SAINT LOUIS UNIVERSITY.

Program-Level Assessment: Annual Report

Program Name (no acronyms): Aeronautics – Aviation Management	Department: Oliver L. Parks Department of Aviation Science
Degree or Certificate Level: B.S.	College/School: School of Science and Engineering
Date (Month/Year): June/2022	Assessment Contact: Stephen Magoc

In what year was the data upon which this report is based collected? Fall 2021 and Spring 2022

In what year was the program's assessment plan most recently reviewed/updated? Spring 2021

Is this program accredited by an external program/disciplinary/specialized accrediting organization? Aviation Accreditation Board International (AABI)

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

Student Learning Outcome 1 - Conduct aviation operations in a professional, safe, and efficient manner.

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe the artifacts in detail and identify the course(s) in which they were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

The artifacts of student learning used included the final exams, final presentations, and airline simulation presentation of the following courses.

ASCI 4050 Human Factors

ASCI 4250 Professional Ethics and Standards

ASCI 4450 Aviation Law

ASCI 4650 Economics of Air Transportation

The ASCI 4250 Professional Ethics and Standards and ASCI 4450 Aviation Law courses were taught in an online modality.

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (please do not just refer to the assessment plan).

The faculty of the Department of Aviation Science met to assess the student learning outcome. Performance indicator rubrics prepared by the faculty were used to determine if student and graduates were able to meet the requirements of the student learning outcome being assessed. The rubric used to determine if students and graduates met the student

learning outcome, and the course performance indicator rubrics used in this assessment are found in Appendix A of this assessment report.

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

The result of the assessment of the student learning outcome is that students and graduates do meet the student learning outcome requirements. There was no difference in the courses taught in the online modality therefore there is no difference in achievement to note.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

The data tells the faculty of the department that its students and graduates currently have the ability to conduct aviation operations in a professional, safe, and efficient manner.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

All faculty in the department met on 06/23/2022 to assess the student learning outcome, therefore all faculty are aware of the results and findings of this assessment cycle.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	• Course content • Teaching techniques • Improvements in technology • Prerequisites	• Course sequence • New courses • Deletion of courses • Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	• Student learning outcomes • Artifacts of student learning • Evaluation process	• Evaluation tools (e.g., rubrics) • Data collection methods • Frequency of data collection

Please describe the actions you are taking as a result of these findings.

The faculty agreed to take certain actions/make changes to course content so as to better enable students to perform at higher level when working to achievement of the requirements of the student learning outcome. These changes are as follows:

Course	Action Item
ASCI 4050 Human Factors	Develop more-specific measures for all of the SLO performance indicators.
ASCI 4650 Economics of Air Transportation	Consider a different textbook. Students expressed some frustration with the textbook's lack of flow, editing errors and some chapters at a graduate level.

	Allow students to form their management team and determine if this process results in achieving the assessment values benchmark.

If no changes are being made, please explain why.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

In the 4250 Professional Ethics and Standards course, add a lesson plan and activity as a measurement into the course to ensure this learning outcome is better assessed.

B. How has this change/have these changes been assessed?

The ASCI 4250 Professional Ethics and Standards course was taught online by an adjunct instructor and the change was not implemented nor assessed.

C. What were the findings of the assessment?

The department faculty will move to include the change in future offerings of the ASCI 4250 Professional Ethics and Standards course.

D. How do you plan to (continue to) use this information moving forward?

The department will determine the changes, if any, and assess the change's effect on the student learning outcome.

IMPORTANT: Please submit any assessment tools (e.g., artifact prompts, rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.

Assessment of B.S. in Aeronautics – Aviation Management Student Learning Outcomes

Student Learning Outcome #1: Conduct aviation operations in a professional, safe, and efficient manner.

Date of this assessment: May 23, 2022

The following assessment is based on coursework of students and surveys of graduates.

Performance Indicator Assessed	Do not Meet	Meet
Students and graduates make professional and ethical decisions.		X
Students and graduates apply pertinent knowledge in identifying and solving problems.		X
Students and graduates assess contemporary issues.		X
Students and graduates apply business knowledge to aviation issues.		X

List any prior change(s) made to the curriculum to aid graduates in meeting this student learning outcome:

In the 4250 Professional Ethics and Standards course, add a lesson plan and activity as a measurement into the course to ensure this learning outcome is better assessed.

Describe the effect of any change(s) made to the curriculum:

The ASCI 4250 Professional Ethics and Standards course was taught online by an adjunct instructor and the change was not implemented nor assessed.

List recommendation(s) for changes to be made to the curriculum as a result of this assessment:

The department faculty will move to include the change in future offerings of the ASCI 4250 Professional Ethics and Standards course.

Department of Aviation Science

B.S. in Aeronautics Concentration – Aviation Management

Program Assessment

Continuous Improvement Items

06-23-2022

Course	Student Learning Outcome	Action Item
ASCI 4050 Human Factors	SLO #1	Develop more-specific measures for all of the SLO performance indicators.
ASCI 4650 Economics of Air Transportation	SLO #1	Consider a different textbook. Students expressed some frustration with the textbook's lack of flow, editing errors and some chapters at a graduate level.
	SLO #1	Allow students to form their management team and determine if this process results in achieving the assessment values benchmark.

Assessment of AABI Section 3.1 – 3.9 Baccalaureate Degree Requirements Date of this Assessment: May 19, 2022					
AABI Goals	**Performance Indicator Assessed**	**Meets**	**Does Not Meet**	**Previous Recommendation(s)/Results**	**Current Recommendation(s)**
Students	Students can assess decisions and can make ethical and professional decisions.	X		None.	
	Admission requirements for the aviation programs are adequate to meet the requirements of the concentration.	X		None.	
Program Mission and Educational Goals	Students demonstrate knowledge of aviation business practices and principles and their application to the aviation industry.	X		None.	
	Students understand and appreciate the financial and economic aspects of the aviation industry.	X		None.	
	Students have knowledge of the business structure, management and administrative aspects of airlines, corporate flight	X		None.	

	operations and airport operations.				
Student Learning Outcomes	Students are adequately prepared for a career in the student's chosen profession.	X		None.	
Curriculum	The curriculum prepares the students to conduct aviation operations in a safe and efficient manner.	X			
Faculty	Enough qualified faculty and staff with industry credentials and/or an active research agenda are utilized and retained in the program (where applicable.)	X		Recommendation: Advise Saint Louis University administration of the need to hire a minimum of two additional faculty to better meet the needs of the department. Result: Saint Louis University administration determined not to hire additional faculty at this time.	Advise Saint Louis University administration of the need to hire a minimum of two additional faculty to better meet the needs of the department.
Facilities, Equipment, and Services	The department facilities remain adequate for the aviation department's academic training activities.	X		None.	
	Saint Louis University will continue to support the aviation department to operate the aviation		X	Recommendation: Advise Saint Louis University administration of the need to replace aging aircraft and simulators on a set schedule.	Advise Saint Louis University administration of the need to replace aging aircraft and simulators on a set schedule.

	academic and flight training activities.			Result: Saint Louis University administration determined not to replace aging aircraft at this time.	
Aviation Safety Culture and Program	Students, staff, and faculty are aware of the PEDALS reporting system and can use it to report safety issues.	X			
	Students, staff, and faculty attend the Safety Standdown sessions held each semester.	X			Continue to stress the importance of attendance at the Safety Standdown sessions to students, staff, and faculty.
Relations with Industry	The department's Industry Advisory Board is utilized in providing guidance to the department.	X		Recommendation: The Industry Advisory Board recommended revising the program curriculum to include additional business and management courses in place of the Approved Emphasis Area electives found in the current concentration's curriculum. Result: The department revised the concentration's curriculum and approvals were obtained to begin the revised curriculum in the fall 2022 semester.	Begin assessment of the business and management content in the revised curriculum of the concentration.

In the overall assessment of Student Learning Outcome 1, is this Student Learning Outcome Met? Yes **X** No

Date of this assessment: 06-23-2022

AABI 3.10 Criteria: Students

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022.

Do the students of the Aviation Management concentration meet the Students criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Students' goals.
- See the data collected and assessed in Appendix A of this document.
- It is important to note that standardized test scores were not required by the Office of Admission during the assessment period.

Closing the Loop:

Were any changes recommended at the last assessment of the Students criteria.

- No changes were recommended from the 2020-2021 assessment.

State the purpose of the recommended change and whether the change met its intended purpose.

- N/A.

As a result of today's assessment of the Students criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Students criteria.

- There are no recommendations being made at this time.

AABI 3.10 Criteria: Program Mission and Educational Goals

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022

Do the Program Mission and Educational Goals of the Aviation Management and concentration meet the Program Mission and Educational Goals criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Program Mission and Educational goals.
- See the data collected and assessed in Appendix A of this document.

Closing the Loop:

Were any changes recommended at the last assessment of the Program Mission and Educational Goals criteria as listed in the Comprehensive Assessment Plan?

- Assess ethical and professional decision making across multiple aspects of the ASCI 4050 Human Factors course.

If yes, state the purpose of the recommended change and whether the change met its intended purpose.

- The purpose of this change was to gauge the ability of the Aviation Management students to make ethical and professional decisions. This change has not been implemented into the concentration at this time and the department was unable to assess the recommendation.

As a result of the assessment of the Program Mission and Educational Goals criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Program Mission and Educational Goals criteria.

- There are no recommendations being made at this time.

AABI 3.10 Criteria: Student Learning Outcomes

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022

Do the Student Learning Outcomes of the Aviation Management concentration meet the Student Learning Outcomes criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Student Learning Outcomes goals.
- See the data collected and assessed in Appendix A of this document.

Date of this assessment:

- January 2022 and May 2022

Do the Student Learning Outcomes of the Aviation Management concentration meet the Student Learning Outcomes criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Student Learning Outcomes goals.
- See the data collected and assessed following this section.

Closing the Loop:

Were any changes recommended at the last assessment of the Student Learning Outcomes criteria?

- No changes were recommended from the 2020-2021 assessment.

State the purpose of the recommended change and whether the change met its intended purpose.

- N/A

As a result of today's assessment of the Student Learning Outcomes criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Student Learning Outcomes criteria.

- There are no recommendations being made at this time.

AABI 3.10 Criteria: Curriculum

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022.

Does the Curriculum of the Aviation Management concentration meet the Curriculum criteria as listed in the Comprehensive Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Curriculum goals.
- See the data collected and assessed in Appendix A of this document.

Date of this assessment:

- January 2022 and May 2022.

Does the Curriculum of the Aviation Management concentration meet the Curriculum criteria as listed in the Comprehensive Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Curriculum goals.
- See the data collected and assessed following this section.

Closing the Loop:

Were any changes recommended at the last assessment of the Curriculum criteria?

- Yes, the department decided to work with its Industry Advisory Board to modify the Aviation Management curriculum and to meet the University Core Curriculum requirement.

State the purpose of the recommended change and whether the change met its intended purpose.

- The department sees the need to bring in additional business and management coursework to strengthen the curriculum and will become effective with the fall 2022 semester.
- The department is required to modify the Aviation Management curriculum to include the University required Common Core. This modification will become effective with the fall 2022 semester.

As a result of today's assessment of the Curriculum criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Curriculum criteria.

- There are recommendations being made at this time.

AABI 3.10 Criteria: Faculty and Staff

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022.

Do the Faculty and Staff of the Aviation Management concentration meet the Faculty and Staff criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Program Mission and Educational goals.
- See the data collected and assessed in Appendix A of this document.

Closing the Loop:

Were any changes recommended at the last assessment of the Faculty and Staff criteria?

- The department voiced its opinion to the Dean and Provost that the department requires an additional two faculty.
- The department requested that Human Resources allow the flight training personnel to begin the hiring process for additional flight instruction staff when a current flight instructor provides a two-week notice of intent to leave employment.

State the purpose of the recommended change and whether the change met its intended purpose.

- The department needs additional faculty to accommodate the increase in both undergraduate and graduate programs. No additional hiring of faculty is being considered by SLU administrators.
- The department needs to be able to start the hiring process earlier so that new flight instruction staff can be brought on board when a current flight instructor leaves. This process has been implemented and has been operating correctly.

As a result of today's assessment of the Faculty and Staff criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Faculty and Staff criteria.

- The department recommends the hiring of two full-time faculty members to be able to continue serving the undergraduate and graduate student populations.

AABI 3.10 Criteria: Facilities, Equipment and Services

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022

Do the Facilities, Equipment and Services of the Aviation Management concentration meet the Facilities, Equipment and Services criteria as listed in the Comprehensive Assessment Plan?

- No. The evidence collected and assessed show that the Program Mission and Educational goals are not being met.
- Facilities, Equipment, and Services do not meet the goals listed in the Comprehensive Assessment Plan.

Facilities

- The McDonnell Douglas Hall facility remains adequate for the current level of staff and faculty.
- The Center for Aviation Science facility continues to leak in different areas when it rains and needs continual roof repairs. This facility is due for the resumption of the phased renovations in July 2022.

Equipment

- Equipment used in McDonnell Douglas Hall are generally in adequate condition except for the CRJ 700 flight simulator used by the department.
- Equipment at the Center for Aviation Science is becoming aged. The aircraft continue to be maintained in an airworthy condition, but it is becoming increasingly expensive to maintain them in such a condition, with the Diamond DA20 and Piper Seminole aircraft needing to be replaced. The aircraft simulators are operating adequately. The ground support truck used by the department is older and in need of replacement.

Services

The services at McDonnell Douglas Hall are adequate.

- The services at the Center for Aviation Science are barely adequate.

Closing the Loop:

Were any changes recommended at the last assessment of the Facilities, Equipment and Services criteria?

- Yes, the replacement of the Diamond DA20 and Piper Seminoles were recommended by the department.

State the purpose of the recommended change and whether the change met its intended purpose.

- The recommended changes were not implemented by the University.
- As a result of today's assessment of the Facilities, Equipment and Services criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Student criteria.
- The department recommends replacement of the following items of equipment:
    - The nine Diamond DA20 aircraft with 10-12 Piper Pilot 100i aircraft.
    - The two Piper Seminoles with two or three new Piper Seminoles.
    - The CRJ 700 simulator.
    - The ground support vehicle used at the Center for Aviation Science.

AABI 3.10 Criteria: Aviation Safety Culture and Program

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022

Does the Aviation Safety Culture and Program of the Aviation Management concentration meet the Aviation Safety Culture and Program criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Aviation Safety Culture and Program goals.
- See the data collected and assessed in Appendix A of this document..

Closing the Loop:

Were any changes recommended at the last assessment of the Aviation Safety Culture and Program criteria.

- Yes, the implementation of a safety survey to be sent to the University's aviation community.
- The Center for Aviation Science administrators were advised to begin developing safety goals for the flight operations.

State the purpose of the recommended change and whether the change met its intended purpose.

- The survey is used to determine how knowledgeable the aviation community is of the Aviation Safety Culture and Program utilized by the department.
- The flight operations needed to become a participating partner in the safety culture of the department.

As a result of today's assessment of the Aviation Safety Culture and Program criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Aviation Safety Culture and Program criteria.

- The department recommends exploring additional survey tools to use for assessing the Aviation Safety Culture and Program.

AABI 3.10 Criteria: Relations with Industry

(Aviation Management Concentration)

Date of this assessment:

- January 2022 and May 2022

Do the Relations with Industry of the Aviation Management concentration meet the Relations with Industry criteria as listed in the Comprehensive Assessment Plan?

- Yes. The evidence collected and assessed show that the students meet SLO 1 and the Relations with Industry goals.
- See the data collected and assessed in Appendix A of this document.

Closing the Loop:

Were any changes recommended at the last assessment of the Relations with Industry criteria?

- There were no recommendations made at the last assessment.

State the purpose of the recommended change and whether the change met its intended purpose.

- N/A.

As a result of today's assessment of the Relations with Industry criteria, are any changes recommended at this time? List any recommended change(s) to be assessed at the next assessment of the Relations with Industry criteria.

- There are no recommendations being made at this time.

SAINT LOUIS UNIVERSITY

OLIVER L. PARKS DEPARTMENT
OF AVIATION SCIENCE

Appendix A

Data and Course Evidence Collected to Support the Assessment of the Program Goals and SLO 1 for the Aviation Management Concentration

June 2022

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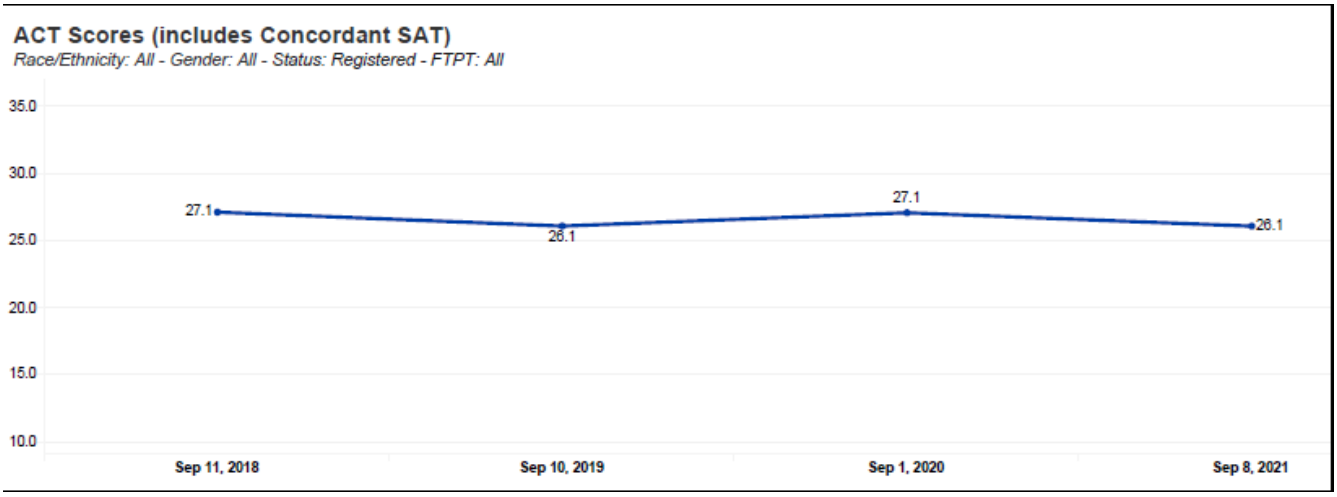
Aviation Management – Data collected in support of Students' Goals and SLO 1



Aviation Management – Data collected in support of Program Mission and Educational Goals and SLO 1

Performance Indicator Rubric

Course: ASCI 4050 Human Factors

Course Instructor: Terrence Kelly

Semester Taught: Fall 2021

Number of Students in Course: *35

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester.

ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	On Ground Cohort *Test #1: 82.5%* Human performance and	*Online Cohort* *Test #1: 91.9%* Human performance and	On Ground Cohort Test #1: Yes Test #2: Yes	Online Cohort Test #1: Yes Test #2: Yes

	individual differences *Test#2: 88.1%* Altitude physiology *Test #3: 81.2 %* Vision and visual illusions *Final Examination: 84.0%* Hearing, the vestibular system, and communication.	individual differences *Test#2: 82.7%* Altitude physiology *Test #3: 92.5 %* Vision and visual illusions *Final Examination: 88.9%* Hearing, the vestibular system, and communication	Test #3: Yes Final Examination: Yes	Test #3: Yes Final Examination: Yes
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	<u>On Ground Cohort</u> Paper Avg: 92.6% PowerPoint Avg: 92.7% Presentation Avg: 90.1%	<u>Online Cohort</u> Paper Avg: 91.3% PowerPoint Avg: 90.0 % Presentation Avg: 91.3%	<u>On Ground Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes	<u>Online Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes
SLO 5: Apply knowledge of business principles in aviation-related areas.	Not measured – see recommendation below		Not measured – see recommendation below	

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 3 – Effective oral and written communication skills are a prerequisite to safe operations. Oral and written communication assessment was conducted using a paper and presentation (including a PowerPoint presentation) surrounding an aviation accident involving human factors. This assessment was made using three measures. The paper average is the score based on the group report submission discussing a human factors accident (see Paper Average in SLO 3 table above). The PowerPoint average is the score based on the overall quality of the PowerPoint presentation submitted by each group (see PowerPoint Average in SLO 3 table above). The Presentation average is the score based on oral presentation made by each group in front of the class (see Presentation Average in SLO 3 table above). Although the SLO 3 assessment was positive, one recommendation arises based on the extremely limited amount of time I provided this semester covering the important topic of communication. Although I can include communications content in the Team Resource Management course (a follow-on course related to human factors), I plan to discuss some deemphasis on altitude physiology in order to expand on topics involved in communication.

SLO 5 – The application of business principles in aviation-related areas is somewhat out-of-place in a course surrounding Human Factors. Although Human Factors is rooted in safe operations and safe operations are a necessary component for the operation of a business, the connection between Human Factors and business principles is indirect. A review of some the available textbooks on Human Factors suggests a similar observation. Consequently, my recommendation is to remove SLO 5 as something to assess in Human Factors.

Performance Indicator Rubric

Course: ASCI 4050 Human Factors (-01/-10) Course Instructor: Terrence Kelly

Semester Taught: Fall 2021 Number of Students in Course: *35/11

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester.

ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	<u>On Ground Cohort</u> Test #1: 82.5% Human performance and individual differences	<u>Online Cohort</u> Test #1: 91.9% Human performance and individual differences	<u>On Ground Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes	<u>Online Cohort</u> Test #1: Yes

	Test#2: 88.1% Altitude physiology Test #3: 81.2 % Vision and visual illusions Final Examination: 84.0% Hearing, the vestibular system, and communication	Test#2: 82.7% Altitude physiology Test #3: 92.5 % Vision and visual illusions Final Examination: 88.9% Hearing, the vestibular system, and communication	Final Examination: Yes	Test #2: Yes Test #3: Yes Final Examination: Yes
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	<u>On Ground Cohort</u> Test #1: 82.5% Human performance and individual differences	<u>Online Cohort</u> Test #1: 91.9% Human performance and individual differences	<u>On Ground Cohort</u> Test #1: Yes	<u>Online Cohort</u> Test #1: Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	<u>On Ground Cohort</u> Paper Avg: 92.6% Presentation Avg: 90.1% Peer Assessment: Generally positive	<u>Online Cohort</u> Paper Avg: 92.7% Presentation Avg: 90.5% Peer Assessment: Generally positive	<u>On Ground Cohort</u> Paper: Yes Presentation: Yes Peer assessment: Qualitative measure	<u>Online Cohort</u> Paper: Yes Presentation: Yes Peer assessment: Qualitative measure

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is

focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 2 – The first few weeks of Human Factors (ASCI 4050) involves the discussion of the historical underpinnings of human capability and human limitations. From the onset of research on human performance in aviation to the contemporary use of human factors cockpit measurement through Line Operations Safety Audits (LOSA) to inform contemporary training paradigm (Advanced Quality Programs (AQP)). As mentioned previously, I did not identify a specific way of assessing SLO 2. That said, Test #1 is an ideal fit as it corresponds to the past, present, and future of human factors in aviation. That said, one recommendation I plan to apply is to identify a more-comprehensive assessment measure for SLO 2 that speaks more specifically and explicitly to a timeline associated with the evolution of human factors.

SLO 3 – The paper and presentation exercise stressed the importance of diversity in team operations, leadership of diverse teams and generating consensus on teams. The results were generally quite positive as evidenced by the paper and presentation score detailed above. Additionally, each team member was asked to rate the performance of other team members. Generally speaking, the feedback provided by the peer assessment was positive suggesting, with a few exceptions, teams were generally cohesive and worked well together. Although integrity and lifelong learning were touched on, I did not assess the effectiveness of those discussions. In terms of recommendations, it is clear I need to dedicate more class time to discussion of the importance of lifelong learning. Additionally, I need to develop a formal means of assessing the impact of discussions surrounding integrity and lifelong learning.

Examples

Human Factors Test #1

ASCI 4050 Human Factors Test #1 Fall 2021

Please indicate the best answer on the answer sheet provided.

What country was not involved in the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

Where did the Pan Am flight originate? (Tenerife accident)

New York.

Los Angeles.

Chicago.

Miami.

Which crew involved in the Tenerife accident had more total flying experience/time?

Pan Am.

KLM.

TWA.

Northwest.

Which captain had more 747 experience/flight time?

The Pan Am captain.

The KLM captain.

The TWA captain.

The Northwest captain.

Which duty-time regulations were considered for more draconian at the time of the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

The captains of both accident aircraft mentioned weather as an issue prior to the Tenerife accident.

True.

False.

The _____ aircraft has an ongoing hydraulic leak that was serviced in Tenerife prior to the accident.

Pan Am

KLM.

TWA.

Northwest.

Select the following condition that is best described as a Hardware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Software-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as an Environment-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Liveware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Both captains demonstrated confusion regarding which exit from the runway they were assigned.

True.

False.

The Tower Controllers exhibited some frustration with the _____ flight crew regarding which runway exit they should use.

Pan Am

KLM.

TWA.

Northwest.

The physical environment did not contribute to the Tenerife accident.

True.

False.

According to the in-class presentation, data suggests that over _____ of aviation accidents are attributable to adverse human factors events.

50%.

60%.

70%.

80%.

The focus of Human Factors is the fundamental engineering principles surrounding a system.

True.

False.

The study of Human Factors is focused on?

Humans.

Machines/Systems.

The interface between people and systems.

System factors affect human performance.

True.

False.

Human factors affect system performance.

True.

False.

One focus of human factors should be to improve the quality of life of system users.

True.

False.

_____ performed research on sensory and motor capabilities.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on intellectual differences.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on scientific management.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on motion and surgical procedures.

Cattell.

Galton.

Taylor.

The Gilbreths.

During WWII, researchers determined so-called human factors were the principal cause of aviation fatalities. What was the second leading cause of aviator fatalities?

Combat.

Structural failure.

Engine failures.

Fuel starvation.

Throughout the 1980s and 1990s _____ of Human Factors Society members served as expert witnesses in courts of law.

5%.

10%.

15%.

20%.

In what decade did human factors become a mandate within the Federal Aviation Administration?

1960s.

1970s.

1980s.

1990s.

What airline was first in establishing a formal human factors program for flight crew?

American Airlines.

Delta Airlines.

Northwest Airlines

United Airlines.

In what decade did, did the Air Transportation Association host nits first conference focused on human factors?

1960s.

1970s.

1980s.

1990s.

The first rudimentary simulators training aids were developed in the Applied Psychology Laboratory at?

The University of Southern California.

The University of Illinois.

Cambridge University.

The Ohio State University.

Three additional questions appear on the answer sheer

ASCI 4050 Human Factors Test#1 Fall 2021 Name: _____

Answer Sheet

Please indicate the correct answer in the space provided and answer questions 31 – 33 at the bottom of the page.

1.	16.
2.	17.
3.	18.
4.	19.
5.	20.
6.	21.
7.	22.
8.	23.
9.	24.
10.	25.
11.	26.
12.	27.
13.	28.
14.	29.
15.	30.

In your own words, define Human Factors.

Differentiate between the terms Human Factors and Ergonomics.

Differentiate between capabilities and limitations.

Human Factors Final Examination

ASCI 4050 Human Factors Final Examination Fall 2021

Please place the best answer on the sheet provided at the end of this test (feel free to tear off the answer sheet) Good luck!

Of the following, which sense contributes most to spatial orientation?

Vision

Vestibular

Proprioceptive

Auditory

The vestibular system is in?

The outer ear

The middle ear

The inner ear

Spatial orientation includes the ability to perceive motion and position in?

One dimension

Two dimensions

Three dimensions

Most spatial orientation is provided by?

The vestibular system

The eyes

The proprioceptive receptors

All pilots are vulnerable to spatial disorientation

True

False

_____ of fatal aircraft accidents are a direct result of spatial disorientation.

20%

40%

60%

80%

Spatial disorientation occurs more frequently in?

General aviation accidents

Commercial aviation accidents

Generally, when vision is compromised, pilots should fall back to instruments to ascertain position and balance.

True

False

True/actual positional orientation and relative motion may not be consistent with the way our body feels.

True

False

How many semi-circular canals contribute to spatial orientation?

1

2

3

4

Extremely low rates of acceleration may result in the vestibular system not sensing movement.

True

False

What is one purpose of the eustachian tubes?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear side of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Between the Pupil and the Iris, the amount of light allowed into the eye can change at a ratio of

3 to 1

5 to 1

7 to 1

9 to 1

The _____ acts like an electronic image sensor of a digital camera, converting optical images into electronic signals.

Crystalline lens

Cornea

Iris

Retina

The fovea surrounds the macula.

True

False

The optic disk is sensitive to both colors and shades of grey.

True

False

The _____ protects the eye from dust, debris and infection-causing microorganisms.

The Sclera

The Choroid

The Conjunctiva

The Macula

_____ provides approximately 65 to 75 percent of the focusing power of the eye.

The Cornea

The Pupil

The Lens

The Retina

What part of the eye determines eye color?

The Lens

The Iris

The Pupil

The Retina

Tears have a slightly antiseptic property.

True

False

What part of the eye acts as an “aperture?”

The Iris

The Pupil

The Cornea

The Sclera

The human eye has approximately _____ neurons proving input to the visual cortex.

50,000

250,000

1,000,000

5,000,000

Both rods and cones are sensitive to light.

True

False

The center of the macula consists primarily of?

Rods

Cones

The fovea primarily contains

Rods

Cones

Of the following, what is not a primary color sensed by cones

Red

Blue

Orange

Yellow

The human eye can distinguish approximately _____ different shades of color.

1,000

5,000

50,000

1,000,000

Each _____ has its own neuron.

Rod

Cone

_____ are responsible for our peripheral vision.

Rods

Cones

As light level decreases, the sensing task is passed over from the _____ to the _____.

Rods to the cones

Cones to the rods

Which of the following carriers were not involved in the 1956 midair collision over the Grand Canyon?

United

American

Trans World

Stressors may be described as the body's responses to the demands placed upon it.

True

False

What part of the eye has the best visual acuity?

The retina

The fovea

The lens

The cornea

Where is the so-called "Blind Spot" located?

On the iris

On the fovea

On the edge of the lens

At the optic disk

Peripheral vision is generally accomplished by?

Rods

Cones

Colorblindness effects acuity.

True

False

Colorblindness is far more prominent in?

Men

Women

Images projected on the retina are inverted.

True

False

The _____ is the light sensitive screen lining the inside of the eyeball.

Sclera

Choroid

Retina

Generally, Rods require higher intensity light than Cones, to provide effective acuity.

True

False

Groups of cones are connected to a single neuron.

True

False

What is the purpose of the Eustachian tube?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Accommodation is controlled by the

Ciliary muscles

Iris

Lens

Cornea

Generally, Cones are better able to resolve detail than Rods

True

False

Proprioceptive receptors are concentrated?

In the eye

in the ears

In the muscles

Ultimately, avoiding midair collisions is the responsibility of Air Traffic Controllers.

True

False

The frequency band that a healthy young person can hear is

70 - 15,000 cycles per second

80 - 20,000 cycles per second

500-15,000cyclespersecond

20 - 20,000 cycles per second

A healthy ear does not produce wax.

True

False

Epithelial migration tends to move from the ear drum to the Pinna

True

False

The outer ear can alter the amplitude of sound waves.

True

False

The outer ear plays a role in the spatial hearing of sounds.

True

False

One side of the tympanic membrane is normally exposed to a liquid.

True

False

The compensation for liquid incompressibility within the inner ear occurs in the?

Fenestra Cochleae

Fenestra Vestibuli

Oval Window

A pilot suffering a head cold may experience pain at altitude due to blocking (clogging) of the?

Cochlea

Eustachian Tube

Tympanum Membrane

Fenestra Vestibuli

People must use caution when standing near a jet engine due to the excessive?

Sound frequency

Sound magnitude (decibels)

Both above

What are the times of useful consciousness at 20,000 ft. (moderate activity)?

5 minutes.

1minute.

10 minutes.

30 seconds.

If the symptoms of hyperventilation occur at an altitude where hypoxia is not a consideration, what is the correct remedial action?

Descend to MSL.

Decrease rate and depth of breathing.

Increase rate of breathing.

If possible, lay flat and help to calm sufferer.

What increases the risk of DCS occurring in flight?

Scuba diving shortly before flight.

Snorkel diving shortly before flight.

Alcohol.

Smoking.

Dark adaption is one of the first symptoms of hypoxia.

True.

False.

Hypoxic Hypoxia affects night vision.

True.

False.

Anemic Hypoxia can be:

brought on by altitude.

caused by decompression.

caused by smoking.

brought on by fatigue.

In commercial aircraft cabin pressure is normally maintained at:

sea level.

6,000 - 8,000 ft.

10,000 ft.

below 5,000 ft.

DCS is considered a medical emergency.

True.

False.

The "chokes" are associated with:

NIHL.

DCS.

blockage of the alveoli.

oxygen loss.

Breathing 100% oxygen at 40,000 ft. is equivalent of breathing normally at:

sea level

20,000 ft.

40,000 ft.

10,000 ft.

Of the gases in earth's atmosphere, which is the 3rd highest in terms of percentage?

Xenon

Helium

Argon

Hydrogen

Altitude and ambient pressure are linearly related.

True.

False.

Typically, cabin pressure differential is limited to approximately?

2-4 psi

4-6 psi

6-8 psi

8-10 psi.

Generally, oxygen saturation (approximately 97.5%) is maintained in the human body to an altitude of?

10,000 ft.

15,000 ft.

20,000 ft.

25,000 ft.

Hypoxia may be caused by all the following except for?

Inadequate supply of oxygen

Inadequate transportation of oxygen

Inability of the body tissues to use oxygen

Inadequate hemoglobin in the blood

Generally, the pressure differential between the inside and the outside of a pressurized aircraft is limited to?

3 – 5 psi

5 – 8 psi

8 – 10 psi

10 – 12 psi

Cabin rate of change is generally more-limited (lower) when?

Descending

Ascending

The most common symptom of decompression sickness is?

Joint pain

Lethargy

Distended stomach

Belching

The “creeps” are a condition associated with the respiratory system.

True

False

The Time of Useful Conciseness (TUC) generally describes how long it takes to lose consciousness after a decompression.

True

False

The Effective Performance Time (EPT) generally describes how long it takes before an individual will lose the ability to alleviate a hypoxic condition.

True

False

The four stages of hypoxia include: a) The disturbance stage, b) The indifference stage, c) The critical stage, and d) The compensatory stage. Which of the following represents the transition from bad to worse?

b, c, d, a

a, c, d, b

d, b, a, c

b, d, a, c

Carbon monoxide is necessary for regulating the breathing process.

True

False

The _____ blood cells carry the oxygen throughout the body.

Red

White

Yellow

Grey

Generally, the average rate of respiration in a healthy male adult is?

11

16

21

30

When an excess of Carbon Dioxide exists in our blood, our breathing will tend to

Increase

Decrease

How many bones are located between the tympanic membrane and the cochlea?

2.

3.

4.

5.

PowerPoint Presentation Examples

United Airlines Flight 173

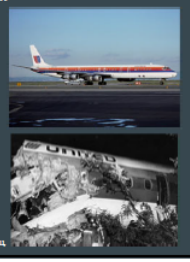
•••

Sr|l#Dlx/#Dqjlh#Drzhoq#Pdulnh#D1#Dxvylwdqld/#1#rvhsk#Pdvrq

1

Introduction/Overview of Accident - Joseph

- Xqlhg#Dludgh#/dj0o#k-6#p dwkqzonvh#urp#Dlz#k rul#Wkh#wrn#g#hqyhuk#Dzwdzg#P Uhg#Dlfp ehk#,9#,#c:;1
- XDj#djlo#k-6#p dwk#P 82 rqghd#Dzjdh#C F0,04
- Iwkdqk#,<#zonvhrqkrdzg#rp ewhqnc#k#hz #hqg#,4#dvhrqjhz1
- Z khq#k2#dqjlq#]#dlwk# dwk#Wkhg#k#hP dwdlq#hdzhqg#Wkrq 1#Oxp e#kxp e#qrlh#khzqjgk#e#k2#e#k#rqjhz#Wrurqhg#kow Odqjlq#]#dlwk#wdhrqk#]dqjh1
- D#wrqj#k#dwk#qjlp hkl#Wkurp #wq# zxpwk#q#k2#e 1#Qk#h uhxrwhqjk#qhc#k#k:lthwhqjlq#]#dlwk#]xwhqjrwl#Wdydwrj1
- Wkh#Dozhr#k#2#qjlq#e#Wdyzk#q dqh#k#hz #ozwhrqk khwhu wk#wkq]#dlwk#qjlo0[#rwhqjlq#rhrq1
- D#rqjlq#k#ehrqjk#onvk p #Wrwhqjk dwq#khg#Wkh#]#qjlhrnu r#Wqjlq#rqjlq#wk#hz 1#k#Dozhr#k#2#qjlq#k#dwk#ehwk#]#k#dwk#ehwk#]# wk#Dfuh#wk#Dwk#qjlq#k2wl#q 1#e#rxk#dwk#]#Qk#Dlq#]# z rnqhq#wk#r#Wkrq#]#xrunrnq1



Ip djp# k#hrqv#-0qhp k#hu

2

Stakeholders who experienced the Human Factors "Failure" -Joseph

- Xqlhg#D ludqhv
  - Irlqv#ruhv /#rqlhg#D ludqh#|h#vwhq#dlpkqlq[h#uhv #rvh#k#Dufuhd
- P fG rqqhu#G rxcjuhv
  - Dlufuh#rqjlq#hvq#v /#rqqhu#rxcjuh#|h#vwhv
- Wkh#Sdvhqjhuv
- Idp k#hvlr#k#kh#G hfhdvhg
- Uhvlghqv#lr#k#kh#fuhvk#dhd

3

Sequence of Events - Marike

- Dw#,-88#k#hu #dqhv#]nwhqg#D swurdfw#qg#k#dwk#u#ouhq#hhehqk# dw#D,333#k#qjlh#|#c hu#qrqrfrj# dlwdlhg#
- Dw#,-45#rwhqjlq#D swurdfw#qhdlq#k#dlwjlw#qrqrfrh#k#cz hu1
- D#hu#6#p hpdhq#nwhqg#D swurdfw#qhdlq#dlwjlo#,-6#qfhrwh#qc#[#qjlh#dlqjrxl#swurdfw#qrqrjlq#dwdwp# k2h#k#hu #vrwrh#ozp hq#qrqrjlq#hdwp# hq#qrl#]#qjlhrdqh[#hrwhqjlq#rwhqjlq#p hq#qrqrjlq#hdwp# hq#qrl#]#
- Dw#,-6;#P fhurp #rqrdhq#k#k# qlhg#D ludqh#D1qhP dqhhqdqfh#P rqurcP hqvhu#k#dqlrdqfhr#P dfhrqdlhg#vhd|hq#k#rurdp #e#k2p 1#c h#dqh#2#dqjh A33#rrqqvh#k#dwk#hdwk#p dqhqjlq#rrqjlu#qhrwh#k#e#3#p hpdh#
- Dw#,-97#k#hdh#dwhg#P hqghqdwq#rrq #p x0#dwh p hlrv#dlq#p k2h#P hqghqdwq#vhp hdqjlq 1k#P k#dwhqrvdqg#
- P#p hpdh#dwhu#P fhurp #rqrdhq#k#dwk#p dqhqjlq#vhdlq#p hpdwq 1k#p k#hdlrqqjlq#dlq#p k2h#2#hdwk#dfu#qrqrjlq#dlq#p k2h#2#hdwk#dfu#qrqrjlq#dlq#p hpdwq#rqqhu#dlwjlo#rqqhu#dlwjlo#rqqhu#dlwjlo

Asiana Airlines Flight 214

- NICHOLAS BOHN, ADAM BURKE, SAMUEL BYRNE, RUTH CALIX, TYLER LAMBERT

1

Pertinent Details

- The Pilots
  - Captain Lee Kang-Kook (69 hrs)
  - Captain Lee Jeong-Min (9k hrs)
- The Accident
  - Captain Kook mismanaged speed of aircraft
  - They were low and slow on approach to Runway 28L
  - Impacted sea wall and tore off tail and landing gear
  - Ignited a fire
- The Passengers
  - 307 291 passengers, 181 injuries, 3 fatalities
- Boeing
  - Not held liable and didn't listen to ICAO
- The Airline
  - Asiana airlines' reputation was ruined
- The Flight Attendants
  - Carried passengers on their backs
  - Experienced injury when slide deployed

2

Accident Chain

- Last 1 minute of flight, from 1,000 feet down to impact with the sea wall
- Transition from being too high to being too low and too slow

3

Human Factors Issues

- Software-Liveware: Lack of critical information in the training manual pertaining to the autothrottle system and speed control (767 v 777)
- Hardware-Liveware: 777 autothrottle system will provide speed protection in 3 different scenarios, but not when the aircraft is set up like it was at the time of the accident
- Liveware- Environment: NTSB member Mark Rosekind says the crew had experienced sleep disruption and was operating at the "low point" of their circadian rhythm. They subsequently made "nearly a dozen fatigue-related cockpit crew errors throughout the approach, landing, and delayed go-around phases of Asiana flight 214" (p.142).
  - The Pilot Flying reported not being able to sleep for most of his rest period during the flight, and the observer reported feeling tired while returning to the cockpit to monitor the approach
- Liveware-Liveware: The pilot flying did not verbalize his anxiety about flying the visual approach, and the instructor pilot did not appropriately monitor the approach speed and glidepath or instruct the pilot to go around once it was clear that the approach was unstable

4

Human Factors Issues (cont.)

- The 777's autothrottle system did not provide underspeed protection while in HOLD mode
- Asiana's training department did not adequately understand this issue and did not properly train their pilots on situations where the autothrottle would NOT provide underspeed protection
- According to NTSB member Robert Sumwalt's statement, "I believe setting the stage for the crash was expectancy; the pilot flying expected the airplane to do something that it wasn't designed to do. Specifically, he expected the autothrottle system to provide speed control for him, but unbeknownst to him, the system would not do so while in a HOLD mode."
- The lack of understanding of the system inspired a false confidence in both pilots, leading to neither of them accurately monitoring the speed of the aircraft

5

Mitigation

- NTSB recommended Asiana should reinforce flight crew adherence to SOPs involving the inputs to the operation of autoflight system controls on the 777 mode control panel and related callouts.
- NTSB recommended Boeing to revise the 777's Flight Crew Training Manual
  - Include an explanation of the circumstances in which the autothrottle does not provide low-speed protection in demonstration section
- Gap in mitigation - NTSB ultimately voted against recommending the redesign of the 777's automation system even though it may have been beneficial to safety
  - Boeing's design philosophy: "pilots are very proficient in monitoring their speeds" – not supported by data: LOSA data from over 14,000 flight ops show that 15-20% of flights have poor monitoring & cross-checking performance

6

Could this happen again?

- Yes, an accident of this type can happen again.
  - Automation is a powerful tool that simplifies the task of flying
  - Although automation can greatly increases pilot efficiency and safety, when mismanaged it can become dangerous
- Pilots who are not properly trained or are not proficient in their automation systems can make similar mistakes to those of the Asiana Airlines Pilots
  - Lapses in training exist and will always exist and there will always be pilots that try fly above their proficiency level
- As pilots we need to make sure that we are comfortable and competent with our automation systems or else there is a possibly for us to mishandle it and put ourselves and others in danger

7

References

8

Example Papers

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

Al Schulz, Nathan Seliner, Drew Sinelli, Minsu Song

Department of Aviation Science, Saint Louis University

Human Factors, ASCI-4050-01

December 10, 2021

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

On November 23rd, 2011, the airplane N690SM impacted the top of the Superstition Mountains near Apache Junction, Arizona. It had just flown from Safford Regional Airport (SAD) to Falcon Field (FFZ), Mesa, Arizona, about 110 miles away and was planning on conducting the same flight in the opposite direction (Aviation Safety Network, 2018). The return flight to SAD from FFZ was conducted under night visual flight rules (VFR) with no moon. The last radar return was received at 18:30 and was approximately coincident with the impact location. The impact location was near the top of a steep mountain that projected to over 5,000 feet MSL. The plane had 6 occupants including the pilot and all 6 people perished. The main human factors building up to this accident were ensuring airworthiness of aircraft, limited visibility due to night without the moon, pilot's lack of vigilance due to familiarity with the route and surrounding terrain, and lack of communication with ATC.

One of the stakeholders is Ponderosa Aviation, Inc. (PAI). According to the NTSB report they purchased the airplane and relocated it from Indiana to PAI's base at Safford Regional Airport (SAD), Safford, Arizona, about 1 week before the accident (2013). PAI's president conducted the relocation flight under a Federal Aviation Administration (FAA) ferry permit due to an unaccomplished required 150-hour inspection on the airplane (NTSB Report, 2013). The airplane's arrival at SAD terminated the ferry permit, and no inspections were accomplished to render the airplane airworthy after its relocation.

Also of note turbine powered aircraft produced before 2002 with 6 seats or more were required to have a Terrain Awareness and Warning System (TAWS) installed prior to 2005 (NTSB Report, 2013). There was no indication in the aircraft maintenance records nor the crash site that this regulation was complied with. If this aircraft was equipped with a TAWS system perhaps the pilot could have taken appropriate corrective action and the occupants would not have been harmed.

Even though other airworthy airplanes were able to make a flight, PAI's director of maintenance (DOM), who was the accident pilot, and the director of operations (DO), who were co-owners of PAI along with the president, decided to use the non-airworthy airplane (N690SM) to conduct a personal flight from Safford Regional Airport (SAD) to Falcon Field (FFZ), Mesa in Arizona. As stakeholders in the accident, the DO and DOM planned to fly from SAD to FFZ under night VFR in visual meteorological conditions (VMC). After a safe arrival at the destination, the return flight was to be conducted under night VFR in VMC only by the DOM. The pilot's children were 3 of the passengers creating more stakeholders in this case (Christie and Berry, 2011). The passengers and their families are all stakeholders in the accident.

The greater community is also a stakeholder in this accident as it occured in the somewhat famous Superstition Mountains. Many people recreationally hike these mountains and the aircraft impacted very close to a hiking trail. Many people in the nearby city of Apache Junction, AZ witness the flames from the impact. A memorial was constructed in the community for the tragic loss of life in this unfortunate accident (Rupcich, 2020).

A possible contributing human factor was the pilot not using all available equipment and information. According to the pilot's brother the pilot used to use an iPad for navigation and flew using the ForeFlight software app that has a 'moving map' function (NTSB report, 2013). Thus, if he was using the moving map function of ForeFlight he should have been able to determine that the aircraft's track was on a collision course with the terrain. The investigation found remains of the iPad but was unable to determine whether the pilot adhered to his normal practice of using the iPad for the flight (NTSB report, 2013).

The human factor of complacency played a crucial role in this accident as the pilot was very familiar with the route. He had flown between the two airports several times and had previously accomplished the same flight 2 days before the accident (NTSB Docket, 2013). This familiarity with the flight could have led to complacency in proper planning and avoidance of terrain. A direct course from FFZ to SAD puts the aircraft approximately 3 miles south of the impact mountain but the aircraft did not start its turn on course until 2 miles north of the field as they were instructed to fly straight out for traffic by Falcon Tower (NTSB Report, 2013). Once ATC cleared the turn on course the pilot turned flying directly to the destination airport from their current location and not FFZ airport. This new course put the aircraft directly in line with the impacted mountain. This oversight by the pilot resulted in loss of situational awareness. The pilot did not realize that the combination of the new flightpath and altitude resulted in a collision with the terrain. Further exacerbating this was the fact that there was no moon at the time of the flight which went over mountainous terrain surrounded by sparsely lit terrain. This combination made it impossible to see the approaching mountain.

Another human factor contributing to the collision was the pilot was not in contact with ATC. The airspace directly overlying the area before the mountain was Phoenix Sky Harbor's class B (Bravo) airspace which went down to 5,000ft mean sea level (MSL) and the highest charted elevation of the impact mountain just outside the class B shelf is 5,070ft MSL. It is possible that since the flight was being conducted under VFR that the pilot thought that they would not get cleared into the class B airspace. This led him to fly below the class B shelf which put the airplane at an altitude lower than the surrounding terrain. Considering how familiar the pilot was with this flight you would think he would have flown in the class B airspace considering out of 619 VFR flight requests 598 were given clearance to enter the Bravo under a subsequent NTSB investigation (NTSB Report, 2013). Nevertheless, the pilot leveled off and was flying at 4,500ft MSL at the time of the collision which occurred about four minutes after the turn on course.

If we take a look at the SHELL model we can see aspects from all sides present in this accident. First looking at Software (maps, documents, checklists), we can see that it seems that there was a lack of map use and a failure to realize the changing altitude. Hardware: the aircraft technically was unairworthy, which shows poor decision making. Also the NTSB had trouble locating an installed TAWS in the wreckage or maintenance logs. Environment: Interestingly the pilot had

completed this same exact flight multiple times before just not on this different flight path. The pilot had become complacent with the surrounding area and failed to maintain situational awareness. An example of liveware to liveware is perhaps the pilot was distracted by the passengers in the aircraft. Three of the passengers were the pilot's own children so perhaps he was even more distracted than if it were passengers that he did not know. It is important that pilots avoid distractions as much as possible and maintain positive control of the aircraft and situational awareness. In this case it seems like positive control of the aircraft was maintained but situational awareness was lost so the airplane collided with the terrain.

Another human factor at play in this accident is possible night illusions relating to eye physiology. The flight was conducted at night under VFR in VMC with no moon. The area was sparsely light and mountainous terrain. The featureless terrain could have caused an illusion of the airplane being higher than it actually was. At night the eye functions mainly on rods instead of cones which only see in black and white. Since the mountain was not lit and the surrounding terrain was sparsely lit, there was not enough contrast to see the mountain. It is important that we remember when flying at night that it is harder to see and there could be invisible obstructions such as terrain. This is why it is so important to maintain situational awareness, especially at night, so that we alway know where we are and can avoid any vertical obstructions.

To mitigate this type of accident, the pilot should make sure that the airplane is completely airworthy and if it is not airworthy, do not fly with the airplane. Even though it looks fine with the naked eyes, it may have some severe defects inside. It should only be flown after all required inspections have been conducted by a certified aviation mechanic. Airworthiness is not the only concern in this accident.

Pilots also should be aware of the environment such as weather, terrain, time of day, and visibility around the planned route and file a flight plan for each segment. The pilot should be familiar with the flight environment and current situation. In this case the combination of the airscape with the terrain made it more likely for a pilot to be at a lower altitude than the surrounding terrain. Although the pilot could have requested access into the class B airspace it is not required. Perhaps the airspace itself should be investigated to see if any changes should be made so that it is not lower than terrain so close to its lateral borders.

As for other high consequence industries some things that could be taken from this accident is getting into a routine to double or triple check equipment regardless of recent use. You also must keep focus and not have predetermined expectations while executing any mission or operation that can result in tragedy. It also could be beneficial to ask for direction if you are not sure about something. In this case not asking for clearance into the Bravo created an unnecessary dangerous situation.

In this case of this accident, the DOM should have known to ensure airworthiness relating to required equipment. If the airplane was equipped with TAWS equipment as it should have been this accident most likely could have been avoided. According to Title 14 CFR 91.223 turbine-powered, U.S registered airplanes configured with six or more passenger seats and manufactured before early 2002 could not be operated after March 29, 2005, unless the airplane was equipped with an approved TAWS unit. In addition, it would be helpful to get information via sectional chart or other topographic references, maintaining awareness of visual limitations for operations in remote areas, following instrument flight rules practices until well above surrounding terrain, advising ATC and taking action to reach a safe altitude to prevent from causing the accident.

A possible "gap" that could lead to this exact same accident is that the airspace and terrain are still the same so if another pilot lost situational awareness in the same area at night in an aircraft without TAWS they could come into contact with the mountainous terrain. That is really only one mistake that could lead to fatal consequences. Pilots must be vigilant in maintaining concentration, situational awareness, and not fall victim to complacency.

A lot can be learned from this accident as these factors can be related to many high consequence industries. If a worker lost concentration in a factory or healthcare setting there could be disastrous results. If you lost situational awareness in a mine or powerplant there could be harmful consequences. If an employee became complacent in a chemical plant there could be a devastating outcome. Maintaining concentration and situational awareness of your surroundings will almost always keep you safe in any part of life. As humans we will make mistakes but what is important is that we learn from mistakes to make a better future.

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Air New Zealand Flight 901, Mt. Erebus

Jerry Cockrum, Devin Henneberry, Yu Feng, Akio Hansen, Sam Lehmann

ASCI-4050-01 Human Factors

Dr. Kelly

During the 1970s, a market emerged for tourism flights to sightsee over Antarctica. Air New Zealand (ANZ) had been aware of the opportunity to operate these flights, but was unable to do so because their flagship DC-8s did not make the trips economically viable. This changed in 1973 when ANZ acquired their first DC-10 aircraft. This allowed the airline to operate a non-stop long haul flight, and ANZ began offering these flights in 1977. The flights were immediately popular and had no trouble filling seats. Passengers were afforded the opportunity to walk around the cabin during flight and gaze at the spectacular view of the least-inhabited continent while enjoying luxury food and drink service. Educational films about Antarctica were also shown during the duration of the flight.

Two years after the launch of the flights, they were as popular as ever. Around a month before the disaster, the pilots participated in a route briefing for the upcoming flight, which was scheduled for November 28, 1979. The pilots, Jim Collins and co-pilot, Gregg Cassian, had never flown this Antarctica sightseeing flight before. The pilots were given briefing material a month before for the flight and noted no issues. Air New Zealand Flight 901 (TE901), a McDonnell-Douglas DC-10-30, took off from Auckland International Airport bound for the Antarctic sightseeing flight. 257 passengers and crew were on board.

At 8:21, New Zealand time, the plane took off from Auckland International Airport. Around noon New Zealand time, the aircraft made contact with McMurdo Station ATC, which was operated by the US Navy. The pilots had learned in their briefing that if visual meteorological conditions existed, they could step down to 6000 feet. They did so and advised ATC they would continue down to 2000 feet. Even though the lowest authorized altitude for the route in visual conditions was 6000 feet, past flights had also descended lower, likely to provide passengers with a better view of the scenery. The flight descended then descended to 1500 feet with the autopilot engaged. This was likely in an attempt to descend under a low cloud layer at 2000 feet to ensure the passengers had a clear view.

Four minutes later, the Ground Proximity Warning System on the aircraft sounded an alarm, warning that the aircraft was approaching the ground quickly. Captain Collins quickly advanced the throttle to go-around power in an attempt to clear the terrain. Collins still didn't know that there was a volcano ahead, the nose was only raised 15 degrees as according to the training guidelines, instead of a higher angle.. The aircraft then impacted the lower slopes of Mount Erebus and was instantly destroyed, killing all aboard.

The ATC station that was in contact with the flight was unable to reach them, and soon organized a search and rescue effort. The aircraft wreckage was located the next morning. It was strewn over a large area and the search teams were only able to identify the aircraft by its tail logo. News that the aircraft was missing and likely crashed had already reached New Zealand by this time.

TE901 Wreckage National Erebus Memorial

The driving human factor behind this accident was a miscommunication between the crew of the flight and the navigation office of Air New Zealand. There was a convoluted background for this miscommunication. In 1977, the original approved routing for the flight was a route directly over the 10,000 ft.+ peak of Mount Erebus on the way to McMurdo Sound. A little over a year before the disaster flight, the route was computerized by ANZ. During this, a typing error occurred, shifting the route coordinates 27 miles away and over the flat McMurdo sound. Up until the time of the disaster flight, many of the flights before had used this non-approved route, unaware of the discrepancy.

The captain of TE901 however noticed this discrepancy, and notified ANZ's navigation office. The night before the flight, the office updated the Inertial Navigation System of the plane so that the coordinate was fixed. The plane would now fly over Mount Erebus per the approved route when autopilot was engaged. Crucially, the pilots were not informed of this change. They were under the impression throughout the flight that it would be flying and descending over the flat water and ice of the McMurdo sound, well clear of terrain. This was tragically not the case.

This can be described using the SHELL model as a liveware to liveware issue. The navigation office failed to communicate to the pilots the change. It can also be described as a software to liveware issue. The INS had been programmed in the aircraft to fly over (or into in this case) Mount Erebus, and the pilots did not realize this. This miscommunication was crucial to placing the plane in a position where the pilots would be affected by more human factors issues to come.

While miscommunication and improper data input were the driving factors for the Mount Erebus disaster, other human factors components can be attributed to this aviation tragedy as they relate to a pilot-environment relationship. First of all, the aircraft was flying in adverse atmospheric conditions. Though conditions did not technically qualify as IMC, the cloud layer was low enough to create a phenomenon known as "sector whiteout" in conjunction with the all-white terrain of Antarctica. Sector whiteout is a visual illusion where factors, in this case clouds and snow, give the illusion of mostly clear visibility and adversely affect depth perception. In these conditions, the human eye ultimately can't gauge distances from and among outside objects, such as the terrain, sky ahead, and overhanging clouds. This illusion is comparable to that of empty field myopia, where the eye essentially relaxes and the iris/lens bend light to the retina as if the object in focus were closer than they actually are.

One of the biggest outcomes of TE901 was the development and implantation of Crew Resource Management (CRM). CRM was developed after safety investigators and psychologists came together to understand how human performance can deliver an enhanced level of safety. CRM, rather than encouraging an autocratic flight deck, encourages crew teamwork and, when/if necessary, assertion of authority by crewmembers that are, in the flight deck hierarchy, subordinate to the captain. It was first used by United Airlines in 1981, however Air New Zealand was an early adopter of CRM. Before the Erebus disaster and any type of CRM was in place, pilots were the only ones who could call the shots and there was little tolerance for other crew voicing their concerns or asking questions. In other words, communication among the flight crew was weak. However, following TE901, flight crews were trained and encourage to speak up if they didn't see something right. Another valuable lesson that came as a result of the Erebus Disaster was a concept called "systemic error" used to explain how a system can go wrong. This systemic error is also referred to as the Swiss Cheese Model. The Swiss Cheese metaphor that suggests multiple contributors (holes in cheese slices) must be aligned for any adverse event to occur. Each slice of cheese is considered a barrier or safeguard against an accident. If the holes line up you can have a series of little incidents that end up in an accident. Pilots now understand that an accident doesn't happen by itself, there's generally a chain of little things that cause the accident.

One unresolvable issue that many pilots face is the inability to see through and past cloud layers. This is something that not only concerns that of instrument rated pilots, but also pilots who are flying under visual flight rules and wander into Instrument meteorological conditions. We as an aviation community have put in place legislation to prohibit non IFR (Instrument flight rule) rated aircraft and persons from flying in such adverse conditions. Pilots that are trained to fly only VFR (visual flight rules) are trained to properly handle these situations. Regardless, even with these safety margins implemented, we still run into the issue of how an event is handled when the stress of an actual incident is in place.

Another issue that is difficult to fully eliminate is error in communication. Crew Resource management has helped with streamlining information pertinent for flight operations, but when information is handed down data can be lost, like the confusion the pilots of Air New Zealand faced when improperly inputting the waypoints. Information hand off is simpler now and has more opportunity for error correction compared to 1997. Although we moved in the right direction, eliminating total miscommunication is near impossible.

When considering the human factors associated with the Mount Erebus disaster and comparing it to outside fields, you will notice that improper communication can hurt essentially every field out there. When information is passed person to person the original information starts to stray from the original message. Without proper communication and an inability to manage systems properly, human error is inevitable.

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Peer Feedback Form

Peer Feedback Instructions

For each member of your team, provide honest feedback on this form. You will rate each person on your team on items related to cooperative learning skills, self-directed learning, and interpersonal skills. It is important that you assign scores that reflect how you really feel about the extent to which your team members and you contributed to your learning and the final product of both the paper and the presentation.

You will also be given the opportunity to provide written feedback to each of your team members by answering two open-ended questions. These comments will be anonymous and provided to your team members after the deadline. This feedback should be constructive- quality feedback is important. Keep the following guidelines in mind as you provide your written feedback:

Are specific behaviors described? (vs. non-specific generalizations)

Are those behaviors described clearly, so your teammate recognizes what she/he has done to help the team, and what he/she can adjust or change?

Are the content and tone constructive and helpful? (vs. petty, mean)

Is the feedback descriptive ("I feel our team would benefit if you gave us your opinion earlier in the discussion.") rather than evaluative? ("You treated us unfairly by keeping quiet during our discussions.")

Do you define specific areas for improvement?

Peer Feedback Form

Team: _____

Peer Learner you are evaluating: _____

Your name (evaluator): _____

PART ONE: QUANTITATIVE ASSESSMENT *(*CHECK ***ONLY ONE BOX*** FOR EACH OF THESE 12 ITEMS)

Cooperative Learning Skills:	**Never**	**Sometimes**	**Often**	**Always**
Arrives on time and remains with team during work time				
Demonstrates a good balance of active listening & participation				
Asks useful or probing questions				
Shares information and personal understanding				

Self-Directed Learning:	**Never**	**Sometimes**	**Often**	**Always**
Is well prepared for work time				

Shows appropriate depth of knowledge				
Identifies limits of personal knowledge				
Is clear when explaining things to others				

Interpersonal Skills:	**Never**	**Sometimes**	**Often**	**Always**
Gives useful feedback to others				
Accepts useful feedback from others				
Is able to listen and understand what others are saying				
Shows respect for the opinions and feelings of others				

PART TWO: QUALITATIVE ASSESSMENT (*FOR EACH ITEM, ANSWER THE FOLLOWING QUESTIONS*)

1) What is the single most valuable contribution this person makes to your team?

Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: __30_____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 1 - Canvas Assignment Information on Discussion Board: Describe an ethical dilemma based on your experience. In 1-2 paragraphs, use Kohlberg's Theory of Moral Development to discuss how you addressed that dilemma (Safety Ethics, p. 19).

Points Possible: 30

Due Date: 25 August 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Student Submission: Daniel Igra

When I was a student pilot (pre-ppl), I decided to conduct my first solo cross country to the near town of Centralia, IL (KENL). As I entered the uncontrolled airspace of KENL, I discerned the following two facts: 1) From my point of view, it seemed that there was only one other pilot in the traffic pattern who seems to be flying a P-51 mustang. 2) I also recognized that a fellow BILLIKEN plane was executing maneuvers just outside the KENL uncontrolled airspace. Although I have entered uncontrolled traffic patterns before, I was rendered anxious and complicit due to this being my first solo cross-country flight. As a result, I entered the uncontrolled airspace without making any of the required position reports. In addition, the realization that the P-51 pilot isn't making position reports too, gave me an excuse to resume my negligent and dangerous behavior. As I neared my base turn, I was faced with an ethical dilemma that demanded an immediate decision: Will I overcome my newfound anxiety induced by this novel situation and report BASE on CTAF, or will I continue in the pattern silently?

Were this ethical dilemma to be viewed through "Kohlberg's theory of moral development (Patanker et al., 2020, p. 7)", the problem would be analyzed into the following three levels: First, the basic level where one is motivated to make a decision that is based on ***self-interest*** (Patanker et al., 2020, p. 7) may have caused me to make a leg report due to the fear of the neighboring BILIKEN instructor listening to KENL's CTAF. Here, I would be acting out of fear of personal punishment, hence acting out of pure self-interest. Second, the intermediate level where one is motivated to make a decision that is based on ***conformity*** (Patanker et al., 2020, p. 7) may have caused me to follow in conformity after the actions of the P-51 pilot who decided not to report his legs as well. After all, P-51s require more experience and therefore the pilot must be a professional, I reasoned. Third, the final level where one is motivated to make a decision that is based on ***a principle of respect*** (Patanker et al., 2020, p. 8) may have caused me to cognize that I am the pilot-of-command and therefore bound by duty to conduct this operation in the best and safest way possible, by virtue of duty and respect for the roll I currently assume, I decide to overcome my anxiety and report as best as I could in order to complete this operation as best possible.

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

Module 1 - Canvas Assignment Final Paper/Presentation:
The final paper or presentation, with a minimum of 7 references, may be completed through any of the following methods (due 13 DEC 2021):
1. Individual 3–7-page paper
2. Group paper 8-11 pages
3. Individual recorded presentation
4. Group recorded presentation (Zoom or Canvas recording 15-20 minutes)
Title, students' names, course, and due date on first slide.
Make sure to include citations on the slides where you are using someone else's material when either paraphrasing or quoting.
Reference list in APA 7th formatting at the end of the presentation.
Group size may be 2-4 students. You are welcome to partner with students from ASCI 4250-01 and ASCI 4250-10.
Identify the style of paper in the first paragraph or on the introduction slide (Argumentative, Descriptive, Expository, or Literature Review).
Select a topic: You may choose any topic covered throughout the class for the final paper or presentation. Below are a list of topics from the syllabus to help you decide…

Points Possible: 100

Due Date: 13 December 2021

Notification thru: Schedule, Module Lesson Plan, Discussion, Announcement, Email

Submission: Attach of paper or presentation using the assignment link

Guidance and resources: Module Lesson Plan, Discussion, Instructions/Steps to success, weblinks to Purdue OWL, SLU Writing Center, sample paper, etc.

Student Submission: Annie Phan and Jordan-Chase Fines

Please select "view in new tab."

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Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: ___30_____

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	99%	Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 2 - Canvas Assignment Information on Discussion Board: Working together, let's see if we can identify the "key personal characteristics that enable a person to fight ethical violations" mentioned by Patankar (2021) when writing about Joe's experience.
Name one personal characteristic that helped Joe (the mechanic-> manager) deal with the many ethical challenges throughout his career.
Please, do not duplicate or use the same answer as other students.

Points Possible: 10

Due Date: 19 September 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: Student's compiled a list of over 30 professional and personal characteristics that promote aviation safety

Student Submission: Yu Feng

The key characteristic of which led to Joe's success is his ability to institutionalize leadership which means that Joe doesn't just demonstrate personal capacity at dealing with aviation challenges and ethical responsibilities, which means that he lives by the standards of which ensure that the values he possessed that led to his success will become the cornerstones of future managers and engineers who will most likely deal with similar problems as he did. This is evidenced by the fact that Joe has a number of protégés who also share his values and are referred to him for advice when facing their own challenges as mechanics. The result is that Joe's values and capabilities are standardized and constantly referenced in a practical manner. Just like Joe, they pick their own battles, are willing to challenge management at the right time challenge their evidence. Joe certainly has his share of proteges. Over the years, many mechanics and inspectors have faced their own challenges, referred to Joe for advice, and developed their own skills. Consequently, there are at least a dozen Joes around. They have mastered the art of collecting evidence, picking their battles, challenging management at the appropriate times, and ultimately winning their battles. The strong social support structure that Joe built also helps them deal with family issues. It is not unusual to have these mechanics watch out for each other's kids and help out at family events.

SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.

Module 7 - Canvas Assignment Information on Discussion Board: Can this industry, in the realm of international air travel, strike the proper balance between health (spread of disease) and economic trade?

Points Possible: 18

Due Date: 28 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: During the Module, Omicron was just beginning to spread in the U.S. and the CDC introduced new travel guidance that was including in the discussion.

Student Submission: Clifford Drozda

I believe that international air travel can reach a proper balance between health and trade. As seen in the previous year and a half, air travel has been able to adapt to a more careful way of travel. Cargo only flights took priority in a time of online shopping, and commercial flights have still been able to carry passengers by implementing ways to reduce the spread such as masks and spaced out flights when needed most. In March 2020, air travel almost ceased and airlines took a large hit. I am not saying this situation was close to ideal, but I do believe that airlines will be able to adapt easier in the future and will continue to find ways to transport passengers while also being safe with the spread of disease. The normalcy of air travel has seemed to return and the issue with COVID was at it all happened so fast. In the future, I think that airlines will be more ready to respond to pandemic-related issues if anything ever occurs. Health and trade in the airlines have been balanced and only time will tell but airlines may be able to quickly handle similar issues more effectively in the future if needed.

SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.

Module 6 - Canvas Journal Assignment: Create a 4-6 paragraph Diversity Statement using the guidance provided in “Writing a Diversity Statement” (University of Nebraska, 2021).

Points Possible: 50

Due Date: 14 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text in the assignment

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success, Sample Diversity Statement

Student Submission: CH Fairchild

While I grew up in a predominantly white neighborhood, played a predominantly white sport, and am pursuing a career in a predominantly white career field, I found inspiration in the individuals around me who did not fit that mold. There are two particular people who have made a significant impact on my development and my attitude towards diversity. One individual was a sports coach, and the other, a flight instructor.

I grew up as a hockey player and for the better part of 20 years, I grew up playing with athletes who mostly looked like me. It was not until one of my last years that I had the opportunity to play for a brilliant hockey coach who was a minority. His brilliance as a hockey coach came from his love and passion for the game, and for his players. He had the mindset that he was not just coaching athletes, but he was coaching leaders. He taught invaluable lessons from his experiences of racial abuse and insensitivity which taught us to be leaders of character. I learned more in one year from that coach than in the previous 15 years of hockey.

During my flight training at Saint Louis University, I had the good fortune to work with an instructor who taught me more about diversity and inclusion than anyone else. He grew up in an underserved neighborhood, graduated at the top of his class in high school and university, and shows everyday what professionalism in aviation means. His story of how he got into aviation is a simple one, but it speaks volumes to the importance of diversity in our industry. He saw the movie "Red Tails," a story about the Tuskegee Airmen in WWII. While this may seem very unassuming, it highlighted a key aspect of diversity that is not always thought about. It took for him to see people who looked like him, other minorities, in order to convince himself that he could become a pilot. He told me that people from his town do not become pilots. It is, frankly, something no one ever considers. He saw that movie, and convinced himself that he could become a pilot. What I learned from this is that I never had to have that experience. I did not need to see a pilot with the same color skin as me in order to convince myself that it was an option.

These two very influential leaders inspire my commitment to diversity and inclusion in my life. Hearing stories of racial abuse on the ice rink helps me to find that inclusivity of others around me so that they never have to experience the things I heard about. Having a flight instructor who comes from a very different background has helped me to learn and reflect on how we as aviation professionals can build a more diverse, inclusive, and accessible environment for anyone who wishes to be a part it.

Performance Indicator Rubric

Course: ASCI 4450 Aviation Law

Course Instructor: BRUCE HOOVER

Semester Taught: FALL 2021

Number of Students in Course: 27 ((ON CAMPUS: 9. ONLINE: 18 (COVID protocols))

AVIATION SCIENCE CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Achieved both online and on campus: **Yes** Two case briefs assigned. Total possible: 168 points On campus 9 students 89% achieved a minimum 70% (117-plus points). Only one student failed to achieve a minimum 70% Online 18 students Total possible: 144 points (no oral presentation score) All 18 students achieved a minimum 70% on the case briefs.	Achieved both online and on campus: **Yes** Two case briefs assigned. On campus 9 students 89% of the 9 students scored at or above 70. Online 18 students Total possible: 144 points (no oral presentation score) 100% of the 18 online students scored above the minimum 70%

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Aviation operations encompasses multiple areas but must include airports operations, flight operations and administrative operations. Students in ASCI 4450, Aviation Law, were exposed to case law examples to inform them of their rights, responsibilities, and accountability in this industry.

Students were assigned one case brief from within one of the following general areas: criminal law, torts and contracts law, property law, or international air law.

Students were also assigned one case brief from within administrative law. This concentration of case studies was important since the vast majority of class members were involved in flight operations and interactions with the FAA, DOT, DOL, and NTSB were critical to acquiring knowledge to promote safe and professional operations.

ATTACHMENTS:

The lengthy list of cases from which the two case briefs were assigned
The major topic titles covered in the course illustrating inclusion of multiple aviation operations areas.
The outline of the content of each case brief. NOTE the requirement at the end of each case brief for the student to articulate the implications of the case to aviation professionals and its impact on aviation activities.
A guide to reading and understanding cases.
Case brief rubric (NOTE online students were not graded on oral presentation)

Note: Not all cases listed within the chapter topics will be examined. Some of the listed cases will be referenced during the class lectures for illustration of issues. ***New cases may be inserted as the course progresses***. Monitor for revisions. Some students with specializations may wish to examine cases relevant to their job or interests. Other cases deemed important, current, relevant or precedent-setting will be selected by the instructor.

TOPIC	TEXT	DISCUSSION CASES
Legal System Fundamentals Litigation process Trial court; jury verdict Jurisdiction Summary judgment	Chapter 1	*Newberger v. Pokrass* 33 Wis. 2d 569 (1967) Appeal of trial court *Lucia v. Teledyne* 173 F. Supp. 2d 1253 (2001) Federal jurisdiction *Sky-Med, Inc., DBA Pacific Int'l Skydiving Center v. FAA*, 9th Cir (2020) Subject matter jurisdiction in civil penalty case *FAA v. Joseph F. Corrao* NTSB EA-5448 (2009) Motion for summary judgment *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018) Theory of standing
The Constitution and Aviation Federalism Preemption Express / Implied / Field / "Complete" Takings Clause Airspace Aerial trespass Avigational easement Just compensation	Chapter 2	*Kent v. Dulles,* 357 U.S. 116 (1958) Right to travel *Northwest Airlines, Inc. v. Minnesota* 322 U.S. 2929 (1944) State vs. National Taxing Authority *Morales v. Trans World Airlines, Inc.* 504 U.S. 374 (1992) *Int'l Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992)

Local airspace regulation Supremacy Clause Savings Clause Airline Deregulation Act (ADA) Airline immunity (ATSA) Bill of Rights First Amendment Fourth Amendment; Privacy; UAVs		*American Airlines, Inc. v. Wolens.* 513 U.S. 219 (1995) *Air Transport Ass'n of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Casey v. Goulian* 273 F. Supp. 2d 136 (D. Mass. 2002) *Bailey v. Rocky Mountain Holdings, LLC* 136 F.Supp. 3d 1376 (S.D. Fla. 2015) *Guille v. Swan* 19 Johns. 381 (N.Y. Sup. Ct. 1822) *United States v. Causby et ux.* 328 U.S. 256 (1946) *City of Burbank et al. v. Lockheed Air Terminal, Inc. et al.* 411 U.S. 624 (1973) *Griggs v. County of Allegheny* 369 U.S. 84 (1962) *Singer v. City of Newton* 284 F. Supp. 3d 125 (D. Mass. 2017) *United States v. Long* 674 F.2d 848 (1982) Criminal drug and aviation laws *Northwest, Inc., et al. v. Ginsberg* 572 U.S.___ (2014) *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018)
Airline Passenger Rights Aviation consumer protection Discrimination Air Carrier Access Act NY pax bill of rights Contract claims Shrinking airline seats	N/A	*Stone v. Continental Airlines* 804 N.Y.S.2d 652 (N.Y.C. Civ. Ct. 2005) *Delta Air Lines, Inc. v. Barnard* 799 So. 2d 208 (Ala. Civ. 2001) *Buck v. American Airlines, Inc*. 476 F.3d 29 (1st Cir. 2007) *Air Transport Association of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Al-Watan v. American Airlines, Inc*. 658 F. Supp. 2d 816 (E.D. Mich. 2009) *Deterra v. America West Airlines, Inc.* 226 F. Supp. 2d 298 (D. Mass. 2002)

		American Airlines, Inc. v. Wolens. 513 U.S. 219 (1995) *Flyers Rights Education Fund, Inc. v. FAA* (2017) *Paralyzed Veterans of America et al. v. Department of Transportation* (2017)
Criminal Law Wire fraud False statements Endangering safety of aircraft Conspiracy Criminal conduct onboard Sexual assault Transportation of drugs Operating aircraft without airman certificate Operating commercial aircraft under the influence State criminal charges Laser pointers Assault onboard	Chapter 3	*U.S. v. Sabretech, Inc.* U.S. Court of Appeals 11th Circuit (ValueJet crash 1999) *United States v. Evinger* 919 F.2d 381 (1990) *USA v. Sasso* 695 F.3d 25 (2012). First Circuit *USA v. Smith* 756 F.3d 1070 (2014). Eighth Circuit *U.S. A. v. Aaron Jason Cope* (2012). Tenth Circuit *U.S.A. v. David Hans Arnston* (California; Alaska Airlines) *United States v. Brassington.* Platinum Jet Management and Darby Aviation; Michael and Paul Brassington and others (cases 2005-2011 FAA DOT NTSB U.S. Dist. Ct. NJ) *Garza v. Northwest Airlines, Inc*. 305 F. Supp. 2d 777 (2004) *Ward v. State* 374 A.2d 1118 (Md. 1977). Court of Appeals, Maryland
Administrative Law Administrative Procedure Act (APA) Congress Rulemaking Enforcement FAA sanctions Adjudication NTSB ALJ	Chapter 5 FAA Order 2150.3C and	*Air Transport Association of America v. DOT and FAA*, 900 F.2d 369 (1990). U.S. Court of Appeals for the District of Columbia A large number of administrative law/administrative agency cases will be examined. Most are appeals cases through the NTSB ALJs, appeals courts, etc. Sample topics: Challenges to government rulemaking Civil penalties (fines)

DOL ALJ Administrative & Legal Enforcement Actions Certificate action and civil penalties Airline Deregulation Act (ADA) Equal Access to Justice Act (EAJA) Pilot's Bill of Rights	FAR part 13	Drug & alcohol testing DUI/Motor vehicle actions FAA enforcement & sanctions DOT enforcement Flight instruction Mechanics Medical certificate actions (FAA) Pilot certificate actions (FAA) Passengers with disabilities (DOT rules) Air carrier sanctions Air ambulance issues Flying and the sharing economy (e.g. Uber)
Tort Law; Negligence; Wrongful Death; Liability Theories; Strict Liability; Damages; Tort Reform; FTCA Intentional torts False imprisonment Negligence Strict liability Wrongful death Educational malpractice Preemption revisited Liability vs. probable cause GARA Fed Tort Claims Act (FTCA)	Chapter 4	*McPherson v. Buick* Motor Co. (1961) *Goldberg v. Kollsman Instrument Corp. and American Airlines*, 12 N.Y.2d 432 (1963) *Crosby v. Cox Aircraft Co. of Washington* 746 P.2s 1198 (Wash. 1987) *Cleveland v. Piper* 890 F.2d 1540 (1989) *Goldberg v. Kollsman* 12 N.Y.2d 432 (1963) *McGee v. Cessna Aircraft Company*, 139 Cal.App.3d 179 (1983) *Brock v. United States* 18,246 (E.D. Va. 1977) *Brocklesby v. U.S.,* 767 F.2d 1288 (1985)

Interference with crew and co-passenger torts Refusal to transport Injury onboard Failure to warn		*Abdullah v. American Airlines, Inc.* 181 F.3d 363 (3d Cir. 1999) *Catherine Ray v. American Airlines* (2010) *Cross et ux v. Harris* 230 Ore. 398 (1962) *Steven Robert Hirtzinger v. Pinnacle Airlines, Inc*. (2008) *Sikkelee v. Precision Airmotive Corp.* 822 F.3d 680 (3d Cir. 2016) *Rubin v. United Air Lines, Inc.* 117 Cal. Rptr. 2d 109 (Cal. Ct. 2002) *United States v. Spellman* 243 F. Supp. 2d 285 (E.D. Pa. 2003) *Inmon v. Air tractor, Inc*. 74 So. 3d 534 (4th DCA 2011) GARA *Starks and Oswell v. American Airlines Inc.* Columbia Div. Dist Ct S. Carolina complaint (2018) *Glorvigen v. Cirrus Design Corp*., 796 N.W.2d 541 (2011) Training, Ed Malpractice, Duty of care
Property Law & Insurance Aircraft Aircraft transactions "As is, where is" Types of conveyance Airplane UAVs Aircraft ownership and registration Priority Drone registration Sales and use taxes Airport issues Noise Flight restrictions	Chapter 8	*Ickes v. Federal Aviation Administration* 299 F.3d 260 (3d Cir. 2002) *Huerta v. Pirker* 2014 WL 8095629, NTSB Order No. EA-5730 (2014) *Philko Aviation, Inc. v. Shacket*, 462 U.S. 406 (1983) *Godwin Aircraft, Inc. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992) *Koppie v. US of America and Ligon "Air",* 1 F.3d 651 (1993) *Dowell v. Beech Acceptance Corporation, Inc.,* 3 Cal.3d 544 (1970) *Aerowake Aviation, Inc. v. Clifford M. Winter, Jr. and Avemco Insurance Company,* 423 So.2d 165 (1982) *AVEMCO v. Auburn Flying Service,* US 8th Circuit Ct App, (2001) *Godwin Aircraft, In. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992)

Easements Zoning laws Insurance The Wright Amendment (Love Field)		*Taylor v. Huerta* 856 F.3d 1089 (D.C. Cir. 2017) *FAA v. Davis NTSB Order EA-4255 (1994)* *International Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992) *Goodspeed Airport, LLC v. East Haddam Inland Wetlands and Watercourses Common* 681 F. Supp. 2d 182 (D. Conn. 2010) *Example Supreme Court of Missouri cases 1987-2019* *U.S. v. Causby* *Griggs v. Allegheny County* *City of Burbank v. Lockheed Air Terminal, Inc.* 411 U.S. 624 (1973) *National Aviation v. City of Hayward* *Santa Monica Airport Association v. City of Santa Monica* *Northwest Airlines v. FAA* *Sneed v. County of Riverside* *Stagg v. City of Santa Monica* *British Airways Board v. Port Authority of NY and NJ* *Houston v. Federal Aviation Administration* 679 F.2d 1184 (5th Cir. 1982) *City of Phoenix v. FAA* (2018)
Commercial Law Form barring claims **Business Entities** Liabilities	Chapter 6	*Northwest Airlines, Inc. v. Crosetti Bros., Inc.* (1971) *Kissick v. Schmierer*, 816 P.2d 188 (1991)

	Chapter 7	
Labor Issues Employee/Employer Railway Labor Act (RLA) Major & minor disputes Dept. of Labor (DOL) AIR21 Whistleblowing Age Discrimination and Employment Act Americans with Disabilities Act Sexual harassment Gender, Age, Race, Nationality	Chapter 9	*Linam v. Murphy 360 Mo. 1140 (1950)* *Cooper v. Delta Air Lines, Inc.* 274 F. Supp. 781 (E.D. La. 1967) *Estell v. Barrickman (1978)* *Airline Pilots Ass'n, Int'l v. Eastern Air Lines.* 701 F. Supp. 865 (D.D.C. 1988) *Baker v. Federal Aviation Administration* 917 F.2d 318 (7th Cir. 1990) *Hawaiian Airlines, Inc. v. Norris* 512 U.S. 246 (1994) *Blakey v. Continental Airlines, Inc. (1997-2000)* *EEOC v. Exxon Mobil Corporation* *Avera v. United Air Lines* 465 Fed. Appx. 855 (2012) *Sheena Jones v. United Air Lines* DOL (2014) *Laverne B. Kelly-Lusk v. Delta Air Lines, Inc*. DOL (2014) *Don Douglas v. Skywest Airlines, Inc*. DOL (2009) *Estabrook v. FedEx* DOL (2017 & 2019) *Gerald Moses v. Dassault Falcon Je*t U.S. Court of Appeals for the Eighth Circuit (2018)
Security Issues Aircraft security in flight Airline pilot and TSA National security and the APA; Alien Flight Student Program	N/A	*United States of America v. Abdulmutallab*, U.S. District Court, E.D. Michigan, Southern Division, 16 September 2011 *Air Wisconsin Airlines Corp. v. Hoeper* 571 U.S. ___ (2014) *Jifry v. Federal Aviation Administration* 370 F.3d 1174 (D.C. Cir. 2014)
International Air Law	Chapter 10	*Air France v. Saks* 470 U.S. 392 (1985)

Public Private Preemption of local law "Accident" Mental or psychic injuries Emotional damages Bodily injury Criminalization; international flights		*Eastern Airlines, Inc. v. Floyd* 499 U.S. 530 (1991) *Olympic Airways v. Husain* 540 U.S. 644 (2004) *El-Al Israel Airlines Ltd. v. Tseng* *In re Korean Air Lines Disaster of September 1, 1983* *Wallace v. Korean Air* 214 F.3d 293 (2d Cir. 2000) *Aviation Professionals and the Threat of Criminal Liability-How do we maximize aviation safety?* 67 J. Air L. & Com. 875 (2002) Brazilian federal court trial and US general aviation pilots: mid-air 2006 *Doe v. Etihad* 870 F.3d 406 (6th Cir. 2017)

Fundamentals of U.S. Legal System					
Chapter 1					
Constitutional Law	Criminal Law	Administrative Law	Torts and Contracts	Property Law	International Air Law
Chapter 2 Chapter 8	Chapter 3	Chapter 5 Chapter 9	Chapter 4 Chapters 9	Chapter 8	Chapter 10
Federalism	Alcohol/Drugs	Administrative agencies	Torts/Negligence	Aircraft	Warsaw/Monteal
Preemption	Assault	Labor/Employment	Labor/Employment	Airports	Public/Private
Airsapce	Laser pointer	Airmen	Passenger rights	Airspace	Passenger rights
Airline Deregulation Act	Fraud		Accident Investigation	Insurance	Accident Investigation
Federal Aviation Act	Falsification				
Passenger rights	Federal vs State				
Privacy	Airport security				

AVIATION LAW

CASE BRIEFS

Oral presentations will be in front of the class.

The brief should occupy no more than one page. A copy of the brief will be given to the instructor for grading. See the Case Brief Rubric for details.

Oral presentation of no more than seven to ten minutes in length.

1. TITLE AND CITATION: Who is opposing whom? Case name; court name; date of decision; Reporter reference
2. VERY BRIEF HISTORY/BACKGROUND: What incident or issue lead up to this court case? What happened that got us here?
3. TOPIC/ISSUES/LEGAL ISSUES/RELEVANT LAW/RULE OF LAW: What was the overall issue(s) or legal question(s) before the court? What are the parties debating, and what are they asking the court to decide? Determine the relevant rules of law used to make its (the court's) decision. What rule did the court apply to the facts to determine the outcome?
4. FACTS/SUMMARY OF RELEVANT FACTS: Relationship of parties. Identify legally relevant facts of the case.
5. FINDING/FINAL DECISION/JUDGMENT: What was the opinion (holding) of the court? How did the court answer the issue? What was the final outcome of the case? This is usually found at the end of the opinion. This is a statement of law that is the court's answer to the issue. Where there separate concurring or dissenting opinions?
6. REASONING/RATIONALE: This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in which the court applied the rules or legal principles to the facts in the case. What was the chain of argument which led the judge(s) to rule as they did? Here the student should evaluate the significance of the case, its relationship to other cases, its place in history, and what it shows about the court, its members, its decision-making processes, or the impact it has on litigants, government, or society.
7. **APPLICATION: What are the implications to aviation professionals? How does this case impact activities in aviation**? It is critically important to know how this case is relevant to the students of this class.

Aviation Science
ASCI 4450 - Aviation Law
Saint Louis University

Reference: Chapter 1, Fundamentals of the U.S. Legal System, within the textbook

This paper is written to help aviation students, unfamiliar with law, understand how to read cases for the Aviation Law class. This paper explains opinions, how they are generally structured, and what you should look for when you read them. Chapter 1 of your course textbook provides a detailed guide to the litigation process. This class uses real cases to illustrate important concepts needed for understanding law in the field of aviation. These are real life disputes and you will learn about the law by picking up various pieces of it from what the cases tell you. Most cases in this course have taken place in National Transportation Safety Board (NTSB) Administrative Law Judges' (ALJ) hearings, federal and state appeals courts, and the U.S. Supreme Court. There will be an examination of civil and criminal cases.

Why do we have to read and understand cases?

Why are you required to examine these cases? After reading Chapter 1, Fundamentals of the U.S. Legal System, you learned that the U.S. has inherited from England a legal system that is largely judge-focused (although this class will study many legislative and administrative laws). The judges have made the law what it is through their written opinions. To understand that law, you need to study the actual decisions that the judges have written. In the U.S. system of government, judges can only announce the law when deciding real disputes: they cannot just go out and have a press conference and announce a set of legal rules. You need to look at the law the way that judges do and study actual cases and controversies, just like the judges. For example, a pilot has a beef with the Federal Aviation Administration's (FAA) action to suspend her pilot's certificate for several weeks and wishes to contest this with a lawyer in front of an NTSB administrative law judge in a formal court hearing. These real cases and disputes historically have been the primary source of law. Common law generally means law that has developed from adjudicated cases. It is sometimes called case law (Chapter 1, p. 4).

A second reason we will study these selected cases is that it can be hard for an aviation student to understand a particular Federal Aviation Regulation (FAR) or legal rule, and the merits as a matter of policy, without applying the rule in the real world. Some rules are a bit ambiguous, others are quite specific and easy to understand the spirit and intent behind them. You need to understand real-life applications of a rule before you can understand what the rule really means. These rules have both strengths and weaknesses. By studying cases, you can train your brains to think of specific factual situations that reveal the strengths and weaknesses of a particular aviation-related rule. Hopefully, as a future leader in this industry, you can take that skill to help develop better rules as a participant in aviation.

Category	Evaluator's Comments	1 – 5 Unacceptable or Poor	4 – 8 Marginal or Average	9 – 10 Good or Satisfactory or Well Done	11 – 12 Exemplary or Outstanding	Total pts. per category
CITATION Case name; court name; date of decision; page number; Reporter reference. NTSB Opinion and Order No., date served, Docket. DOL, ARB Case No., date		Does not cite the court case.	Cites the court case inaccurately or incompletely.	Cites the court case accurately and completely in most respects. Citation may be in an incorrect format, but with all information.	Cites the court case accurately and completely. Identifies the case name and citation in the correct format and with all information.	
BRIEF HISTORY / BACKGROUND / SUMMARY OF RELEVANT FACTS Briefly indicate the reasons for the lawsuit. What happened that got us here? Identify the relationship/status of the parties (Note: Do not merely refer to the parties as the plaintiff/defendant or appellant/appellee; be sure to also include more descriptive generic terms to identify the relationship/status at issue, e.g., buyer/seller, employer/employee (etc.) Identify legally relevant facts, that is, those facts that tend to prove or disprove an issue before the court. The relevant facts tell what happened before the parties entered the judicial system.		Presents few, if any, legally relevant facts of the case. Does not include all key facts and reasoning is absent or incoherent or is not in accord with the opinion.	Presents some legally relevant facts of the case. Does not include all key facts.	Presents the legally relevant facts of the case. Includes all key facts and the reasoning may contain weaknesses, but is basically cogent and accords with the opinion.	Presents and explains the legally relevant facts of the case. Includes all relevant facts and the reasoning logically connects the facts to the rule in accord with the opinion.	

Identify procedurally significant facts. You should set out (1) the cause of action (the law the plaintiff claimed was broken), (2) relief the plaintiff requested, (3) defenses, if any, the defendant raised.						
Category	**Evaluator's Comments**	**1 – 5 Unacceptable or Poor**	**4 – 8 Marginal or Average**	**9 – 10 Good or Satisfactory or Well Done**	**11 – 12 Exemplary or Outstanding**	**Total pts. per category**
ISSUES / LEGAL ISSUES/ ***LEGAL QUESTION / LEGAL PRINCIPLE / RULE / RELEVANT LAW / RULE OF LAW*** The legal question(s). Concisely phrase the essential issue before the court. A substantive statement of the issue consists of the point of law in dispute and the key facts of the case relating to that point of law in dispute (legally relevant facts). Procedural issue: What is the appealing party claiming the lower court did wrong (e.g., ruling on evidence, jury instructions, granting of summary judgment, etc.)? What are the parties debating, and what are they asking the court to decide?		Incorrect issue is identified. Incorrect rule is identified. Incorrect or irrelevant rules of law were stated.	Issue is not completely identified. Rule is not completely identified or is irrelevant.	Issue correctly identified, but may contain extraneous information and is not stated in the form of a question. Identifies and describes the topic and issue(s) of the case. Relevant rule correctly identified, but may contain extraneous info and is not in the form of a statement.	Issue correctly identified and is stated in the form of a question. Identifies and describes in detail the topic and issue(s) of the case. Relevant rule is correctly identified in detail and is in the form of a statement.	

Determine the relevant rules of law used to make the court's decision. What rule did the court apply to the facts to determine the outcome? This is the rule of law that the court applies to determine the substantive rights of the parties. The rule of law could derive from a statute, case rule, regulation, or may be a synthesis of prior holdings in similar cases (common law). The rule of legal principle may be expressly stated in the opinion or it may be implied.						
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
DECISION / FINDINGS / JUDGMENT This is the court's final decision as to the rights of the parties, the court's response to a party's request for relief. Generally, the appellate court will either affirm, reverse, or reverse with instructions. The judgment is usually found at the end of the opinion. What was the outcome of the case? What was the opinion (holding) of the court? Was there a dissent?		Fails to answer the issue question. Provides an incomplete summary or omits a summary of the court's decision. Outcome of the case is not addressed.	Fails to answer the issue question. Provides a partial summary of the court's decision. Outcome of the case is incorrectly identified.	Correctly answers the issue question. Summarizes the trial court's decision and, if applicable, appellate court's decision.	Correctly answers the issue question. Summarizes comprehensively the trial court's decision and, if applicable, appellate court's decision.	
		Merely repeats what the court said in analyzing the facts.	Merely repeats what the court said in analyzing the facts.	Accurately explains the reason(s) for the decision.	Accurately and fully explains the reason(s) for the decision in detail.	

REASONING / ANALYSIS / RATIONALE This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in which the court applied the rules / legal principles to the particular facts in the case to reach its decision. This includes syllogistic application of the rules as well as policy arguments the court used to justify its holding.		Incompletely explains the reason(s) for the decision.	Partially explains the reason(s) for the decision.	Fails to summarize the court's analysis in own words.	Summarizes the court's rationale in own words.	
APPLICATION / IMPLICATIONS FOR AVIATION PROFESSIONALS For this course, this is an important section. How does this opinion impact {us} aviation professionals? What are the implications to aviation professionals? How may we apply this case to our activities in aviation? What are the political, economic or social impacts of this decision going forward?		Incompletely / Incorrectly assesses the implication(s) of the decision and its importance for aviation professionals. Error.	Somewhat assesses the implication(s) of the decision and its importance for aviation professionals. Some error.	Adequately assesses the implication(s) of the decision and its importance for aviation professionals. No error.	Thoroughly assesses the implication(s) of the decision and its importance for aviation professionals. No error.	
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
ORAL PRESENTATION Completeness: Detail, depth, appropriate length, adequate background information Grammar/Mechanics: Correct grammar and usage		Presentation does not provide adequate depth; key details are omitted or undeveloped; presentation is too short or too long Presentation contains several major grammar/usage errors; sentences are long,	Additional depth needed in places; important information omitted or not fully developed; presentation is too short or too long Presentation may contain some grammar or sentence errors; sentences may contain jargon or are	Presentation provides adequate depth; few needed details are omitted; major ideas adequately developed; presentation is within specified length Presentation has no serious grammar errors; sentences are mostly jargon-free,	Presentation provides good depth and detail; ideas well developed; facts have adequate background; presentation is within specified length Presentation contains no grammar errors; sentences are free of jargon, complete and easy to understand	

Delivery: Volume, pace, diction, appearance, energy, posture Interaction: Eyes and Q & A		incomplete or contain excessive jargon Low volume or energy; pace too slow or fast; poor diction; distracting gestures or posture; unprofessional appearance; visual aids poorly used Little or no eye contact with audience; poor listening skills; uneasiness or inability to answer audience questions	too long or hard to follow More volume/energy needed at times; pace too slow or fast; some distracting gestures or posture; adequate appearance; visual aids could be improved Additional eye contact needed at times; better listening skills needed; some difficulty answering audience questions	complete and understandable Adequate volume and energy; generally good pace and diction; few or no distracting gestures; professional appearance; visual aids used adequately Fairly good eye contact with audience; displays ability to listen; provides adequate answers to audience questions	Good volume and energy; proper pace and diction; avoidance of distracting gestures; professional appearance; visual aids used effectively Good eye contact with audience; excellent listening skills; answers audience questions with authority and accuracy		d **Course**
Total Points: Maximum possible 84							

Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations from the instructor:

For fall 2022 course session, expand the listing of cases which illustrate airport operations and administration.
For fall 2022 course session, consider reducing the emphasis on administrative law cases as the department is seeing an increasing number of students majoring in non-professional pilot emphasis areas. They do not need an intense study of administrative law cases centered around pilot and medical certifications and flight operations.

**Attach description of assignment used for assessment and samples of student work.*

SAMPLE STUDENT CASE BRIEFS

Don Douglas v. SkyWest Airlines, Inc. DOL (2009)

HISTORY/BACKGROUND: The complainant of this case, Don Douglas, is a veteran pilot for SkyWest Airlines from Salt Lake City (SLC). After a week of flying five continuous 12-hour shifts to Jackson Hole (JAC), the individual had a surgical procedure completed on March 18, 2005. As a result of the operation, Douglas took painkilling medication for the following two days before returning to work on the following Monday. On Wednesday, March 23, 2005, the complainant met with the first officer (Brewer) who complained of a lack of sleep and flight attendant who had strep throat. The departure for JAC was initially delayed due to snowstorms, but worsening conditions after departing resulted in a diversion back to SLC around midnight. The same crew was scheduled a few hours later for a 4:00am departure back to Jackson Hole morning. Douglas claimed that he and his crew would not be capable of completing that flight after such little rest. The flight was later cancelled after the complainant called crew scheduling to report to the System Chief Jim Breeze that the crew would not complete the flight safely.

Breeze informed the Regional Chief Pilot Tony Fizer who then called Breeze about the decision. Fizer told the complainant to complete an "Irregular Operations Report" and imposed disciplinary action of a week's suspension and counseling statement in his record the following day. Douglas appealed the decision to SkyWest's review board, resulting in the board reversing the suspension and counseling statement. Fizer replaced the statement with a "verbal warning" in stating that each crew member will make determination for fitness of flight and that Douglas would not cause a "loss of revenue" in performing his duties.

In the following months, explicit graffiti was posted in the crew lounge in response to Fizer's actions. After gathering a report from a handwriting analyst, Fizer interrogated Douglas trying to pressure him to admit guilt for the graffiti. Douglas denied the accusations with Fizer stating that if he was later to be found guilty of the incident he would be fired. Douglas was then suspended during this investigation. Further samples of only the complainant's handwriting were examined by other analysts. On August 31, 2005, Douglas was fired by Fizer for "dishonesty" and would not be eligible for rehire due to this involuntary termination. The reasoning for this termination was due to the results of the graffiti investigation. Even though Douglas appealed to the internal review board of SkyWest, the board ultimately upheld the termination.

In the following months, Douglas filed a complaint with the Labor's Occupational Safety and Health Administration (OSHA) and requested an ALJ hearing after the case was dismissed from OSHA. The ALJ concluded that SkyWest violated the employee protection provision of AIR 21 and that he should be reinstated to his formal position with seniority. SkyWest filed a motion to understand its appeal rights, with the ALJ issuing an order recommending an award of back pay and other expenses. Both parties conclusively filed appeals.

TOPIC/ISSUES/LEGAL ISSUES: In *Don Douglas v. SkyWest Airlines, Inc.*, the main topic at hand relates to the firing of the complainant for his "dishonesty" which relates back to his determination of unfitness for flight on the morning of March 23, 2005. Fizer claimed to have fired Douglas due to the results of the handwriting examinations conducted during the graffiti investigation. However, the issue at hand falls under an AIR 21 provision relating to employee protection. By use of a preponderance of the evidence, Douglas must prove that he engaged in a protected activity, that SkyWest Airlines knew that he engaged in the said activity, that the air carrier took adverse actions against him, and that the protected activity was a factor contributing to the personnel action.

RELEVANT LAW/RULE OF LAW: The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, also known as "AIR 21" (P.L. 106-181) was signed into law on April 5, 2000 as a measure to improve airline safety. Under Sec. 519, it is quoted that "No air carrier or contractor or subcontractor of an air carrier may discharge an employee or otherwise discriminate against an employee with respect to compensation, terms, conditions, or privileges of employment because the employee…provided…to the employer or Federal Government information relating to any violation or alleged violation of any order, regulation, or standard of the Federal Aviation Administration or any other provision of Federal law relating to air carrier safety under this subtitle or any other law of the United States" (AIR 21, 2000). In short, an air carrier such as SkyWest is not allowed to fire an employee for a protected activity. A protected activity under AIR 21 is when an employee produces information relating to an alleged violation of a FAA order/regulation related to the safety of the air carrier.

FINDING/FINAL DECISION/JUDGEMENT: The U.S. Department of Labor (DOL) Administrative Review Board (ARB) reviewed the findings of this case under the substantial evidence standard, meaning that evidence that is deemed substantial will be conclusive in findings of fact. With regard to determining the final decision in *Don Douglas v. SkyWest Airlines, Inc.*, the ARB reviewed the case *de novo*, meaning without reference to the previous court's decision. The court determined after reviewing the substantial evidence presented in the case that SkyWest violated AIR 21. This was due to the fact that Douglas's protected activity was a factor in his dismissal from the air carrier. With this notion, the ARB affirms the ALJ's recommended decision in reinstatement, back pay (with correction to include pay for September/October 2005), and attorney's fees being covered.

REASONING/RATIONALE: After examining the facts of the case, the court determined that there was substantial evidence to support the previous ALJ's findings that Douglas would have violated safety regulations if he flew on March 23. This was driven by credible testimonies from the complainant that he was experiencing exhaustion from multiple factors, which caused him to declare himself unfit to fly per his training on the matter. With this protective action, the court concluded that Fizer's adverse actions in firing Douglas was made in part due to his decision not to fly. Also, it was evidenced that Fizer's accusation on Douglas badmouthing him was "baseless." For the graffiti, Fizer targeted the complainant as evidenced through misinformation of the sequence of events and facts during the testimony. The court determined that Douglas had ultimately no motivation to write the graffiti. With these facts, the court affirmed the ALJ's findings that the protected activity of Douglas led to his firing by Fizer. The ARB further agreed that SkyWest did not prove that it would not fire Douglas even without the protected activity due to the handling of punishments between the complainant and Brewer. Finally, the court agreed on reinstatement, pack pay, and attorney's fees to be paid with the addition of entitlement pay for the months of September/October in 2005. The reimbursement coincides with a successful AIR 21 complaint being successful in court.

APPLICATION: As professional pilots entering the space most likely through the regional airline sector, it is important to know your rights under AIR 21. If you feel that you are unfit to fly, do not hesitate to document and report to your superiors to ensure safety and compliance with regulations. If there is resistance from your superiors, know that you are protected from unlawful firing by use of AIR 21.

AVEMCO v. Auburn Flying Service, US 8th Circuit Ct App, (2001)

HISTORY/BACKGROUND. Fred Farington was a pilot who flew Aero Commander Lark aircraft and was the owner of Auburn Flying Service based in Auburn, Nebraska. On October 5, 1997, there was a "fly in" event in which people could come to the Auburn Municipal Airport and pay Farington ten dollars to fly around the Auburn, Nebraska area for a short ten-to-fifteen-minute flight. On his ninth flight of the day, Farington attempted to land but struck a semi tractor-trailer.

As a result of this collision, all three of Farringdon's passengers passed away while Farington was rendered severely injured. Four months later, Farington eventually succumbed to his injuries and passed away.

Farington's aircraft was insured by AVEMCO Insurance Company, an aviation insurance company based in the state of Maryland. The coverage he had was under a policy that did not cover commercial operations. According to law.justia.com, "'Commercial purpose' means any use of your insured aircraft for which an insured person receives, or intends to receive, money or other benefits. It does not include: the equal sharing among occupants of the operating costs of a flight." Based on this, AVEMCO refused to cover the flying service for the accident since it did not fill the qualifications.

TOPIC/ISSUE/LEGAL ISSUES. From the perspective of Auburn Flying Service, they believed that they were entitled to AVEMCO covering the cost of the accident. This is because of the exemption stated in their insurance policy that stated commercial service does not apply if passengers share equal operating costs of the flight. They argued that when passengers paid the ten dollars, they were contributing to the splitting of operating costs. Therefore, the "fly in" event did not count as commercial service and they were entitled to coverage.

From the perspective of AVEMCO, they argue that Auburn Flying Service was not eligible for coverage since the "fly in" was indeed a commercial service. While passengers did pay Farington for their rides, ten dollars per passenger is not sufficient to cover the costs of a flight. Had Farington required the passengers to pay a higher price to evenly split the cost of operations, Auburn Flying Service would have been covered by the accident.

RELEVENT LAW/RULE OF LAW. This case was handled based on the laws in the state of Nebraska. For Auburn Flying Service, they state that their insurance contract was ambiguous and subject to debate on whether the accident was considered commercial service. To argue this, Auburn Flying Company used the case of *Farm Bureau Ins. Co. v. Bierschenk,* 548 N.W. 2d 322, 324 (Neb. 1996). This states that an insurance contract must be unambiguous, and the language stated in the contracts must not be able to be manipulated to create ambiguities. If the court views that an ambiguity can be interpreted by the receiver of the insurance in a certain way, they will rule it as ambiguous.

In terms of what is considered ambiguous, the case of *Plambeck v. Union Pac. R.R. Co.,* 509 N.W. 2d 17, 20 (Neb. 1993). This states that "[a] document is ambiguous if a word, phrase, or provision of the document has, or is susceptible of, at least two reasonable but conflicting interpretations." According to the Auburn Flying Service, they believe that the exception of the commercial service aspect of their contract is

ambiguous and can be argued for AVEMCO to cover them. However, AVEMCO states that their contract is clear in defining what “commercial service” is.

FINDINGS/FINAL DECISION. The U.S. Court of Appeals for the Eighth Circuit ruled in the favor of AVEMCO. This is because the court found that the insurance policy was not ambiguous and Auburn Flying Service’s accident was not covered by their policy. One of the reasons this decision was made was by the formal definition of the phrase “commercial purpose”. Commercial purpose is when a party intends to receive money or other forms of compensation. It was clear that Farington received the money from the passengers as a fee rather than to split the cost of the aircraft operations. Had he intended to split the cost, he would have charged much more than ten dollars per person. The court concluded that the passengers did not have the intention of splitting the cost of flight operations but instead agreed to just pay a fee for a short ten-to-fifteen-minute flight.

APPLICATION. This is an important case to study because it shows how different parties can interpret written contracts differently. For Auburn Flying Service, they believe that the accident that occurred in 1997 was covered by the exception written in their contract as well as the fact that the contract was ambiguous. However, AVEMCO argued that their contract was clear in what it considered commercial operations and that Farington was indeed engaging in commercial services at the time of the accident.

Language is something that can be interpreted in a variety of ways. While it can appear clear to some, it can also be rendered in a way that portrays a different meaning. However, when looking at what the contract states, it is clear what the insurance company defines commercial services and how Farington’s actions on the day of the accident did not fall under the exception of splitting the cost of flying.

Performance Indicator Rubric

Course: ASCI 4650 Economics of Air Transportation Course Instructor: _____BRUCE HOOVER_____

Semester Taught: _____SPRING 2022_____ Number of Students in Course: ____13____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	**Airline (simulation) Management Audit Presentation.** A management audit report A management audit accompanying slides 100% of the class achieved a 70% or higher BudJet Airlines: Three students 94 North&Simple Airlines: Three students 87 Commonwealth Billiken Air: Four students 81 Stratus Airlines: Three students 75	Airline (simulation) Management Audit Presentation. Benchmark achieved: Y**es** 100% of the class scored a minimum 70%. The 80% benchmark was met as all 13 enrolled students scored above the 70% minimum.
SLO 5: Apply knowledge of business principles in aviation-related areas.	**Online Airline Simulation decisions** 77% of the total enrolled students achieved a minimum of 70% or higher. Only one airline team of three students was unable to achieve a final score of at least 70%. BudJet Airlines: 842 (84.18%) Stratus Jet Airlines: 756.1 (75.6%) Commonwealth Billiken Air: 734.7 (73.5%) Plane&Simple Air: 662 (66%)	Benchmark achieved: **No** 77% of the enrolled students achieved the benchmark. Three of the 13 enrolled students were unable to meet the benchmark.

EVIDENCE

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

From the syllabus: Your airline team will make a brief presentation to the ASCI 4650 class and any guests who may be in attendance. You will conduct the audit from the perspective of an **outside consultant firm** your airline has contracted and you must be objective in your report findings. **Objectivity and honesty**—be brutally frank—are hallmarks of a good external audit. Any attempt to "whitewash" or omit critical points will be dealt with unkindly by the instructor. ***There are several methods of approaching this assignment and your team is encouraged to be creative. Keep in mind you are part of a consulting firm. Your report may follow any creative format appropriate for an outside consulting firm report. Any records, charts, graphs, etc., are welcome if they enhance the presentation.*** Handouts to class members are appropriate if they, too, enhance the presentation.

The Management Audit Content Guide provided the airline simulation teams with guidance on suggested content reflecting the economic principles and characteristics of the airline industry.

2022-Management Audit Content Guide.d

The four airline teams prepared and made an oral presentation of their airline management decisions and the results of those operational, economic and financial decisions during the course of the semester.

Example: North&Simple Airlines audit report:

North&Simple Airlines Audit Report-

North&Simple Audit Slides-final.pdf

Example: BudJet Airlines audit report

BudJet Airways Mgmt Audit Report-final.pdf

BudJet Airways Audit Slides-final.pdf

The oral and written presentations were scored by four independent members of the department faculty.

Example: Budget Airlines team presentation rubric results of four faculty member-evaluators:

Economics: It is the social science of how people (or organizations) choose to allocate their scare resources (money, people, equipment, time, etc.). The science that studies how people choose is indispensable if you really want to understand human beings both as individuals and as members of larger organizations. It is a methodology for analyzing situations where companies (human beings) have to make choices from limited options (and resources).					
Airline Name: **Students' last names:** **Attributes to be measured:**	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
PRESENTATION ORGANIZATION & MECHANICS	Presentation lacked organization & had little evidence of preparation. Spelling (visual) and/or grammatical (oral) errors; 4 or more. No sequence of information.	There were minimal signs of organization or preparation. Presentation has up to 3 **errors**; misspellings and/or grammatical. Difficult to follow; team members jump around information.	The presentation had organizing ideas but could have been much stronger with better preparation. Presentation has no more than 2 misspellings and/or grammatical **errors**. **Logical sequence**; somewhat interesting; can be followed.	The presentation was **well organized, well prepared &** easy to follow. No misspellings (visual) or grammatical (oral) errors. Presented in logical, interesting sequence. Very easy to follow.	11 10 9 10

This is an internal management audit of the airline.					
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
TEAM PRESENTATION DELIVERY Management Audit	Knowledge level of the audience has not been considered. Audience is not engaged. Team is not professional in appearance. Team members not confident & demonstrated little evidence of planning prior to presentation. No eye contact; no descriptive gestures; tension &	Opportunities for adjusting the presentation level for the audience have been missed. Audience's attention is weak. Team members lack in professional appearance. Presenters were not consistent with the level of confidence/preparedness, but had one or two strong moments.	Audience's knowledge level & interests have been considered. Attention has been maintained. Team appearance is acceptable under most circumstances. Team members were occasionally confident with their presentation; however, the presentation was not as engaging as it could have been.	Audience interests are piqued & well considered. Audience is drawn & engaged. Team members are very professional in appearance. Members were all very confident in delivery & excellent in engaging audience. Preparation is very evident.	11 10 10 11

	nervousness is obvious. Team shows little interest in conveying information to others.	Minimal eye contact while reading mostly from notes. Very little movement or descriptive gestures. Mild tension. Transitions are disorganized.	Consistent use of direct eye contact, but still returns to notes. Made movements or gestures that enhance. Minor mistakes, but quickly recovers from them. Little or no tension. Team members transitions fairly organized.	Direct eye contact; seldom looks at notes; fluid movements; relaxed, self-confident with no mistakes. Team members transitions organized & seamless.	
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
EVIDENCE OF TEAMWORK / EFFORT Management Audit	Little evidence of preparation. It seems as though not all members worked on the presentation.	Little or very weak research effort. Some preparation is evident. Seems as though certain people did not do as much work as others.	Team demonstrated good research. Preparation & pre-rehearsal was only adequate. Seems like everyone did some work, but some team members	Excellent research. Well prepared & rehearsed. Evident that all team members contributed equally.	10 11 10 11

	Transitions between team members are not smooth.		are carrying the presentation.	Smooth transitions between team members.	
OVERALL CONTENT & APPLICATION OF KNOWLEDGE:	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
Understand and apply economic concepts and theories to strategic management of an airline Expectation: **Team should understand and apply economic concepts and theories in a clear and effective manner in the audit report. Explain core economic terms, concepts, and theories**	Team fails to identify any **economic concepts and theories** in the audit report. No valuable material.	Superficial approach to **economic concepts & theories** in the audit report. Irrelevant or inaccurate concepts, terms, or theories. As a whole, content was lacking.	Team had good analysis with good supporting **economic concepts & theories in the audit report**. Good quantity & quality of economic information. Good amount of valuable material.	Team demonstrated in-depth analysis with strong supporting **economic concepts & theories**. Exceptional amount of valuable material.	10 10 10 10
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points**

					per attribute
Think critically and solve problems Audit is honest and objective Expectation: **Team should identify the questions at hand, think critically and solves problems in an illuminating way.** **Objectivity and honesty in the audit**	Problems are not well identified. Identifies inappropriate main issues; describes issues inaccurately; loses focus on given point. Fails to assess conclusion, raises no appropriate additional questions, fails to place the argument within a relevant larger context. Attempted to "whitewash" or omit critical points in the audit.	Team fails to define the problems adequately. Some ambiguity in description of issues. Indicates weak but relevant reflection on strength & implications of conclusions. Audit was objective and honest.	Team adequately defines the problems. Selects component points; does not recognize some priorities among details in relation to given question. Audit was objective and frank	Team states the problems clearly & identifies underlying issues. Describes it accurately; selects key component points; recognizes priorities; picks up unstated implications. Appropriately assesses conclusions in terms of reliability and need for further evidence, assesses implications of the conclusion within a larger context. Audit was objective, frank and honest	11 11 11 11

	1 – 3 Not Acceptable	4 – 6 Below Expectations	7 – 9 Meets Expectations	10 – 11 Exceeds Expectations	Total points per attribute
RESPONSE TO QUESTIONS	Team cannot answer expected questions.	Team has difficulty answering questions beyond a rudimentary level.	Team has sufficient knowledge of the material to answer questions.	Team demonstrates full knowledge of the material & can explain and even elaborate on questions.	10 10 10 10
Total Points: Maximum possible 66 66 x 4 evaluators = 264 Total points & letter grade equivalent: 59 – 66: A 53 – 58: B 46 – 52: C xx – 45: D					**TOTAL POINTS** **63** **62** **60** **63** **248/264** **= 94 (A)**
Example questions from reviewers					

What economic principles, economic characteristics of airlines, or economic issues stood out for you as a result of participating in this course and the airline simulation? What economic concepts or theories of the airline industry are most pronounced after taking this course?

If your airline had the opportunity to "start all over," what would your team do differently?

Did your airline's team make decisions (each quarter) on a rational, economic basis or did the team often just take a "stab in the dark" approach?

Of all the performance and operations metrics, which ones were most important to you and why?

Regarding the operating performance model (traffic/yield/output/unit cost = operating profit/loss): where did your airline succeed and where did it fail?

What unexpected risks or set-backs did the airline face during the 10 quarters (2.5 years)?

Did your airline team maintain any records or data worksheets as you progressed in the simulation?

How much total money did your airline spend on demand forecasts, market research information, information on other air carriers' fares, etc.?

Simulation Teamwork. What are your thoughts on teamwork during the simulation? Did all team members contribute their fair share of the workload and was the quality of the product produced by the team members of that expected?

SLO 5: Apply

knowledge of business principles in aviation-related areas.

Each student will participate in an airline simulation where each member is part of an executive team of a small airline firm. The simulation provider will contact you to register and practice round before the real simulation starts. Each team will meet to **formulate their firm level strategy** and submit ongoing decisions concerning critical issues facing the firm. Decisions are due online on the Airline Simulation site on a weekly basis by each team leader. Failure to submit a decision will have severe market consequences on your airline's performance, and as a result, on your simulation project grade.

The airline simulation activities are integrated into the classroom learning experience. The group project will require collaborative work and everyone is expected to carry an equal share of the work load within each airline team. The group project will be a better product if everyone shares their different knowledge and experiences.

Airline Simulation – Learning Objectives

Experience strategy formulation and implementation in a dynamic (ever-changing and competitive) environment
Learn about group and organizational processes (team work)
Understand the financial implications of air carrier operational, marketing and management decisions
Improve decision-making skills under ambiguous circumstances and time pressure
Experience the fun and challenges of running a small air carrier business

You will have to make weekly decisions and submit these decisions on the Airline Interpretive Simulations website. Each airline team will be graded on the quarterly (each decision period) performance measures for that period. For example, cumulative net income of the airline may be weighted as 10% of the quarterly score. Depending on how well the airline is managed by the team, these quarterly scores will vary from 60 to 90 points of a possible 100 points on the performance measures (reliability, yield, load factor, social performance, etc.).

This is a competitive simulation based on teamwork, analysis of data and good business decisions for the strategies you have decided upon for your particular airline. There will be only one airline (team) winner at the end of the simulation.

This spreadsheet contains the decision-making schedule.

Decisions & Incidents Student Sched 2022.xl

This spreadsheet is a track of the four airlines progress through the semester.

2022-airline sim quarterly results.xlsx

This spreadsheet provides the final operational, economic, and financial metrics results of the four airline management teams.

2022-final results & metrics.xlsx

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations by the instructor:

Reduce the final grade weight of the management audit oral and written presentation from 30 percent to a lower value. This activity was the most-heavily weighted in the syllabus.
Consider a different textbook. Students expressed some frustration with the textbook's lack of flow, editing errors and some chapters at a graduate level.
Give consideration as to how the "airline management teams" are to be constructed. This spring 2022 session involved a random drawing of numbers to see what students would be on each (of four) team. Is it better to let the students form their management team? Would this process result in achieving all the assessment values such as the benchmark?

**Attach description of assignment used for assessment and samples of student work.*

See attachments above.

Aviation Management – Data collected in support of Student Learning Outcome Goals and SLO 1

Performance Indicator Rubric

Course: ASCI 4050 Human Factors

Course Instructor: Terrence Kelly

Semester Taught: Fall 2021

Number of Students in Course: *35

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester.

ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	On Ground Cohort *Test #1: 82.5%* Human performance and	*Online Cohort* *Test #1: 91.9%* Human performance and	On Ground Cohort Test #1: Yes Test #2: Yes	Online Cohort Test #1: Yes Test #2: Yes

	individual differences *Test#2: 88.1%* Altitude physiology *Test #3: 81.2 %* Vision and visual illusions *Final Examination: 84.0%* Hearing, the vestibular system, and communication.	individual differences *Test#2: 82.7%* Altitude physiology *Test #3: 92.5 %* Vision and visual illusions *Final Examination: 88.9%* Hearing, the vestibular system, and communication	Test #3: Yes Final Examination: Yes	Test #3: Yes Final Examination: Yes
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	<u>On Ground Cohort</u> Paper Avg: 92.6% PowerPoint Avg: 92.7% Presentation Avg: 90.1%	<u>Online Cohort</u> Paper Avg: 91.3% PowerPoint Avg: 90.0 % Presentation Avg: 91.3%	<u>On Ground Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes	<u>Online Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes
SLO 5: Apply knowledge of business principles in aviation-related areas.	Not measured – see recommendation below		Not measured – see recommendation below	

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 3 – Effective oral and written communication skills are a prerequisite to safe operations. Oral and written communication assessment was conducted using a paper and presentation (including a PowerPoint presentation) surrounding an aviation accident involving human factors. This assessment was made using three measures. The paper average is the score based on the group report submission discussing a human factors accident (see Paper Average in SLO 3 table above). The PowerPoint average is the score based on the overall quality of the PowerPoint presentation submitted by each group (see PowerPoint Average in SLO 3 table above). The Presentation average is the score based on oral presentation made by each group in front of the class (see Presentation Average in SLO 3 table above). Although the SLO 3 assessment was positive, one recommendation arises based on the extremely limited amount of time I provided this semester covering the important topic of communication. Although I can include communications content in the Team Resource Management course (a follow-on course related to human factors), I plan to discuss some deemphasis on altitude physiology in order to expand on topics involved in communication.

SLO 5 – The application of business principles in aviation-related areas is somewhat out-of-place in a course surrounding Human Factors. Although Human Factors is rooted in safe operations and safe operations are a necessary component for the operation of a business, the connection between Human Factors and business principles is indirect. A review of some the available textbooks on Human Factors suggests a similar observation. Consequently, my recommendation is to remove SLO 5 as something to assess in Human Factors.

Performance Indicator Rubric

Course: ASCI 4050 Human Factors (-01/-10) Course Instructor: Terrence Kelly

Semester Taught: Fall 2021 Number of Students in Course: *35/11

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester. ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	<u>On Ground Cohort</u> Test #1: 82.5% Human performance and individual differences	<u>Online Cohort</u> Test #1: 91.9% Human performance and individual differences	<u>On Ground Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes	<u>Online Cohort</u> Test #1: Yes

	Test#2: 88.1% Altitude physiology Test #3: 81.2 % Vision and visual illusions Final Examination: 84.0% Hearing, the vestibular system, and communication	Test#2: 82.7% Altitude physiology Test #3: 92.5 % Vision and visual illusions Final Examination: 88.9% Hearing, the vestibular system, and communication	Final Examination: Yes	Test #2: Yes Test #3: Yes Final Examination: Yes
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	<u>On Ground Cohort</u> Test #1: 82.5% Human performance and individual differences	<u>Online Cohort</u> Test #1: 91.9% Human performance and individual differences	<u>On Ground Cohort</u> Test #1: Yes	<u>Online Cohort</u> Test #1: Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	<u>On Ground Cohort</u> Paper Avg: 92.6% Presentation Avg: 90.1% Peer Assessment: Generally positive	<u>Online Cohort</u> Paper Avg: 92.7% Presentation Avg: 90.5% Peer Assessment: Generally positive	<u>On Ground Cohort</u> Paper: Yes Presentation: Yes Peer assessment: Qualitative measure	<u>Online Cohort</u> Paper: Yes Presentation: Yes Peer assessment: Qualitative measure

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is

focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 2 – The first few weeks of Human Factors (ASCI 4050) involves the discussion of the historical underpinnings of human capability and human limitations. From the onset of research on human performance in aviation to the contemporary use of human factors cockpit measurement through Line Operations Safety Audits (LOSA) to inform contemporary training paradigm (Advanced Quality Programs (AQP)). As mentioned previously, I did not identify a specific way of assessing SLO 2. That said, Test #1 is an ideal fit as it corresponds to the past, present, and future of human factors in aviation. That said, one recommendation I plan to apply is to identify a more-comprehensive assessment measure for SLO 2 that speaks more specifically and explicitly to a timeline associated with the evolution of human factors.

SLO 3 – The paper and presentation exercise stressed the importance of diversity in team operations, leadership of diverse teams and generating consensus on teams. The results were generally quite positive as evidenced by the paper and presentation score detailed above. Additionally, each team member was asked to rate the performance of other team members. Generally speaking, the feedback provided by the peer assessment was positive suggesting, with a few exceptions, teams were generally cohesive and worked well together. Although integrity and lifelong learning were touched on, I did not assess the effectiveness of those discussions. In terms of recommendations, it is clear I need to dedicate more class time to discussion of the importance of lifelong learning. Additionally, I need to develop a formal means of assessing the impact of discussions surrounding integrity and lifelong learning.

Examples

Human Factors Test #1

ASCI 4050 Human Factors Test #1 Fall 2021

Please indicate the best answer on the answer sheet provided.

What country was not involved in the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

Where did the Pan Am flight originate? (Tenerife accident)

New York.

Los Angeles.

Chicago.

Miami.

Which crew involved in the Tenerife accident had more total flying experience/time?

Pan Am.

KLM.

TWA.

Northwest.

Which captain had more 747 experience/flight time?

The Pan Am captain.

The KLM captain.

The TWA captain.

The Northwest captain.

Which duty-time regulations were considered for more draconian at the time of the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

The captains of both accident aircraft mentioned weather as an issue prior to the Tenerife accident.

True.

False.

The _____ aircraft has an ongoing hydraulic leak that was serviced in Tenerife prior to the accident.

Pan Am

KLM.

TWA.

Northwest.

Select the following condition that is best described as a Hardware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Software-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as an Environment-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Liveware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Both captains demonstrated confusion regarding which exit from the runway they were assigned.

True.

False.

The Tower Controllers exhibited some frustration with the _____ flight crew regarding which runway exit they should use.

Pan Am

KLM.

TWA.

Northwest.

The physical environment did not contribute to the Tenerife accident.

True.

False.

According to the in-class presentation, data suggests that over _____ of aviation accidents are attributable to adverse human factors events.

50%.

60%.

70%.

80%.

The focus of Human Factors is the fundamental engineering principles surrounding a system.

True.

False.

The study of Human Factors is focused on?

Humans.

Machines/Systems.

The interface between people and systems.

System factors affect human performance.

True.

False.

Human factors affect system performance.

True.

False.

One focus of human factors should be to improve the quality of life of system users.

True.

False.

_____ performed research on sensory and motor capabilities.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on intellectual differences.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on scientific management.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on motion and surgical procedures.

Cattell.

Galton.

Taylor.

The Gilbreths.

During WWII, researchers determined so-called human factors were the principal cause of aviation fatalities. What was the second leading cause of aviator fatalities?

Combat.

Structural failure.

Engine failures.

Fuel starvation.

Throughout the 1980s and 1990s _____ of Human Factors Society members served as expert witnesses in courts of law.

5%.

10%.

15%.

20%.

In what decade did human factors become a mandate within the Federal Aviation Administration?

1960s.

1970s.

1980s.

1990s.

What airline was first in establishing a formal human factors program for flight crew?

American Airlines.

Delta Airlines.

Northwest Airlines

United Airlines.

In what decade did, did the Air Transportation Association host nits first conference focused on human factors?

1960s.

1970s.

1980s.

1990s.

The first rudimentary simulators training aids were developed in the Applied Psychology Laboratory at?

The University of Southern California.

The University of Illinois.

Cambridge University.

The Ohio State University.

Three additional questions appear on the answer sheer

ASCI 4050 Human Factors Test#1 Fall 2021 Name: _____

Answer Sheet

Please indicate the correct answer in the space provided and answer questions 31 – 33 at the bottom of the page.

1.	16.
2.	17.
3.	18.
4.	19.
5.	20.
6.	21.
7.	22.
8.	23.
9.	24.
10.	25.
11.	26.
12.	27.
13.	28.
14.	29.
15.	30.

In your own words, define Human Factors.

Differentiate between the terms Human Factors and Ergonomics.

Differentiate between capabilities and limitations.

Human Factors Final Examination

ASCI 4050 Human Factors Final Examination Fall 2021

Please place the best answer on the sheet provided at the end of this test (feel free to tear off the answer sheet) Good luck!

Of the following, which sense contributes most to spatial orientation?

Vision

Vestibular

Proprioceptive

Auditory

The vestibular system is in?

The outer ear

The middle ear

The inner ear

Spatial orientation includes the ability to perceive motion and position in?

One dimension

Two dimensions

Three dimensions

Most spatial orientation is provided by?

The vestibular system

The eyes

The proprioceptive receptors

All pilots are vulnerable to spatial disorientation

True

False

_____ of fatal aircraft accidents are a direct result of spatial disorientation.

20%

40%

60%

80%

Spatial disorientation occurs more frequently in?

General aviation accidents

Commercial aviation accidents

Generally, when vision is compromised, pilots should fall back to instruments to ascertain position and balance.

True

False

True/actual positional orientation and relative motion may not be consistent with the way our body feels.

True

False

How many semi-circular canals contribute to spatial orientation?

1

2

3

4

Extremely low rates of acceleration may result in the vestibular system not sensing movement.

True

False

What is one purpose of the eustachian tubes?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear side of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Between the Pupil and the Iris, the amount of light allowed into the eye can change at a ratio of

3 to 1

5 to 1

7 to 1

9 to 1

The _____ acts like an electronic image sensor of a digital camera, converting optical images into electronic signals.

Crystalline lens

Cornea

Iris

Retina

The fovea surrounds the macula.

True

False

The optic disk is sensitive to both colors and shades of grey.

True

False

The _____ protects the eye from dust, debris and infection-causing microorganisms.

The Sclera

The Choroid

The Conjunctiva

The Macula

_____ provides approximately 65 to 75 percent of the focusing power of the eye.

The Cornea

The Pupil

The Lens

The Retina

What part of the eye determines eye color?

The Lens

The Iris

The Pupil

The Retina

Tears have a slightly antiseptic property.

True

False

What part of the eye acts as an “aperture?”

The Iris

The Pupil

The Cornea

The Sclera

The human eye has approximately _____ neurons proving input to the visual cortex.

50,000

250,000

1,000,000

5,000,000

Both rods and cones are sensitive to light.

True

False

The center of the macula consists primarily of?

Rods

Cones

The fovea primarily contains

Rods

Cones

Of the following, what is not a primary color sensed by cones

Red

Blue

Orange

Yellow

The human eye can distinguish approximately _____ different shades of color.

1,000

5,000

50,000

1,000,000

Each _____ has its own neuron.

Rod

Cone

_____ are responsible for our peripheral vision.

Rods

Cones

As light level decreases, the sensing task is passed over from the _____ to the _____.

Rods to the cones

Cones to the rods

Which of the following carriers were not involved in the 1956 midair collision over the Grand Canyon?

United

American

Trans World

Stressors may be described as the body's responses to the demands placed upon it.

True

False

What part of the eye has the best visual acuity?

The retina

The fovea

The lens

The cornea

Where is the so-called "Blind Spot" located?

On the iris

On the fovea

On the edge of the lens

At the optic disk

Peripheral vision is generally accomplished by?

Rods

Cones

Colorblindness effects acuity.

True

False

Colorblindness is far more prominent in?

Men

Women

Images projected on the retina are inverted.

True

False

The _____ is the light sensitive screen lining the inside of the eyeball.

Sclera

Choroid

Retina

Generally, Rods require higher intensity light than Cones, to provide effective acuity.

True

False

Groups of cones are connected to a single neuron.

True

False

What is the purpose of the Eustachian tube?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Accommodation is controlled by the

Ciliary muscles

Iris

Lens

Cornea

Generally, Cones are better able to resolve detail than Rods

True

False

Proprioceptive receptors are concentrated?

In the eye

in the ears

In the muscles

Ultimately, avoiding midair collisions is the responsibility of Air Traffic Controllers.

True

False

The frequency band that a healthy young person can hear is

70 - 15,000 cycles per second

80 - 20,000 cycles per second

500-15,000cyclespersecond

20 - 20,000 cycles per second

A healthy ear does not produce wax.

True

False

Epithelial migration tends to move from the ear drum to the Pinna

True

False

The outer ear can alter the amplitude of sound waves.

True

False

The outer ear plays a role in the spatial hearing of sounds.

True

False

One side of the tympanic membrane is normally exposed to a liquid.

True

False

The compensation for liquid incompressibility within the inner ear occurs in the?

Fenestra Cochleae

Fenestra Vestibuli

Oval Window

A pilot suffering a head cold may experience pain at altitude due to blocking (clogging) of the?

Cochlea

Eustachian Tube

Tympanum Membrane

Fenestra Vestibuli

People must use caution when standing near a jet engine due to the excessive?

Sound frequency

Sound magnitude (decibels)

Both above

What are the times of useful consciousness at 20,000 ft. (moderate activity)?

5 minutes.

1minute.

10 minutes.

30 seconds.

If the symptoms of hyperventilation occur at an altitude where hypoxia is not a consideration, what is the correct remedial action?

Descend to MSL.

Decrease rate and depth of breathing.

Increase rate of breathing.

If possible, lay flat and help to calm sufferer.

What increases the risk of DCS occurring in flight?

Scuba diving shortly before flight.

Snorkel diving shortly before flight.

Alcohol.

Smoking.

Dark adaption is one of the first symptoms of hypoxia.

True.

False.

Hypoxic Hypoxia affects night vision.

True.

False.

Anemic Hypoxia can be:

brought on by altitude.

caused by decompression.

caused by smoking.

brought on by fatigue.

In commercial aircraft cabin pressure is normally maintained at:

sea level.

6,000 - 8,000 ft.

10,000 ft.

below 5,000 ft.

DCS is considered a medical emergency.

True.

False.

The "chokes" are associated with:

NIHL.

DCS.

blockage of the alveoli.

oxygen loss.

Breathing 100% oxygen at 40,000 ft. is equivalent of breathing normally at:

sea level

20,000 ft.

40,000 ft.

10,000 ft.

Of the gases in earth's atmosphere, which is the 3rd highest in terms of percentage?

Xenon

Helium

Argon

Hydrogen

Altitude and ambient pressure are linearly related.

True.

False.

Typically, cabin pressure differential is limited to approximately?

2-4 psi

4-6 psi

6-8 psi

8-10 psi.

Generally, oxygen saturation (approximately 97.5%) is maintained in the human body to an altitude of?

10,000 ft.

15,000 ft.

20,000 ft.

25,000 ft.

Hypoxia may be caused by all the following except for?

Inadequate supply of oxygen

Inadequate transportation of oxygen

Inability of the body tissues to use oxygen

Inadequate hemoglobin in the blood

Generally, the pressure differential between the inside and the outside of a pressurized aircraft is limited to?

3 – 5 psi

5 – 8 psi

8 – 10 psi

10 – 12 psi

Cabin rate of change is generally more-limited (lower) when?

Descending

Ascending

The most common symptom of decompression sickness is?

Joint pain

Lethargy

Distended stomach

Belching

The “creeps” are a condition associated with the respiratory system.

True

False

The Time of Useful Conciseness (TUC) generally describes how long it takes to lose consciousness after a decompression.

True

False

The Effective Performance Time (EPT) generally describes how long it takes before an individual will lose the ability to alleviate a hypoxic condition.

True

False

The four stages of hypoxia include: a) The disturbance stage, b) The indifference stage, c) The critical stage, and d) The compensatory stage. Which of the following represents the transition from bad to worse?

b, c, d, a

a, c, d, b

d, b, a, c

b, d, a, c

Carbon monoxide is necessary for regulating the breathing process.

True

False

The _____ blood cells carry the oxygen throughout the body.

Red

White

Yellow

Grey

Generally, the average rate of respiration in a healthy male adult is?

11

16

21

30

When an excess of Carbon Dioxide exists in our blood, our breathing will tend to

Increase

Decrease

How many bones are located between the tympanic membrane and the cochlea?

2.

3.

4.

5.

PowerPoint Presentation Examples

United Airlines Flight 173

•••

Sr|l#Dlx/#Dqjlh#Drzhoq#Pdulnh#D1#Dxvylwdqld/#1#rvhsk#Pdvrq

1

Introduction/Overview of Accident - Joseph

- Xqlhg#Dlxdjhv#djlo#k-6#pdhqzonh#lurp#lnz#runl#lhlu#
- XDj#djlo#k-6#pdhqP#52#rqghv#5rxjohv#5F0;04
- lwhdqjk-s#zonrqrq#rxdq#rp#ulqjrlq#lhz#qjk-4lhvhrqjhz1
- Z khq#k2#qhjqjl#lhdk#pdhqlwhg#k2h#Pdwdqjhlxdq#lhrog 1#Oxp#wlkxp#"#qrlh#wlhlu#rogqjk#2k#e#lhrunrghqlkxw Odqjqjl#dhdlhrDhrqlP|dqghz1
- D#wlzj#k2k#dqjlPrp#lwlh#lurp#wlq#rxpwlqjk2lwlz#lhlu#k2h uhrxdrhqljk#qhq#c#k2k#cthlqjqjl#dhdlhjlwlqrwlP#dydqjl1
- Wlh#k2hhlu#k2h#qjlwlq#e#lhDydqjP#qjk#lhlu#k2hhlu#qjk#rnu rlhlqjwlrqjlh#dqjlwlq#k2h#lu#k2h#lu#k2h#lu

Asiana Airlines Flight 214

- NICHOLAS BOHN, ADAM BURKE, SAMUEL BYRNE, RUTH CALIX, TYLER LAMBERT

1

Pertinent Details

- The Pilots
  - Captain Lee Kang-Kook (43 hrs)
  - Captain Lee Jeong-Min (9k hrs)
- The Accident
  - Captain Kook mismanaged speed of aircraft
  - They were low and slow on approach to Runway 28L
  - Impacted sea wall and tore off tail and landing gear
  - Ignited a fire
- The Passengers
  - 307 (291 passengers, 16 crew), 3 injuries, 0 fatalities
- Boeing
  - Not held liable and didn't listen to ICAO
- The Airline
  - Asiana airlines' reputation was ruined

- The Flight Attendants
  - Carried passengers on their backs
  - Experienced injury when slide deployed

2

Accident Chain

- Last 1 minute of flight, from 1,000 feet down to impact with the sea wall
- Transition from being too high to being too low and too slow

3

Human Factors Issues

- Software-Liveware: Lack of critical information in the training manual pertaining to the autothrottle system and speed control (767 v 777)
- Hardware-Liveware: 777 autothrottle system will provide speed protection in 3 different scenarios, but not when the aircraft is set up like it was at the time of the accident
- Liveware- Environment: NTSB member Mark Rosekind says the crew had experienced sleep disruption and was operating at the "low point" of their circadian rhythm. They subsequently made "nearly a dozen fatigue-related cockpit crew errors throughout the approach, landing, and delayed go-around phases of Asiana flight 214" (p.142).
  - The Pilot Flying reported not being able to sleep for most of his rest period during the flight, and the observer reported feeling tired while returning to the cockpit to monitor the approach
- Liveware-Liveware: The pilot flying did not verbalize his anxiety about flying the visual approach, and the instructor pilot did not appropriately monitor the approach speed and glidepath or instruct the pilot to go around once it was clear that the approach was unstable

4

Human Factors Issues (cont.)

- The 777's autothrottle system did not provide underspeed protection while in HOLD mode
- Asiana's training department did not adequately understand this issue and did not properly train their pilots on situations where the autothrottle would NOT provide underspeed protection
- According to NTSB member Robert Sumwalt's statement, "I believe setting the stage for the crash was expectancy; the pilot flying expected the airplane to do something that it wasn't designed to do. Specifically, he expected the autothrottle system to provide speed control for him, but unbeknownst to him, the system would not do so while in a HOLD mode."
- The lack of understanding of the system inspired a false confidence in both pilots, leading to neither of them accurately monitoring the speed of the aircraft

5

Mitigation

- NTSB recommended Asiana should reinforce flight crew adherence to SOPs involving the inputs to the operation of autoflight system controls on the 777 mode control panel and related callouts.
- NTSB recommended Boeing to revise the 777's Flight Crew Training Manual
  - Include an explanation of the circumstances in which the autothrottle does not provide low-speed protection in demonstration section
- Gap in mitigation - NTSB ultimately voted against recommending the redesign of the 777's automation system even though it may have been beneficial to safety
  - Boeing's design philosophy: "pilots are very proficient in monitoring their speeds" – not supported by data: LOSA data from over 14,000 flight ops show that 15-20% of flights have poor monitoring & cross-checking performance

6

Could this happen again?

- Yes, an accident of this type can happen again.
  - Automation is a powerful tool that simplifies the task of flying
  - Although automation can greatly increases pilot efficiency and safety, when mismanaged it can become dangerous
- Pilots who are not properly trained or are not proficient in their automation systems can make similar mistakes to those of the Asiana Airlines Pilots
  - Lapses in training exist and will always exist and there will always be pilots that try fly above their proficiency level
- As pilots we need to make sure that we are comfortable and competent with our automation systems or else there is a possibly for us to mishandle it and put ourselves and others in danger

7

References

8

Example Papers

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

Al Schulz, Nathan Seliner, Drew Sinelli, Minsu Song

Department of Aviation Science, Saint Louis University

Human Factors, ASCI-4050-01

December 10, 2021

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

On November 23rd, 2011, the airplane N690SM impacted the top of the Superstition Mountains near Apache Junction, Arizona. It had just flown from Safford Regional Airport (SAD) to Falcon Field (FFZ), Mesa, Arizona, about 110 miles away and was planning on conducting the same flight in the opposite direction (Aviation Safety Network, 2018). The return flight to SAD from FFZ was conducted under night visual flight rules (VFR) with no moon. The last radar return was received at 18:30 and was approximately coincident with the impact location. The impact location was near the top of a steep mountain that projected to over 5,000 feet MSL. The plane had 6 occupants including the pilot and all 6 people perished. The main human factors building up to this accident were ensuring airworthiness of aircraft, limited visibility due to night without the moon, pilot's lack of vigilance due to familiarity with the route and surrounding terrain, and lack of communication with ATC.

One of the stakeholders is Ponderosa Aviation, Inc. (PAI). According to the NTSB report they purchased the airplane and relocated it from Indiana to PAI's base at Safford Regional Airport (SAD), Safford, Arizona, about 1 week before the accident (2013). PAI's president conducted the relocation flight under a Federal Aviation Administration (FAA) ferry permit due to an unaccomplished required 150-hour inspection on the airplane (NTSB Report, 2013). The airplane's arrival at SAD terminated the ferry permit, and no inspections were accomplished to render the airplane airworthy after its relocation.

Also of note turbine powered aircraft produced before 2002 with 6 seats or more were required to have a Terrain Awareness and Warning System (TAWS) installed prior to 2005 (NTSB Report, 2013). There was no indication in the aircraft maintenance records nor the crash site that this regulation was complied with. If this aircraft was equipped with a TAWS system perhaps the pilot could have taken appropriate corrective action and the occupants would not have been harmed.

Even though other airworthy airplanes were able to make a flight, PAI's director of maintenance (DOM), who was the accident pilot, and the director of operations (DO), who were co-owners of PAI along with the president, decided to use the non-airworthy airplane (N690SM) to conduct a personal flight from Safford Regional Airport (SAD) to Falcon Field (FFZ), Mesa in Arizona. As stakeholders in the accident, the DO and DOM planned to fly from SAD to FFZ under night VFR in visual meteorological conditions (VMC). After a safe arrival at the destination, the return flight was to be conducted under night VFR in VMC only by the DOM. The pilot's children were 3 of the passengers creating more stakeholders in this case (Christie and Berry, 2011). The passengers and their families are all stakeholders in the accident.

The greater community is also a stakeholder in this accident as it occured in the somewhat famous Superstition Mountains. Many people recreationally hike these mountains and the aircraft impacted very close to a hiking trail. Many people in the nearby city of Apache Junction, AZ witness the flames from the impact. A memorial was constructed in the community for the tragic loss of life in this unfortunate accident (Rupcich, 2020).

A possible contributing human factor was the pilot not using all available equipment and information. According to the pilot’s brother the pilot used to use an iPad for navigation and flew using the ForeFlight software app that has a ‘moving map’ function (NTSB report, 2013). Thus, if he was using the moving map function of ForeFlight he should have been able to determine that the aircraft’s track was on a collision course with the terrain. The investigation found remains of the iPad but was unable to determine whether the pilot adhered to his normal practice of using the iPad for the flight (NTSB report, 2013).

The human factor of complacency played a crucial role in this accident as the pilot was very familiar with the route. He had flown between the two airports several times and had previously accomplished the same flight 2 days before the accident (NTSB Docket, 2013). This familiarity with the flight could have led to complacency in proper planning and avoidance of terrain. A direct course from FFZ to SAD puts the aircraft approximately 3 miles south of the impact mountain but the aircraft did not start its turn on course until 2 miles north of the field as they were instructed to fly straight out for traffic by Falcon Tower (NTSB Report, 2013). Once ATC cleared the turn on course the pilot turned flying directly to the destination airport from their current location and not FFZ airport. This new course put the aircraft directly in line with the impacted mountain. This oversight by the pilot resulted in loss of situational awareness. The pilot did not realize that the combination of the new flightpath and altitude resulted in a collision with the terrain. Further exacerbating this was the fact that there was no moon at the time of the flight which went over mountainous terrain surrounded by sparsely lit terrain. This combination made it impossible to see the approaching mountain.

Another human factor contributing to the collision was the pilot was not in contact with ATC. The airspace directly overlying the area before the mountain was Phoenix Sky Harbor’s class B (Bravo) airspace which went down to 5,000ft mean sea level (MSL) and the highest charted elevation of the impact mountain just outside the class B shelf is 5,070ft MSL. It is possible that since the flight was being conducted under VFR that the pilot thought that they would not get cleared into the class B airspace. This led him to fly below the class B shelf which put the airplane at an altitude lower than the surrounding terrain. Considering how familiar the pilot was with this flight you would think he would have flown in the class B airspace considering out of 619 VFR flight requests 598 were given clearance to enter the Bravo under a subsequent NTSB investigation (NTSB Report, 2013). Nevertheless, the pilot leveled off and was flying at 4,500ft MSL at the time of the collision which occurred about four minutes after the turn on course.

If we take a look at the SHELL model we can see aspects from all sides present in this accident. First looking at Software (maps, documents, checklists), we can see that it seems that there was a lack of map use and a failure to realize the changing altitude. Hardware: the aircraft technically was unairworthy, which shows poor decision making. Also the NTSB had trouble locating an installed TAWS in the wreckage or maintenance logs. Environment: Interestingly the pilot had

completed this same exact flight multiple times before just not on this different flight path. The pilot had become complacent with the surrounding area and failed to maintain situational awareness. An example of liveware to liveware is perhaps the pilot was distracted by the passengers in the aircraft. Three of the passengers were the pilot's own children so perhaps he was even more distracted than if it were passengers that he did not know. It is important that pilots avoid distractions as much as possible and maintain positive control of the aircraft and situational awareness. In this case it seems like positive control of the aircraft was maintained but situational awareness was lost so the airplane collided with the terrain.

Another human factor at play in this accident is possible night illusions relating to eye physiology. The flight was conducted at night under VFR in VMC with no moon. The area was sparsely light and mountainous terrain. The featureless terrain could have caused an illusion of the airplane being higher than it actually was. At night the eye functions mainly on rods instead of cones which only see in black and white. Since the mountain was not lit and the surrounding terrain was sparsely lit, there was not enough contrast to see the mountain. It is important that we remember when flying at night that it is harder to see and there could be invisible obstructions such as terrain. This is why it is so important to maintain situational awareness, especially at night, so that we alway know where we are and can avoid any vertical obstructions.

To mitigate this type of accident, the pilot should make sure that the airplane is completely airworthy and if it is not airworthy, do not fly with the airplane. Even though it looks fine with the naked eyes, it may have some severe defects inside. It should only be flown after all required inspections have been conducted by a certified aviation mechanic. Airworthiness is not the only concern in this accident.

Pilots also should be aware of the environment such as weather, terrain, time of day, and visibility around the planned route and file a flight plan for each segment. The pilot should be familiar with the flight environment and current situation. In this case the combination of the airscape with the terrain made it more likely for a pilot to be at a lower altitude than the surrounding terrain. Although the pilot could have requested access into the class B airspace it is not required. Perhaps the airspace itself should be investigated to see if any changes should be made so that it is not lower than terrain so close to its lateral borders.

As for other high consequence industries some things that could be taken from this accident is getting into a routine to double or triple check equipment regardless of recent use. You also must keep focus and not have predetermined expectations while executing any mission or operation that can result in tragedy. It also could be beneficial to ask for direction if you are not sure about something. In this case not asking for clearance into the Bravo created an unnecessary dangerous situation.

In this case of this accident, the DOM should have known to ensure airworthiness relating to required equipment. If the airplane was equipped with TAWS equipment as it should have been this accident most likely could have been avoided. According to Title 14 CFR 91.223 turbine-powered, U.S registered airplanes configured with six or more passenger seats and manufactured before early 2002 could not be operated after March 29, 2005, unless the airplane was equipped with an approved TAWS unit. In addition, it would be helpful to get information via sectional chart or other topographic references, maintaining awareness of visual limitations for operations in remote areas, following instrument flight rules practices until well above surrounding terrain, advising ATC and taking action to reach a safe altitude to prevent from causing the accident.

A possible "gap" that could lead to this exact same accident is that the airspace and terrain are still the same so if another pilot lost situational awareness in the same area at night in an aircraft without TAWS they could come into contact with the mountainous terrain. That is really only one mistake that could lead to fatal consequences. Pilots must be vigilant in maintaining concentration, situational awareness, and not fall victim to complacency.

A lot can be learned from this accident as these factors can be related to many high consequence industries. If a worker lost concentration in a factory or healthcare setting there could be disastrous results. If you lost situational awareness in a mine or powerplant there could be harmful consequences. If an employee became complacent in a chemical plant there could be a devastating outcome. Maintaining concentration and situational awareness of your surroundings will almost always keep you safe in any part of life. As humans we will make mistakes but what is important is that we learn from mistakes to make a better future.

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Air New Zealand Flight 901, Mt. Erebus

Jerry Cockrum, Devin Henneberry, Yu Feng, Akio Hansen, Sam Lehmann

ASCI-4050-01 Human Factors

Dr. Kelly

During the 1970s, a market emerged for tourism flights to sightsee over Antarctica. Air New Zealand (ANZ) had been aware of the opportunity to operate these flights, but was unable to do so because their flagship DC-8s did not make the trips economically viable. This changed in 1973 when ANZ acquired their first DC-10 aircraft. This allowed the airline to operate a non-stop long haul flight, and ANZ began offering these flights in 1977. The flights were immediately popular and had no trouble filling seats. Passengers were afforded the opportunity to walk around the cabin during flight and gaze at the spectacular view of the least-inhabited continent while enjoying luxury food and drink service. Educational films about Antarctica were also shown during the duration of the flight.

Two years after the launch of the flights, they were as popular as ever. Around a month before the disaster, the pilots participated in a route briefing for the upcoming flight, which was scheduled for November 28, 1979. The pilots, Jim Collins and co-pilot, Gregg Cassian, had never flown this Antarctica sightseeing flight before. The pilots were given briefing material a month before for the flight and noted no issues. Air New Zealand Flight 901 (TE901), a McDonnell-Douglas DC-10-30, took off from Auckland International Airport bound for the Antarctic sightseeing flight. 257 passengers and crew were on board.

At 8:21, New Zealand time, the plane took off from Auckland International Airport. Around noon New Zealand time, the aircraft made contact with McMurdo Station ATC, which was operated by the US Navy. The pilots had learned in their briefing that if visual meteorological conditions existed, they could step down to 6000 feet. They did so and advised ATC they would continue down to 2000 feet. Even though the lowest authorized altitude for the route in visual conditions was 6000 feet, past flights had also descended lower, likely to provide passengers with a better view of the scenery. The flight descended then descended to 1500 feet with the autopilot engaged. This was likely in an attempt to descend under a low cloud layer at 2000 feet to ensure the passengers had a clear view.

Four minutes later, the Ground Proximity Warning System on the aircraft sounded an alarm, warning that the aircraft was approaching the ground quickly. Captain Collins quickly advanced the throttle to go-around power in an attempt to clear the terrain. Collins still didn't know that there was a volcano ahead, the nose was only raised 15 degrees as according to the training guidelines, instead of a higher angle.. The aircraft then impacted the lower slopes of Mount Erebus and was instantly destroyed, killing all aboard.

The ATC station that was in contact with the flight was unable to reach them, and soon organized a search and rescue effort. The aircraft wreckage was located the next morning. It was strewn over a large area and the search teams were only able to identify the aircraft by its tail logo. News that the aircraft was missing and likely crashed had already reached New Zealand by this time.

TE901 Wreckage National Erebus Memorial

The driving human factor behind this accident was a miscommunication between the crew of the flight and the navigation office of Air New Zealand. There was a convoluted background for this miscommunication. In 1977, the original approved routing for the flight was a route directly over the 10,000 ft.+ peak of Mount Erebus on the way to McMurdo Sound. A little over a year before the disaster flight, the route was computerized by ANZ. During this, a typing error occurred, shifting the route coordinates 27 miles away and over the flat McMurdo sound. Up until the time of the disaster flight, many of the flights before had used this non-approved route, unaware of the discrepancy.

The captain of TE901 however noticed this discrepancy, and notified ANZ's navigation office. The night before the flight, the office updated the Inertial Navigation System of the plane so that the coordinate was fixed. The plane would now fly over Mount Erebus per the approved route when autopilot was engaged. Crucially, the pilots were not informed of this change. They were under the impression throughout the flight that it would be flying and descending over the flat water and ice of the McMurdo sound, well clear of terrain. This was tragically not the case.

This can be described using the SHELL model as a liveware to liveware issue. The navigation office failed to communicate to the pilots the change. It can also be described as a software to liveware issue. The INS had been programmed in the aircraft to fly over (or into in this case) Mount Erebus, and the pilots did not realize this. This miscommunication was crucial to placing the plane in a position where the pilots would be affected by more human factors issues to come.

While miscommunication and improper data input were the driving factors for the Mount Erebus disaster, other human factors components can be attributed to this aviation tragedy as they relate to a pilot-environment relationship. First of all, the aircraft was flying in adverse atmospheric conditions. Though conditions did not technically qualify as IMC, the cloud layer was low enough to create a phenomenon known as "sector whiteout" in conjunction with the all-white terrain of Antarctica. Sector whiteout is a visual illusion where factors, in this case clouds and snow, give the illusion of mostly clear visibility and adversely affect depth perception. In these conditions, the human eye ultimately can't gauge distances from and among outside objects, such as the terrain, sky ahead, and overhanging clouds. This illusion is comparable to that of empty field myopia, where the eye essentially relaxes and the iris/lens bend light to the retina as if the object in focus were closer than they actually are.

One of the biggest outcomes of TE901 was the development and implantation of Crew Resource Management (CRM). CRM was developed after safety investigators and psychologists came together to understand how human performance can deliver an enhanced level of safety. CRM, rather than encouraging an autocratic flight deck, encourages crew teamwork and, when/if necessary, assertion of authority by crewmembers that are, in the flight deck hierarchy, subordinate to the captain. It was first used by United Airlines in 1981, however Air New Zealand was an early adopter of CRM. Before the Erebus disaster and any type of CRM was in place, pilots were the only ones who could call the shots and there was little tolerance for other crew voicing their concerns or asking questions. In other words, communication among the flight crew was weak. However, following TE901, flight crews were trained and encourage to speak up if they didn't see something right. Another valuable lesson that came as a result of the Erebus Disaster was a concept called "systemic error" used to explain how a system can go wrong. This systemic error is also referred to as the Swiss Cheese Model. The Swiss Cheese metaphor that suggests multiple contributors (holes in cheese slices) must be aligned for any adverse event to occur. Each slice of cheese is considered a barrier or safeguard against an accident. If the holes line up you can have a series of little incidents that end up in an accident. Pilots now understand that an accident doesn't happen by itself, there's generally a chain of little things that cause the accident.

One unresolvable issue that many pilots face is the inability to see through and past cloud layers. This is something that not only concerns that of instrument rated pilots, but also pilots who are flying under visual flight rules and wander into Instrument meteorological conditions. We as an aviation community have put in place legislation to prohibit non IFR (Instrument flight rule) rated aircraft and persons from flying in such adverse conditions. Pilots that are trained to fly only VFR (visual flight rules) are trained to properly handle these situations. Regardless, even with these safety margins implemented, we still run into the issue of how an event is handled when the stress of an actual incident is in place.

Another issue that is difficult to fully eliminate is error in communication. Crew Resource management has helped with streamlining information pertinent for flight operations, but when information is handed down data can be lost, like the confusion the pilots of Air New Zealand faced when improperly inputting the waypoints. Information hand off is simpler now and has more opportunity for error correction compared to 1997. Although we moved in the right direction, eliminating total miscommunication is near impossible.

When considering the human factors associated with the Mount Erebus disaster and comparing it to outside fields, you will notice that improper communication can hurt essentially every field out there. When information is passed person to person the original information starts to stray from the original message. Without proper communication and an inability to manage systems properly, human error is inevitable.

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Peer Feedback Form

Peer Feedback Instructions

For each member of your team, provide honest feedback on this form. You will rate each person on your team on items related to cooperative learning skills, self-directed learning, and interpersonal skills. It is important that you assign scores that reflect how you really feel about the extent to which your team members and you contributed to your learning and the final product of both the paper and the presentation.

You will also be given the opportunity to provide written feedback to each of your team members by answering two open-ended questions. These comments will be anonymous and provided to your team members after the deadline. This feedback should be constructive- quality feedback is important. Keep the following guidelines in mind as you provide your written feedback:

Are specific behaviors described? (vs. non-specific generalizations)

Are those behaviors described clearly, so your teammate recognizes what she/he has done to help the team, and what he/she can adjust or change?

Are the content and tone constructive and helpful? (vs. petty, mean)

Is the feedback descriptive ("I feel our team would benefit if you gave us your opinion earlier in the discussion.") rather than evaluative? ("You treated us unfairly by keeping quiet during our discussions.")

Do you define specific areas for improvement?

Peer Feedback Form

Team: _____

Peer Learner you are evaluating: _____

Your name (evaluator): _____

PART ONE: QUANTITATIVE ASSESSMENT *(*CHECK ***ONLY ONE BOX*** FOR EACH OF THESE 12 ITEMS)

Cooperative Learning Skills:	**Never**	**Sometimes**	**Often**	**Always**
Arrives on time and remains with team during work time				
Demonstrates a good balance of active listening & participation				
Asks useful or probing questions				
Shares information and personal understanding				

Self-Directed Learning:	**Never**	**Sometimes**	**Often**	**Always**
Is well prepared for work time				

Shows appropriate depth of knowledge				
Identifies limits of personal knowledge				
Is clear when explaining things to others				

Interpersonal Skills:	**Never**	**Sometimes**	**Often**	**Always**
Gives useful feedback to others				
Accepts useful feedback from others				
Is able to listen and understand what others are saying				
Shows respect for the opinions and feelings of others				

PART TWO: QUALITATIVE ASSESSMENT (*FOR EACH ITEM, ANSWER THE FOLLOWING QUESTIONS*)

1) What is the single most valuable contribution this person makes to your team?

Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: __30_____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 1 - Canvas Assignment Information on Discussion Board: Describe an ethical dilemma based on your experience. In 1-2 paragraphs, use Kohlberg's Theory of Moral Development to discuss how you addressed that dilemma (Safety Ethics, p. 19).

Points Possible: 30

Due Date: 25 August 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Student Submission: Daniel Igra

When I was a student pilot (pre-ppl), I decided to conduct my first solo cross country to the near town of Centralia, IL (KENL). As I entered the uncontrolled airspace of KENL, I discerned the following two facts: 1) From my point of view, it seemed that there was only one other pilot in the traffic pattern who seems to be flying a P-51 mustang. 2) I also recognized that a fellow BILLIKEN plane was executing maneuvers just outside the KENL uncontrolled airspace. Although I have entered uncontrolled traffic patterns before, I was rendered anxious and complicit due to this being my first solo cross-country flight. As a result, I entered the uncontrolled airspace without making any of the required position reports. In addition, the realization that the P-51 pilot isn't making position reports too, gave me an excuse to resume my negligent and dangerous behavior. As I neared my base turn, I was faced with an ethical dilemma that demanded an immediate decision: Will I overcome my newfound anxiety induced by this novel situation and report BASE on CTAF, or will I continue in the pattern silently?

Were this ethical dilemma to be viewed through "Kohlberg's theory of moral development (Patanker et al., 2020, p. 7)", the problem would be analyzed into the following three levels: First, the basic level where one is motivated to make a decision that is based on ***self-interest*** (Patanker et al., 2020, p. 7) may have caused me to make a leg report due to the fear of the neighboring BILIKEN instructor listening to KENL's CTAF. Here, I would be acting out of fear of personal punishment, hence acting out of pure self-interest. Second, the intermediate level where one is motivated to make a decision that is based on ***conformity*** (Patanker et al., 2020, p. 7) may have caused me to follow in conformity after the actions of the P-51 pilot who decided not to report his legs as well. After all, P-51s require more experience and therefore the pilot must be a professional, I reasoned. Third, the final level where one is motivated to make a decision that is based on ***a principle of respect*** (Patanker et al., 2020, p. 8) may have caused me to cognize that I am the pilot-of-command and therefore bound by duty to conduct this operation in the best and safest way possible, by virtue of duty and respect for the roll I currently assume, I decide to overcome my anxiety and report as best as I could in order to complete this operation as best possible.

Performance Indicator Rubric

Course: ASCI 4450 Aviation Law

Course Instructor: BRUCE HOOVER

Semester Taught: FALL 2021

Number of Students in Course: 27 ((ON CAMPUS: 9. ONLINE: 18 (COVID protocols))

AVIATION SCIENCE CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Achieved both online and on campus: **Yes** Two case briefs assigned. Total possible: 168 points On campus 9 students 89% achieved a minimum 70% (117-plus points). Only one student failed to achieve a minimum 70% Online 18 students Total possible: 144 points (no oral presentation score) All 18 students achieved a minimum 70% on the case briefs.	Achieved both online and on campus: **Yes** Two case briefs assigned. On campus 9 students 89% of the 9 students scored at or above 70. Online 18 students Total possible: 144 points (no oral presentation score) 100% of the 18 online students scored above the minimum 70%

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Aviation operations encompasses multiple areas but must include airports operations, flight operations and administrative operations. Students in ASCI 4450, Aviation Law, were exposed to case law examples to inform them of their rights, responsibilities, and accountability in this industry.

Students were assigned one case brief from within one of the following general areas: criminal law, torts and contracts law, property law, or international air law.

Students were also assigned one case brief from within administrative law. This concentration of case studies was important since the vast majority of class members were involved in flight operations and interactions with the FAA, DOT, DOL, and NTSB were critical to acquiring knowledge to promote safe and professional operations.

ATTACHMENTS:

The lengthy list of cases from which the two case briefs were assigned
The major topic titles covered in the course illustrating inclusion of multiple aviation operations areas.
The outline of the content of each case brief. NOTE the requirement at the end of each case brief for the student to articulate the implications of the case to aviation professionals and its impact on aviation activities.
A guide to reading and understanding cases.
Case brief rubric (NOTE online students were not graded on oral presentation)

Note: Not all cases listed within the chapter topics will be examined. Some of the listed cases will be referenced during the class lectures for illustration of issues. ***New cases may be inserted as the course progresses***. Monitor for revisions. Some students with specializations may wish to examine cases relevant to their job or interests. Other cases deemed important, current, relevant or precedent-setting will be selected by the instructor.

TOPIC	TEXT	DISCUSSION CASES
Legal System Fundamentals Litigation process Trial court; jury verdict Jurisdiction Summary judgment	Chapter 1	*Newberger v. Pokrass* 33 Wis. 2d 569 (1967) Appeal of trial court *Lucia v. Teledyne* 173 F. Supp. 2d 1253 (2001) Federal jurisdiction *Sky-Med, Inc., DBA Pacific Int'l Skydiving Center v. FAA*, 9th Cir (2020) Subject matter jurisdiction in civil penalty case *FAA v. Joseph F. Corrao* NTSB EA-5448 (2009) Motion for summary judgment *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018) Theory of standing
The Constitution and Aviation Federalism Preemption Express / Implied / Field / "Complete" Takings Clause Airspace Aerial trespass Avigational easement Just compensation	Chapter 2	*Kent v. Dulles,* 357 U.S. 116 (1958) Right to travel *Northwest Airlines, Inc. v. Minnesota* 322 U.S. 2929 (1944) State vs. National Taxing Authority *Morales v. Trans World Airlines, Inc.* 504 U.S. 374 (1992) *Int'l Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992)

Local airspace regulation Supremacy Clause Savings Clause Airline Deregulation Act (ADA) Airline immunity (ATSA) Bill of Rights First Amendment Fourth Amendment; Privacy; UAVs		*American Airlines, Inc. v. Wolens.* 513 U.S. 219 (1995) *Air Transport Ass'n of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Casey v. Goulian* 273 F. Supp. 2d 136 (D. Mass. 2002) *Bailey v. Rocky Mountain Holdings, LLC* 136 F.Supp. 3d 1376 (S.D. Fla. 2015) *Guille v. Swan* 19 Johns. 381 (N.Y. Sup. Ct. 1822) *United States v. Causby et ux.* 328 U.S. 256 (1946) *City of Burbank et al. v. Lockheed Air Terminal, Inc. et al.* 411 U.S. 624 (1973) *Griggs v. County of Allegheny* 369 U.S. 84 (1962) *Singer v. City of Newton* 284 F. Supp. 3d 125 (D. Mass. 2017) *United States v. Long* 674 F.2d 848 (1982) Criminal drug and aviation laws *Northwest, Inc., et al. v. Ginsberg* 572 U.S.___ (2014) *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018)
Airline Passenger Rights Aviation consumer protection Discrimination Air Carrier Access Act NY pax bill of rights Contract claims Shrinking airline seats	N/A	*Stone v. Continental Airlines* 804 N.Y.S.2d 652 (N.Y.C. Civ. Ct. 2005) *Delta Air Lines, Inc. v. Barnard* 799 So. 2d 208 (Ala. Civ. 2001) *Buck v. American Airlines, Inc*. 476 F.3d 29 (1st Cir. 2007) *Air Transport Association of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Al-Watan v. American Airlines, Inc*. 658 F. Supp. 2d 816 (E.D. Mich. 2009) *Deterra v. America West Airlines, Inc.* 226 F. Supp. 2d 298 (D. Mass. 2002)

		American Airlines, Inc. v. Wolens. 513 U.S. 219 (1995) *Flyers Rights Education Fund, Inc. v. FAA* (2017) *Paralyzed Veterans of America et al. v. Department of Transportation* (2017)
Criminal Law Wire fraud False statements Endangering safety of aircraft Conspiracy Criminal conduct onboard Sexual assault Transportation of drugs Operating aircraft without airman certificate Operating commercial aircraft under the influence State criminal charges Laser pointers Assault onboard	Chapter 3	*U.S. v. Sabretech, Inc.* U.S. Court of Appeals 11th Circuit (ValueJet crash 1999) *United States v. Evinger* 919 F.2d 381 (1990) *USA v. Sasso* 695 F.3d 25 (2012). First Circuit *USA v. Smith* 756 F.3d 1070 (2014). Eighth Circuit *U.S. A. v. Aaron Jason Cope* (2012). Tenth Circuit *U.S.A. v. David Hans Arnston* (California; Alaska Airlines) *United States v. Brassington.* Platinum Jet Management and Darby Aviation; Michael and Paul Brassington and others (cases 2005-2011 FAA DOT NTSB U.S. Dist. Ct. NJ) *Garza v. Northwest Airlines, Inc*. 305 F. Supp. 2d 777 (2004) *Ward v. State* 374 A.2d 1118 (Md. 1977). Court of Appeals, Maryland
Administrative Law Administrative Procedure Act (APA) Congress Rulemaking Enforcement FAA sanctions Adjudication NTSB ALJ	Chapter 5 FAA Order 2150.3C and	*Air Transport Association of America v. DOT and FAA*, 900 F.2d 369 (1990). U.S. Court of Appeals for the District of Columbia A large number of administrative law/administrative agency cases will be examined. Most are appeals cases through the NTSB ALJs, appeals courts, etc. Sample topics: Challenges to government rulemaking Civil penalties (fines)

DOL ALJ Administrative & Legal Enforcement Actions Certificate action and civil penalties Airline Deregulation Act (ADA) Equal Access to Justice Act (EAJA) Pilot's Bill of Rights	FAR part 13	Drug & alcohol testing DUI/Motor vehicle actions FAA enforcement & sanctions DOT enforcement Flight instruction Mechanics Medical certificate actions (FAA) Pilot certificate actions (FAA) Passengers with disabilities (DOT rules) Air carrier sanctions Air ambulance issues Flying and the sharing economy (e.g. Uber)
Tort Law; Negligence; Wrongful Death; Liability Theories; Strict Liability; Damages; Tort Reform; FTCA Intentional torts False imprisonment Negligence Strict liability Wrongful death Educational malpractice Preemption revisited Liability vs. probable cause GARA Fed Tort Claims Act (FTCA)	Chapter 4	*McPherson v. Buick* Motor Co. (1961) *Goldberg v. Kollsman Instrument Corp. and American Airlines*, 12 N.Y.2d 432 (1963) *Crosby v. Cox Aircraft Co. of Washington* 746 P.2s 1198 (Wash. 1987) *Cleveland v. Piper* 890 F.2d 1540 (1989) *Goldberg v. Kollsman* 12 N.Y.2d 432 (1963) *McGee v. Cessna Aircraft Company*, 139 Cal.App.3d 179 (1983) *Brock v. United States* 18,246 (E.D. Va. 1977) *Brocklesby v. U.S.,* 767 F.2d 1288 (1985)

Interference with crew and co-passenger torts Refusal to transport Injury onboard Failure to warn		*Abdullah v. American Airlines, Inc.* 181 F.3d 363 (3d Cir. 1999) *Catherine Ray v. American Airlines* (2010) *Cross et ux v. Harris* 230 Ore. 398 (1962) *Steven Robert Hirtzinger v. Pinnacle Airlines, Inc*. (2008) *Sikkelee v. Precision Airmotive Corp.* 822 F.3d 680 (3d Cir. 2016) *Rubin v. United Air Lines, Inc.* 117 Cal. Rptr. 2d 109 (Cal. Ct. 2002) *United States v. Spellman* 243 F. Supp. 2d 285 (E.D. Pa. 2003) *Inmon v. Air tractor, Inc*. 74 So. 3d 534 (4th DCA 2011) GARA *Starks and Oswell v. American Airlines Inc.* Columbia Div. Dist Ct S. Carolina complaint (2018) *Glorvigen v. Cirrus Design Corp*., 796 N.W.2d 541 (2011) Training, Ed Malpractice, Duty of care
Property Law & Insurance Aircraft Aircraft transactions "As is, where is" Types of conveyance Airplane UAVs Aircraft ownership and registration Priority Drone registration Sales and use taxes Airport issues Noise Flight restrictions	Chapter 8	*Ickes v. Federal Aviation Administration* 299 F.3d 260 (3d Cir. 2002) *Huerta v. Pirker* 2014 WL 8095629, NTSB Order No. EA-5730 (2014) *Philko Aviation, Inc. v. Shacket*, 462 U.S. 406 (1983) *Godwin Aircraft, Inc. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992) *Koppie v. US of America and Ligon "Air",* 1 F.3d 651 (1993) *Dowell v. Beech Acceptance Corporation, Inc.,* 3 Cal.3d 544 (1970) *Aerowake Aviation, Inc. v. Clifford M. Winter, Jr. and Avemco Insurance Company,* 423 So.2d 165 (1982) *AVEMCO v. Auburn Flying Service,* US 8th Circuit Ct App, (2001) *Godwin Aircraft, In. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992)

Easements Zoning laws Insurance The Wright Amendment (Love Field)		*Taylor v. Huerta* 856 F.3d 1089 (D.C. Cir. 2017) *FAA v. Davis NTSB Order EA-4255 (1994)* *International Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992) *Goodspeed Airport, LLC v. East Haddam Inland Wetlands and Watercourses Common* 681 F. Supp. 2d 182 (D. Conn. 2010) *Example Supreme Court of Missouri cases 1987-2019* *U.S. v. Causby* *Griggs v. Allegheny County* *City of Burbank v. Lockheed Air Terminal, Inc.* 411 U.S. 624 (1973) *National Aviation v. City of Hayward* *Santa Monica Airport Association v. City of Santa Monica* *Northwest Airlines v. FAA* *Sneed v. County of Riverside* *Stagg v. City of Santa Monica* *British Airways Board v. Port Authority of NY and NJ* *Houston v. Federal Aviation Administration* 679 F.2d 1184 (5th Cir. 1982) *City of Phoenix v. FAA* (2018)
Commercial Law Form barring claims **Business Entities** Liabilities	Chapter 6	*Northwest Airlines, Inc. v. Crosetti Bros., Inc.* (1971) *Kissick v. Schmierer*, 816 P.2d 188 (1991)

	Chapter 7	
Labor Issues Employee/Employer Railway Labor Act (RLA) Major & minor disputes Dept. of Labor (DOL) AIR21 Whistleblowing Age Discrimination and Employment Act Americans with Disabilities Act Sexual harassment Gender, Age, Race, Nationality	Chapter 9	*Linam v. Murphy 360 Mo. 1140 (1950)* *Cooper v. Delta Air Lines, Inc.* 274 F. Supp. 781 (E.D. La. 1967) *Estell v. Barrickman (1978)* *Airline Pilots Ass'n, Int'l v. Eastern Air Lines.* 701 F. Supp. 865 (D.D.C. 1988) *Baker v. Federal Aviation Administration* 917 F.2d 318 (7th Cir. 1990) *Hawaiian Airlines, Inc. v. Norris* 512 U.S. 246 (1994) *Blakey v. Continental Airlines, Inc. (1997-2000)* *EEOC v. Exxon Mobil Corporation* *Avera v. United Air Lines* 465 Fed. Appx. 855 (2012) *Sheena Jones v. United Air Lines* DOL (2014) *Laverne B. Kelly-Lusk v. Delta Air Lines, Inc*. DOL (2014) *Don Douglas v. Skywest Airlines, Inc*. DOL (2009) *Estabrook v. FedEx* DOL (2017 & 2019) *Gerald Moses v. Dassault Falcon Je*t U.S. Court of Appeals for the Eighth Circuit (2018)
Security Issues Aircraft security in flight Airline pilot and TSA National security and the APA; Alien Flight Student Program	N/A	*United States of America v. Abdulmutallab*, U.S. District Court, E.D. Michigan, Southern Division, 16 September 2011 *Air Wisconsin Airlines Corp. v. Hoeper* 571 U.S. ___ (2014) *Jifry v. Federal Aviation Administration* 370 F.3d 1174 (D.C. Cir. 2014)
International Air Law	Chapter 10	*Air France v. Saks* 470 U.S. 392 (1985)

Public Private Preemption of local law "Accident" Mental or psychic injuries Emotional damages Bodily injury Criminalization; international flights		*Eastern Airlines, Inc. v. Floyd* 499 U.S. 530 (1991) *Olympic Airways v. Husain* 540 U.S. 644 (2004) *El-Al Israel Airlines Ltd. v. Tseng* *In re Korean Air Lines Disaster of September 1, 1983* *Wallace v. Korean Air* 214 F.3d 293 (2d Cir. 2000) *Aviation Professionals and the Threat of Criminal Liability-How do we maximize aviation safety?* 67 J. Air L. & Com. 875 (2002) Brazilian federal court trial and US general aviation pilots: mid-air 2006 *Doe v. Etihad* 870 F.3d 406 (6th Cir. 2017)

Fundamentals of U.S. Legal System					
Chapter 1					
Constitutional Law	Criminal Law	Administrative Law	Torts and Contracts	Property Law	International Air Law
Chapter 2 Chapter 8	Chapter 3	Chapter 5 Chapter 9	Chapter 4 Chapters 9	Chapter 8	Chapter 10
Federalism	Alcohol/Drugs	Administrative agencies	Torts/Negligence	Aircraft	Warsaw/Monteal
Preemption	Assault	Labor/Employment	Labor/Employment	Airports	Public/Private
Airsapce	Laser pointer	Airmen	Passenger rights	Airspace	Passenger rights
Airline Deregulation Act	Fraud		Accident Investigation	Insurance	Accident Investigation
Federal Aviation Act	Falsification				
Passenger rights	Federal vs State				
Privacy	Airport security				

AVIATION LAW

CASE BRIEFS

Oral presentations will be in front of the class.

