with results from focus groups, this data will provide information on how important/impactful each question is to the larger student population. The results of these surveys will be indicated in the final report along with the answers given by students in the focus groups.

Program Outcomes and/or Program Learning Outcome

Identify the Program Outcome (e.g. "LU-Student Satisfaction") and/or Program Learning Outcome that this assessment will relate to:

- The focus of the assessment relates mostly to student satisfaction with the quality and content of the B.S. Aeronautics Program as well as the fulfillment of the SOA mission to Equip, Mentor, and Send.

Student Achievement

B.S. Aeronautics, Unmanned Aerial Systems (UAS) Cognate

Number and percentage of the students that were on the honor during the past year. (1st year, 2nd year in the tables refers to standing, not calendar years.)

Year: 2018-19	Fall (201840)		Winter (n/a)		Spring (201920)		Summ (201930)	
	No.	%	No.	%	No.	%	No.	%
1 st year	0/8	0%	0	-	1/4	25%	0/0	0%
2 nd year	2/4	50%	0	-	2/10	20%	0/4	0%
3 rd year	8/11	72%	0	-	5/5	100%	0/2	0%
4 th year	5/8	63%	0	-	11/16	69%	0/10	0%
Totals	15/33	45%	0	-	19/35	54%	0/16	0%

Other School of Aeronautics Achievements:

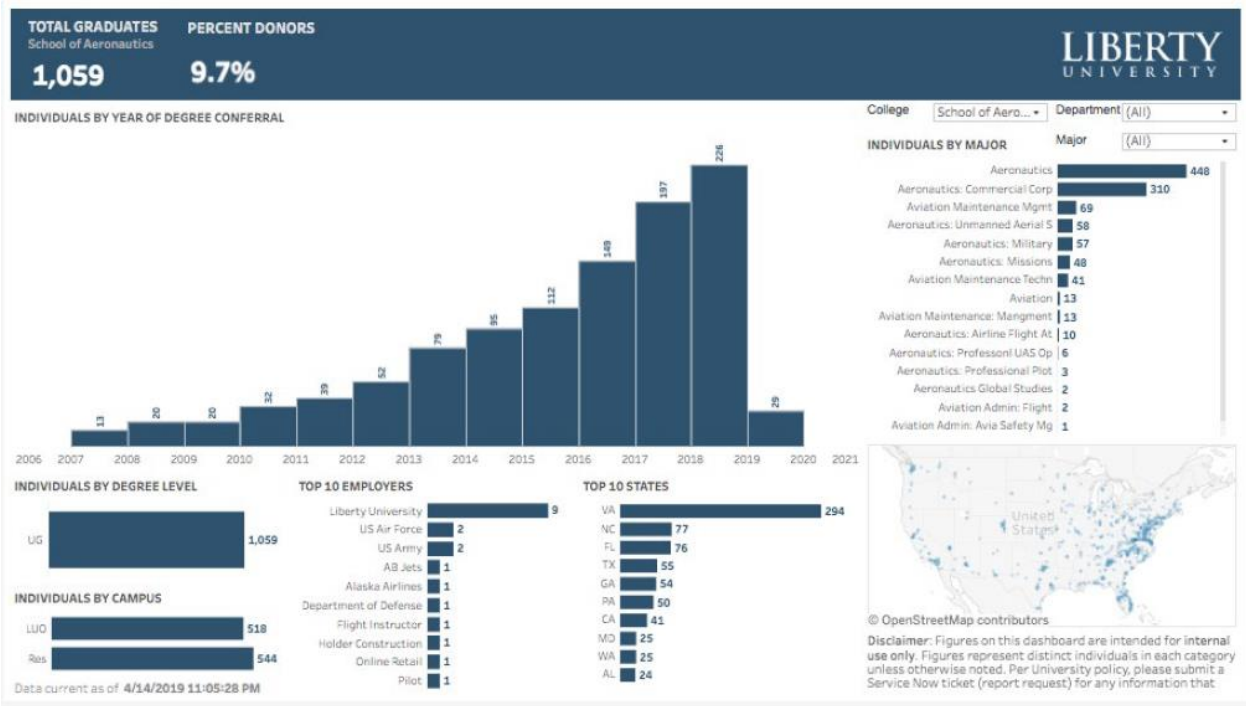
Loening Trophy: 2017, 2018 and 2019 winner of the prestigious Loening Trophy awarded to the outstanding all-around collegiate aviation program in the United States.

American Airlines Safety Award: 2016, 2017, and 2018 winner of the American Airlines Safety Award.

Graduation Rates

Year	2014	2015	2016	2017	2018
Associate	n/a	n/a	n/a	n/a	n/a
Baccalaureate	9	14	16	10	14

Rates and Types of Employment of Graduates



Types of Employment:

- Aviation Management
- Flight
- Aviation Electronics
- Air Traffic Control
- Safety
- Material or Equipment Supplier
- Manufacturing

Airline Hiring Agreements:

As part of its mission to send *Champions for Christ* into the aerospace community, the Liberty University School of Aeronautics has established strong relationships with numerous airlines across the United States and has signed hiring agreements with those listed below:

