

Bridging Academia and Industry: A NIST Initiative

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Orlando World Center Marriott,
Magnolia 7

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- **Students**

2 Graduate DB Engineering Students:
Sapkota Dhakal, Shreya, and Ghosh, Tonmoy

Residential Campuses

Daytona Beach, Florida



Prescott, Arizona



Worldwide (Online Campus)



- Over 100 campuses across the U.S., Europe, Asia, and South America with multiple modalities, including online, blended, and in person
- Three colleges: College of Aviation (COA), the College of Arts & Sciences (COAS), and the College of Business (COB)

Purpose: Bridging the Academia-Industry Skills Gap

The Problem and Motivation

The Gap: Higher education often fails to prepare graduates with immediate job-ready skills, leading to redundant and costly employer-provided training.

Our Goal: To reduce this gap and enhance graduate readiness for the workforce.



Solution (Our Project)

- **Objective:** To investigate how academic institutions can **effectively integrate professional standards** into their curricula.
- **Funding:** This work is made possible through a **National Institute of Standards (NIST) grant**, emphasizing its national relevance and commitment to standards.





Integration of Industry Standards Into Curriculum

Assessments and Learning Activities for Industry Relevance

Industry-Reflective Assessments

Designed assessments that simulate real-world aviation and engineering challenges to build relevant skills.

Practical Learning Activities

Created learning activities focused on hands-on experience to develop competencies required in aviation and engineering.



ASCI 693: Iterative Course Development Timeline

- **Initial Launch (Aug 2024):** Course piloted with two sections, taught by the PI and Co-PI.
- **Rapid Revision (Jan 2025):** Content was revised based on immediate feedback; new sections were taught by the PI and an Advisory Member to gather diverse data.
- **Comprehensive Improvement (Summer 2025):** Utilized two terms of feedback for a major content overhaul and enhancement.
- **Relaunch of Modified Version (Aug 2025):** The fully refined curriculum was launched, with a commitment to ongoing, continuous improvement based on future student feedback. 🚀

Engineering Classes: Iterative Course Development Timeline

- CIV 222: Offered in Aug 2024 & 2025 (currently leveraging feedback).
- CIV 417: Under development for Spring 2026 Launch.
- Core Strategy: Continuous Data Collection 
- All courses utilize comparable student surveys to measure standards effectiveness.
- We are committed to continuous improvement to ensure optimal content quality, student learning, and assimilation. 



ASCI 693: Current Research Problems

Aviation/Aerospace Standards



Important Update:

SAE AS 9100 will be revised in 2026 and will become IA 9100



Engineering Classes

Environmental Engineering Course Structure





Curriculum Feedback Loop: Survey Questions by Module



Example of 7 Likert Scale Multiple Choice Questions

Survey Response Scale

7-Point Likert Scale for Multiple Choice Questions

7	- Extremely well
6	- Very well
5	- Well
4	- Neither well or at all
3	- Reasonably well
2	- Somewhat well
1	- Not at all



Module 1 Survey Questions– ASCI 693

ASCI693 Module 1 Survey Questions

Introduction to Standards in Aviation and Aerospace Research

Question 1 Multiple Choice

How well did Module 1 establish the meaning of standards and their roles in aviation and aerospace research? (1-7 scale)

Question 3 Multiple Choice

To what extent did Module 1 clarify the distinctions between standards, regulations, codes, software, and guidelines?

Question 5 Open-Ended

Please provide any additional feedback or suggestions for improving the content related to aviation and aerospace research standards.

Question 7 Open-Ended

How did the Sample Student case study help you understand the importance of ethics and good leadership in aviation aerospace organizations?

Question 9 Ethical - MC

Module 1's focus on ethics and good leadership has helped me apply these important concepts in my current or future aviation/aerospace career.

Question 2 Multiple Choice

Rate your understanding of how to link standards relevant to aviation and aerospace research after completing Module 1.

Question 4 Multiple Choice

How useful will the information on standards accuracy definitions and frameworks from Module 1 be in your career?

Question 6 Multiple Choice

How well did Module 1 help you understand the importance of ethics and good leadership in the aviation/aerospace industry? (1-7 scale)

Question 8 Experiential - MC

My experience level working in the aviation aerospace industry is...

Question 10 Closing

Thank you for your participation. Your feedback is greatly appreciated and will help us enhance the learning experience for all students.



Module 2 Survey Questions– ASCI 693

ASCI693 Module 2 Survey Questions

AS 9100 and ISO 31000 Standards

Question 1 Multiple Choice

On a scale of 1 to 7, how well did the lectures on AS 9100 and ISO 31000 standards clarify their respective concepts and applications?

Question 2 Multiple Choice

Rate the usefulness of the reading resources for understanding AS 9100 and ISO 31000 standards.

Question 3 Multiple Choice

Considering your career goals, how relevant do you believe the knowledge gained from studying AS 9100 and ISO 31000 standards will be?

Question 4 Multiple Choice

How well do you feel prepared to utilize AS 9100 and ISO 31000 standards in your research and problem-solving endeavors after completing Module 2?

Question 5 Open-Ended

Please provide any additional feedback or suggestions for improving this course's content related to AS 9100 and ISO 31000 standards.



Module 4 Survey Questions– ASCI 693

ASCI693 Module 4 Survey Questions

Comprehensive Standards Survey

Question 1 Multiple Choice

Considering your future work setting, do you believe practical application for the knowledge gained in Module 4 regarding standards in aviation and aerospace research?

Question 2 Multiple Choice

Overall, how relevant do you find the addition of content on using standards in aviation and aerospace research to the objectives of this course?

Question 3 Multiple Choice

How confident are you in applying the concepts and principles related to aviation and aerospace research standards covered in Module 4 to real-world scenarios?

Question 4 Multiple Choice

Considering your career goals, how relevant do you believe the knowledge gained from studying AS 9100 and ISO 31000 standards will be?

Question 5 Multiple Choice

How confident are you in applying the principles outlined in AS 9100 and ISO 31000 standards to real-world scenarios?

Question 6 Multiple Choice

On a scale of 1 to 7, how satisfied are you with the incorporation of industry standards such as AS 9100 and ISO 31000 in this course?

Question 7 Multiple Choice

On a scale of 1 to 7, how useful do you find the incorporation of industry standards in enhancing your understanding of aviation and aerospace research topics?

Question 8 Open-Ended

Please share your current thoughts and feedback on the application and use of AS 9100 and ISO 31000 standards in the course. How do you envision these standards advancing your approach to research and problem-solving in aviation and aerospace?

Question 9 Closing

Thank you for your participation! Your feedback is greatly appreciated and will help us enhance the learning experience for all students.



End of Course Evaluation Questions – ASCI 693

ASCI693 Course Evaluation Questions

End-of-Class Student Evaluation Survey

Question 1 Multiple Choice

How effectively did the course integrate the NIST grant-related standards into the existing curriculum?

Question 2 Multiple Choice

To what extent has this course improved your ability to apply multiple standards (e.g., AS 9100, ISO 31000, NIST-related) in combination for complex aviation and aerospace research scenarios?

Question 3 Open-Ended

How do you anticipate the knowledge of standards gained from this course will impact your future work or research in aviation and aerospace?

Question 4 Open-Ended

What suggestions do you have for further improving the integration and application of various standards throughout the course?



Methodology



Methodology

Approach: Employing a comprehensive **mixed-methods** study (performance assessments, interviews, and surveys) to analyze both outcomes and perceptions.



Early Insights

ASCI 693:Module 4 Evaluation: Practical Application and Course Relevance of Aviation and Aerospace Standards"

Considering your current or future work setting, do you foresee practical applications for the knowledge gained in Module 4 regarding standards in aviation and aerospace research?

7 - Highly applicable	2 respondents	40%	✓
6 - Very applicable	1 respondent	20%	
5 - Applicable		0%	
4 - Neither applicable or inapplicable	1 respondent	20%	
3 - Fairly applicable	1 respondent	20%	
2 - Somewhat applicable		0%	
1 - Not applicable at all		0%	

Overall, how relevant do you find the addition of content on using standards in aviation and aerospace research to the objectives of this course?

7 - Highly relevant	2 respondents	40%	✓
6 - Very relevant	1 respondent	20%	
5 - Relevant	2 respondents	40%	
4 - Neither relevant or irrelevant		0%	
3 - Fairly relevant		0%	
2 - Somewhat relevant		0%	
1 - Not relevant at all		0%	

ASCI 693: : "Module 4 Assessment: Student Confidence and Career Relevance of Aviation and Aerospace Standards"

Explanatory:

How confident are you in applying the concepts and principles related to aviation and aerospace research standards covered in Module 4 to real-world scenarios?

7 - Highly confident	1 respondent	20 %	✓
6 - Very confident	1 respondent	20 %	
5 - Confident	2 respondents	40 %	
4 - Neither confident or unconfident	1 respondent	20 %	
3 - Fairly confident		0 %	
2 - Somewhat confident		0 %	
1 - Not confident at all		0 %	

Considering your career goals, how relevant do you believe the knowledge gained from studying AS 9100 and ISO 31000 standards will be?

7 - Highly relevant	1 respondent	20 %	✓
6 - Very relevant	1 respondent	20 %	
5 - Relevant	3 respondents	60 %	
4 - Neither relevant or irrelevant		0 %	
3 - Fairly relevant		0 %	
2 - Somewhat relevant		0 %	
1 - Not relevant at all		0 %	

ASCI 693 Survey: Student Confidence and Satisfaction with Industry Standards

How confident are you in applying the principles outlined in AS 9100 and ISO 31000 standards to real-world scenarios?

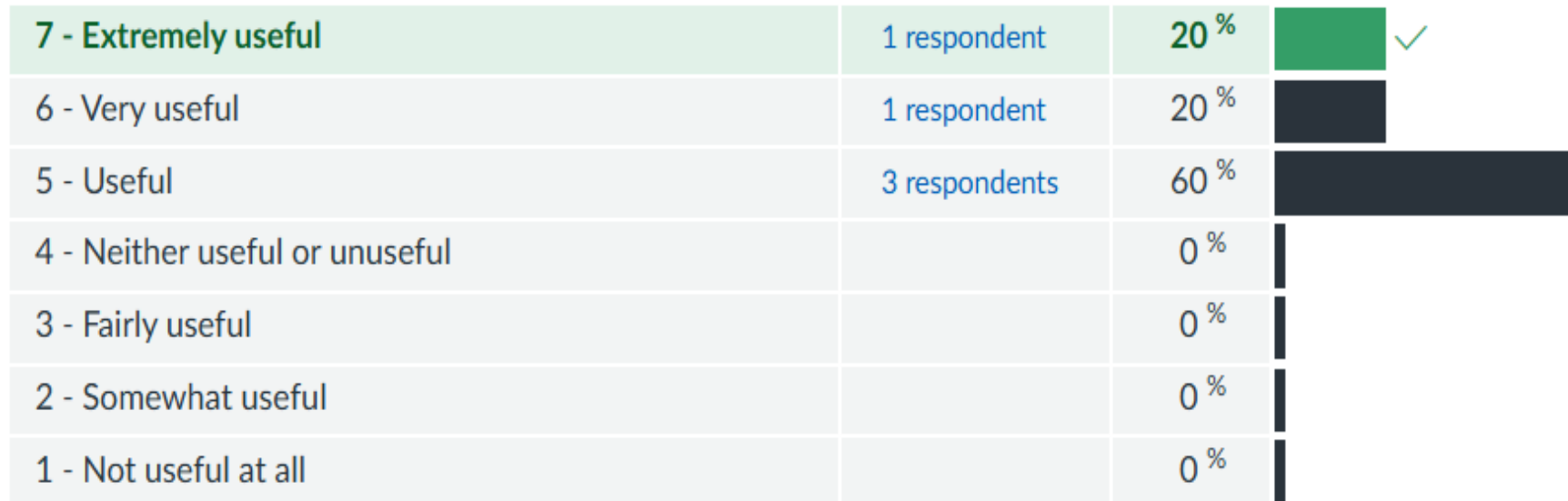
7 - Highly confident	1 respondent	20 %	✓
6 - Very confident	2 respondents	40 %	
5 - Relevant	1 respondent	20 %	
4 - Neither relevant or irrelevant	1 respondent	20 %	
3 - Fairly relevant		0 %	
2 - Somewhat relevant		0 %	
1 - Not relevant at all		0 %	

On a scale of 1 to 7, how satisfied are you with the incorporation of industry standards such as AS 9100 and ISO 31000 in this course?

7 - Extremely satisfied	1 respondent	20 %	✓
6 - Very satisfied	2 respondents	40 %	
5 - Satisfied	2 respondents	40 %	
4 - Neither satisfies or dissatisfied		0 %	
3 - Fairly satisfied		0 %	
2 - Somewhat satisfied		0 %	
1 - Not satisfied at all		0 %	

ASCI 693 Survey: Perceived Usefulness of Industry Standards Integration

On a scale of 1 to 7, how useful do you find the incorporation of industry standards such as AS 9100 and ISO 31000 in this course in enhancing your understanding and application of aviation and aerospace research topics?



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- The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Institute of Standards and Technology or the U.S. Department of Commerce.



THANK YOU FOR ATTENDING.
QUESTIONS?



Join Us Friday, Nov 24th

**Pedagogical Models and Teaching
Standards: A Framework for Higher
Education Curriculum in Aviation and
Engineering**

Orlando World Center Marriott, Canary 3

08:00 - 09:30