The brief should occupy no more than one page. A copy of the brief will be given to the instructor for grading. See the Case Brief Rubric for details.

Oral presentation of no more than seven to ten minutes in length.

1. TITLE AND CITATION: Who is opposing whom? Case name; court name; date of decision; Reporter reference
2. VERY BRIEF HISTORY/BACKGROUND: What incident or issue lead up to this court case? What happened that got us here?
3. TOPIC/ISSUES/LEGAL ISSUES/RELEVANT LAW/RULE OF LAW: What was the overall issue(s) or legal question(s) before the court? What are the parties debating, and what are they asking the court to decide? Determine the relevant rules of law used to make its (the court's) decision. What rule did the court apply to the facts to determine the outcome?
4. FACTS/SUMMARY OF RELEVANT FACTS: Relationship of parties. Identify legally relevant facts of the case.
5. FINDING/FINAL DECISION/JUDGMENT: What was the opinion (holding) of the court? How did the court answer the issue? What was the final outcome of the case? This is usually found at the end of the opinion. This is a statement of law that is the court's answer to the issue. Where there separate concurring or dissenting opinions?
6. REASONING/RATIONALE: This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in which the court applied the rules or legal principles to the facts in the case. What was the chain of argument which led the judge(s) to rule as they did? Here the student should evaluate the significance of the case, its relationship to other cases, its place in history, and what it shows about the court, its members, its decision-making processes, or the impact it has on litigants, government, or society.
7. **APPLICATION: What are the implications to aviation professionals? How does this case impact activities in aviation**? It is critically important to know how this case is relevant to the students of this class.

Aviation Science
ASCI 4450 - Aviation Law
Saint Louis University

Reference: Chapter 1, Fundamentals of the U.S. Legal System, within the textbook

This paper is written to help aviation students, unfamiliar with law, understand how to read cases for the Aviation Law class. This paper explains opinions, how they are generally structured, and what you should look for when you read them. Chapter 1 of your course textbook provides a detailed guide to the litigation process. This class uses real cases to illustrate important concepts needed for understanding law in the field of aviation. These are real life disputes and you will learn about the law by picking up various pieces of it from what the cases tell you. Most cases in this course have taken place in National Transportation Safety Board (NTSB) Administrative Law Judges' (ALJ) hearings, federal and state appeals courts, and the U.S. Supreme Court. There will be an examination of civil and criminal cases.

Why do we have to read and understand cases?

Why are you required to examine these cases? After reading Chapter 1, Fundamentals of the U.S. Legal System, you learned that the U.S. has inherited from England a legal system that is largely judge-focused (although this class will study many legislative and administrative laws). The judges have made the law what it is through their written opinions. To understand that law, you need to study the actual decisions that the judges have written. In the U.S. system of government, judges can only announce the law when deciding real disputes: they cannot just go out and have a press conference and announce a set of legal rules. You need to look at the law the way that judges do and study actual cases and controversies, just like the judges. For example, a pilot has a beef with the Federal Aviation Administration's (FAA) action to suspend her pilot's certificate for several weeks and wishes to contest this with a lawyer in front of an NTSB administrative law judge in a formal court hearing. These real cases and disputes historically have been the primary source of law. Common law generally means law that has developed from adjudicated cases. It is sometimes called case law (Chapter 1, p. 4).

A second reason we will study these selected cases is that it can be hard for an aviation student to understand a particular Federal Aviation Regulation (FAR) or legal rule, and the merits as a matter of policy, without applying the rule in the real world. Some rules are a bit ambiguous, others are quite specific and easy to understand the spirit and intent behind them. You need to understand real-life applications of a rule before you can understand what the rule really means. These rules have both strengths and weaknesses. By studying cases, you can train your brains to think of specific factual situations that reveal the strengths and weaknesses of a particular aviation-related rule. Hopefully, as a future leader in this industry, you can take that skill to help develop better rules as a participant in aviation.

Category	Evaluator's Comments	1 – 5 Unacceptable or Poor	4 – 8 Marginal or Average	9 – 10 Good or Satisfactory or Well Done	11 – 12 Exemplary or Outstanding	Total pts. per category
CITATION Case name; court name; date of decision; page number; Reporter reference. NTSB Opinion and Order No., date served, Docket. DOL, ARB Case No., date		Does not cite the court case.	Cites the court case inaccurately or incompletely.	Cites the court case accurately and completely in most respects. Citation may be in an incorrect format, but with all information.	Cites the court case accurately and completely. Identifies the case name and citation in the correct format and with all information.	
BRIEF HISTORY / BACKGROUND / SUMMARY OF RELEVANT FACTS Briefly indicate the reasons for the lawsuit. What happened that got us here? Identify the relationship/status of the parties (Note: Do not merely refer to the parties as the plaintiff/defendant or appellant/appellee; be sure to also include more descriptive generic terms to identify the relationship/status at issue, e.g., buyer/seller, employer/employee (etc.) Identify legally relevant facts, that is, those facts that tend to prove or disprove an issue before the court. The relevant facts tell what happened before the parties entered the judicial system.		Presents few, if any, legally relevant facts of the case. Does not include all key facts and reasoning is absent or incoherent or is not in accord with the opinion.	Presents some legally relevant facts of the case. Does not include all key facts.	Presents the legally relevant facts of the case. Includes all key facts and the reasoning may contain weaknesses, but is basically cogent and accords with the opinion.	Presents and explains the legally relevant facts of the case. Includes all relevant facts and the reasoning logically connects the facts to the rule in accord with the opinion.	

Identify procedurally significant facts. You should set out (1) the cause of action (the law the plaintiff claimed was broken), (2) relief the plaintiff requested, (3) defenses, if any, the defendant raised.						
Category	**Evaluator's Comments**	**1 – 5 Unacceptable or Poor**	**4 – 8 Marginal or Average**	**9 – 10 Good or Satisfactory or Well Done**	**11 – 12 Exemplary or Outstanding**	**Total pts. per category**
ISSUES / LEGAL ISSUES/ ***LEGAL QUESTION / LEGAL PRINCIPLE / RULE / RELEVANT LAW / RULE OF LAW*** The legal question(s). Concisely phrase the essential issue before the court. A substantive statement of the issue consists of the point of law in dispute and the key facts of the case relating to that point of law in dispute (legally relevant facts). Procedural issue: What is the appealing party claiming the lower court did wrong (e.g., ruling on evidence, jury instructions, granting of summary judgment, etc.)? What are the parties debating, and what are they asking the court to decide?		Incorrect issue is identified. Incorrect rule is identified. Incorrect or irrelevant rules of law were stated.	Issue is not completely identified. Rule is not completely identified or is irrelevant.	Issue correctly identified, but may contain extraneous information and is not stated in the form of a question. Identifies and describes the topic and issue(s) of the case. Relevant rule correctly identified, but may contain extraneous info and is not in the form of a statement.	Issue correctly identified and is stated in the form of a question. Identifies and describes in detail the topic and issue(s) of the case. Relevant rule is correctly identified in detail and is in the form of a statement.	

Determine the relevant rules of law used to make the court's decision. What rule did the court apply to the facts to determine the outcome? This is the rule of law that the court applies to determine the substantive rights of the parties. The rule of law could derive from a statute, case rule, regulation, or may be a synthesis of prior holdings in similar cases (common law). The rule of legal principle may be expressly stated in the opinion or it may be implied.						
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
DECISION / FINDINGS / JUDGMENT This is the court's final decision as to the rights of the parties, the court's response to a party's request for relief. Generally, the appellate court will either affirm, reverse, or reverse with instructions. The judgment is usually found at the end of the opinion. What was the outcome of the case? What was the opinion (holding) of the court? Was there a dissent?		Fails to answer the issue question. Provides an incomplete summary or omits a summary of the court's decision. Outcome of the case is not addressed.	Fails to answer the issue question. Provides a partial summary of the court's decision. Outcome of the case is incorrectly identified.	Correctly answers the issue question. Summarizes the trial court's decision and, if applicable, appellate court's decision.	Correctly answers the issue question. Summarizes comprehensively the trial court's decision and, if applicable, appellate court's decision.	
		Merely repeats what the court said in analyzing the facts.	Merely repeats what the court said in analyzing the facts.	Accurately explains the reason(s) for the decision.	Accurately and fully explains the reason(s) for the decision in detail.	

REASONING / ANALYSIS / RATIONALE This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in which the court applied the rules / legal principles to the particular facts in the case to reach its decision. This includes syllogistic application of the rules as well as policy arguments the court used to justify its holding.		Incompletely explains the reason(s) for the decision.	Partially explains the reason(s) for the decision.	Fails to summarize the court's analysis in own words.	Summarizes the court's rationale in own words.	
APPLICATION / IMPLICATIONS FOR AVIATION PROFESSIONALS For this course, this is an important section. How does this opinion impact {us} aviation professionals? What are the implications to aviation professionals? How may we apply this case to our activities in aviation? What are the political, economic or social impacts of this decision going forward?		Incompletely / Incorrectly assesses the implication(s) of the decision and its importance for aviation professionals. Error.	Somewhat assesses the implication(s) of the decision and its importance for aviation professionals. Some error.	Adequately assesses the implication(s) of the decision and its importance for aviation professionals. No error.	Thoroughly assesses the implication(s) of the decision and its importance for aviation professionals. No error.	
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
ORAL PRESENTATION Completeness: Detail, depth, appropriate length, adequate background information Grammar/Mechanics: Correct grammar and usage		Presentation does not provide adequate depth; key details are omitted or undeveloped; presentation is too short or too long Presentation contains several major grammar/usage errors; sentences are long,	Additional depth needed in places; important information omitted or not fully developed; presentation is too short or too long Presentation may contain some grammar or sentence errors; sentences may contain jargon or are	Presentation provides adequate depth; few needed details are omitted; major ideas adequately developed; presentation is within specified length Presentation has no serious grammar errors; sentences are mostly jargon-free,	Presentation provides good depth and detail; ideas well developed; facts have adequate background; presentation is within specified length Presentation contains no grammar errors; sentences are free of jargon, complete and easy to understand	

Delivery: Volume, pace, diction, appearance, energy, posture Interaction: Eyes and Q & A		incomplete or contain excessive jargon Low volume or energy; pace too slow or fast; poor diction; distracting gestures or posture; unprofessional appearance; visual aids poorly used Little or no eye contact with audience; poor listening skills; uneasiness or inability to answer audience questions	too long or hard to follow More volume/energy needed at times; pace too slow or fast; some distracting gestures or posture; adequate appearance; visual aids could be improved Additional eye contact needed at times; better listening skills needed; some difficulty answering audience questions	complete and understandable Adequate volume and energy; generally good pace and diction; few or no distracting gestures; professional appearance; visual aids used adequately Fairly good eye contact with audience; displays ability to listen; provides adequate answers to audience questions	Good volume and energy; proper pace and diction; avoidance of distracting gestures; professional appearance; visual aids used effectively Good eye contact with audience; excellent listening skills; answers audience questions with authority and accuracy		d **Course**
Total Points: Maximum possible 84							

Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations from the instructor:

For fall 2022 course session, expand the listing of cases which illustrate airport operations and administration.
For fall 2022 course session, consider reducing the emphasis on administrative law cases as the department is seeing an increasing number of students majoring in non-professional pilot emphasis areas. They do not need an intense study of administrative law cases centered around pilot and medical certifications and flight operations.

**Attach description of assignment used for assessment and samples of student work.*

SAMPLE STUDENT CASE BRIEFS

Don Douglas v. SkyWest Airlines, Inc. DOL (2009)

HISTORY/BACKGROUND: The complainant of this case, Don Douglas, is a veteran pilot for SkyWest Airlines from Salt Lake City (SLC). After a week of flying five continuous 12-hour shifts to Jackson Hole (JAC), the individual had a surgical procedure completed on March 18, 2005. As a result of the operation, Douglas took painkilling medication for the following two days before returning to work on the following Monday. On Wednesday, March 23, 2005, the complainant met with the first officer (Brewer) who complained of a lack of sleep and flight attendant who had strep throat. The departure for JAC was initially delayed due to snowstorms, but worsening conditions after departing resulted in a diversion back to SLC around midnight. The same crew was scheduled a few hours later for a 4:00am departure back to Jackson Hole morning. Douglas claimed that he and his crew would not be capable of completing that flight after such little rest. The flight was later cancelled after the complainant called crew scheduling to report to the System Chief Jim Breeze that the crew would not complete the flight safely.

Breeze informed the Regional Chief Pilot Tony Fizer who then called Breeze about the decision. Fizer told the complainant to complete an "Irregular Operations Report" and imposed disciplinary action of a week's suspension and counseling statement in his record the following day. Douglas appealed the decision to SkyWest's review board, resulting in the board reversing the suspension and counseling statement. Fizer replaced the statement with a "verbal warning" in stating that each crew member will make determination for fitness of flight and that Douglas would not cause a "loss of revenue" in performing his duties.

In the following months, explicit graffiti was posted in the crew lounge in response to Fizer's actions. After gathering a report from a handwriting analyst, Fizer interrogated Douglas trying to pressure him to admit guilt for the graffiti. Douglas denied the accusations with Fizer stating that if he was later to be found guilty of the incident he would be fired. Douglas was then suspended during this investigation. Further samples of only the complainant's handwriting were examined by other analysts. On August 31, 2005, Douglas was fired by Fizer for "dishonesty" and would not be eligible for rehire due to this involuntary termination. The reasoning for this termination was due to the results of the graffiti investigation. Even though Douglas appealed to the internal review board of SkyWest, the board ultimately upheld the termination.

In the following months, Douglas filed a complaint with the Labor's Occupational Safety and Health Administration (OSHA) and requested an ALJ hearing after the case was dismissed from OSHA. The ALJ concluded that SkyWest violated the employee protection provision of AIR 21 and that he should be reinstated to his formal position with seniority. SkyWest filed a motion to understand its appeal rights, with the ALJ issuing an order recommending an award of back pay and other expenses. Both parties conclusively filed appeals.

TOPIC/ISSUES/LEGAL ISSUES: In *Don Douglas v. SkyWest Airlines, Inc.*, the main topic at hand relates to the firing of the complainant for his "dishonesty" which relates back to his determination of unfitness for flight on the morning of March 23, 2005. Fizer claimed to have fired Douglas due to the results of the handwriting examinations conducted during the graffiti investigation. However, the issue at hand falls under an AIR 21 provision relating to employee protection. By use of a preponderance of the evidence, Douglas must prove that he engaged in a protected activity, that SkyWest Airlines knew that he engaged in the said activity, that the air carrier took adverse actions against him, and that the protected activity was a factor contributing to the personnel action.

RELEVANT LAW/RULE OF LAW: The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, also known as "AIR 21" (P.L. 106-181) was signed into law on April 5, 2000 as a measure to improve airline safety. Under Sec. 519, it is quoted that "No air carrier or contractor or subcontractor of an air carrier may discharge an employee or otherwise discriminate against an employee with respect to compensation, terms, conditions, or privileges of employment because the employee…provided…to the employer or Federal Government information relating to any violation or alleged violation of any order, regulation, or standard of the Federal Aviation Administration or any other provision of Federal law relating to air carrier safety under this subtitle or any other law of the United States" (AIR 21, 2000). In short, an air carrier such as SkyWest is not allowed to fire an employee for a protected activity. A protected activity under AIR 21 is when an employee produces information relating to an alleged violation of a FAA order/regulation related to the safety of the air carrier.

FINDING/FINAL DECISION/JUDGEMENT: The U.S. Department of Labor (DOL) Administrative Review Board (ARB) reviewed the findings of this case under the substantial evidence standard, meaning that evidence that is deemed substantial will be conclusive in findings of fact. With regard to determining the final decision in *Don Douglas v. SkyWest Airlines, Inc.*, the ARB reviewed the case *de novo*, meaning without reference to the previous court's decision. The court determined after reviewing the substantial evidence presented in the case that SkyWest violated AIR 21. This was due to the fact that Douglas's protected activity was a factor in his dismissal from the air carrier. With this notion, the ARB affirms the ALJ's recommended decision in reinstatement, back pay (with correction to include pay for September/October 2005), and attorney's fees being covered.

REASONING/RATIONALE: After examining the facts of the case, the court determined that there was substantial evidence to support the previous ALJ's findings that Douglas would have violated safety regulations if he flew on March 23. This was driven by credible testimonies from the complainant that he was experiencing exhaustion from multiple factors, which caused him to declare himself unfit to fly per his training on the matter. With this protective action, the court concluded that Fizer's adverse actions in firing Douglas was made in part due to his decision not to fly. Also, it was evidenced that Fizer's accusation on Douglas badmouthing him was "baseless." For the graffiti, Fizer targeted the complainant as evidenced through misinformation of the sequence of events and facts during the testimony. The court determined that Douglas had ultimately no motivation to write the graffiti. With these facts, the court affirmed the ALJ's findings that the protected activity of Douglas led to his firing by Fizer. The ARB further agreed that SkyWest did not prove that it would not fire Douglas even without the protected activity due to the handling of punishments between the complainant and Brewer. Finally, the court agreed on reinstatement, pack pay, and attorney's fees to be paid with the addition of entitlement pay for the months of September/October in 2005. The reimbursement coincides with a successful AIR 21 complaint being successful in court.

APPLICATION: As professional pilots entering the space most likely through the regional airline sector, it is important to know your rights under AIR 21. If you feel that you are unfit to fly, do not hesitate to document and report to your superiors to ensure safety and compliance with regulations. If there is resistance from your superiors, know that you are protected from unlawful firing by use of AIR 21.

HISTORY/BACKGROUND. Fred Farington was a pilot who flew Aero Commander Lark aircraft and was the owner of Auburn Flying Service based in Auburn, Nebraska. On October 5, 1997, there was a "fly in" event in which people could come to the Auburn Municipal Airport and pay Farington ten dollars to fly around the Auburn, Nebraska area for a short ten-to-fifteen-minute flight. On his ninth flight of the day, Farington attempted to land but struck a semi tractor-trailer.

As a result of this collision, all three of Farringdon's passengers passed away while Farington was rendered severely injured. Four months later, Farington eventually succumbed to his injuries and passed away.

Farington's aircraft was insured by AVEMCO Insurance Company, an aviation insurance company based in the state of Maryland. The coverage he had was under a policy that did not cover commercial operations. According to law.justia.com, "'Commercial purpose' means any use of your insured aircraft for which an insured person receives, or intends to receive, money or other benefits. It does not include: the equal sharing among occupants of the operating costs of a flight." Based on this, AVEMCO refused to cover the flying service for the accident since it did not fill the qualifications.

TOPIC/ISSUE/LEGAL ISSUES. From the perspective of Auburn Flying Service, they believed that they were entitled to AVEMCO covering the cost of the accident. This is because of the exemption stated in their insurance policy that stated commercial service does not apply if passengers share equal operating costs of the flight. They argued that when passengers paid the ten dollars, they were contributing to the splitting of operating costs. Therefore, the "fly in" event did not count as commercial service and they were entitled to coverage.

From the perspective of AVEMCO, they argue that Auburn Flying Service was not eligible for coverage since the "fly in" was indeed a commercial service. While passengers did pay Farington for their rides, ten dollars per passenger is not sufficient to cover the costs of a flight. Had Farington required the passengers to pay a higher price to evenly split the cost of operations, Auburn Flying Service would have been covered by the accident.

RELEVENT LAW/RULE OF LAW. This case was handled based on the laws in the state of Nebraska. For Auburn Flying Service, they state that their insurance contract was ambiguous and subject to debate on whether the accident was considered commercial service. To argue this, Auburn Flying Company used the case of *Farm Bureau Ins. Co. v. Bierschenk,* 548 N.W. 2d 322, 324 (Neb. 1996). This states that an insurance contract must be unambiguous, and the language stated in the contracts must not be able to be manipulated to create ambiguities. If the court views that an ambiguity can be interpreted by the receiver of the insurance in a certain way, they will rule it as ambiguous.

In terms of what is considered ambiguous, the case of *Plambeck v. Union Pac. R.R. Co.,* 509 N.W. 2d 17, 20 (Neb. 1993). This states that "[a] document is ambiguous if a word, phrase, or provision of the document has, or is susceptible of, at least two reasonable but conflicting interpretations." According to the Auburn Flying Service, they believe that the exception of the commercial service aspect of their contract is

ambiguous and can be argued for AVEMCO to cover them. However, AVEMCO states that their contract is clear in defining what “commercial service” is.

FINDINGS/FINAL DECISION. The U.S. Court of Appeals for the Eighth Circuit ruled in the favor of AVEMCO. This is because the court found that the insurance policy was not ambiguous and Auburn Flying Service’s accident was not covered by their policy. One of the reasons this decision was made was by the formal definition of the phrase “commercial purpose”. Commercial purpose is when a party intends to receive money or other forms of compensation. It was clear that Farington received the money from the passengers as a fee rather than to split the cost of the aircraft operations. Had he intended to split the cost, he would have charged much more than ten dollars per person. The court concluded that the passengers did not have the intention of splitting the cost of flight operations but instead agreed to just pay a fee for a short ten-to-fifteen-minute flight.

APPLICATION. This is an important case to study because it shows how different parties can interpret written contracts differently. For Auburn Flying Service, they believe that the accident that occurred in 1997 was covered by the exception written in their contract as well as the fact that the contract was ambiguous. However, AVEMCO argued that their contract was clear in what it considered commercial operations and that Farington was indeed engaging in commercial services at the time of the accident.

Language is something that can be interpreted in a variety of ways. While it can appear clear to some, it can also be rendered in a way that portrays a different meaning. However, when looking at what the contract states, it is clear what the insurance company defines commercial services and how Farington’s actions on the day of the accident did not fall under the exception of splitting the cost of flying.

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

Module 1 - Canvas Assignment Final Paper/Presentation:
The final paper or presentation, with a minimum of 7 references, may be completed through any of the following methods (due 13 DEC 2021):
1. Individual 3–7-page paper
2. Group paper 8-11 pages
3. Individual recorded presentation
4. Group recorded presentation (Zoom or Canvas recording 15-20 minutes)
Title, students' names, course, and due date on first slide.
Make sure to include citations on the slides where you are using someone else's material when either paraphrasing or quoting.
Reference list in APA 7th formatting at the end of the presentation.
Group size may be 2-4 students. You are welcome to partner with students from ASCI 4250-01 and ASCI 4250-10.
Identify the style of paper in the first paragraph or on the introduction slide (Argumentative, Descriptive, Expository, or Literature Review).
Select a topic: You may choose any topic covered throughout the class for the final paper or presentation. Below are a list of topics from the syllabus to help you decide…

Points Possible: 100

Due Date: 13 December 2021

Notification thru: Schedule, Module Lesson Plan, Discussion, Announcement, Email

Submission: Attach of paper or presentation using the assignment link

Guidance and resources: Module Lesson Plan, Discussion, Instructions/Steps to success, weblinks to Purdue OWL, SLU Writing Center, sample paper, etc.

Student Submission: Annie Phan and Jordan-Chase Fines

Please select "view in new tab."

https://slu.zoom.us/rec/share/SqgWEaPX9Xa_VViEAIhBelg433gz66YzegjmO6jf3dcIq5u2ornYxsVSI6phHut_.6UtwSOFaeUqy_RWf?startTime=1639460258000

(View in a new tab)

Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: ___30_____

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	99%	Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 2 - Canvas Assignment Information on Discussion Board: Working together, let's see if we can identify the "key personal characteristics that enable a person to fight ethical violations" mentioned by Patankar (2021) when writing about Joe's experience.
Name one personal characteristic that helped Joe (the mechanic-> manager) deal with the many ethical challenges throughout his career.
Please, do not duplicate or use the same answer as other students.

Points Possible: 10

Due Date: 19 September 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: Student's compiled a list of over 30 professional and personal characteristics that promote aviation safety

Student Submission: Yu Feng

The key characteristic of which led to Joe's success is his ability to institutionalize leadership which means that Joe doesn't just demonstrate personal capacity at dealing with aviation challenges and ethical responsibilities, which means that he lives by the standards of which ensure that the values he possessed that led to his success will become the cornerstones of future managers and engineers who will most likely deal with similar problems as he did. This is evidenced by the fact that Joe has a number of protégés who also share his values and are referred to him for advice when facing their own challenges as mechanics. The result is that Joe's values and capabilities are standardized and constantly referenced in a practical manner. Just like Joe, they pick their own battles, are willing to challenge management at the right time challenge their evidence. Joe certainly has his share of proteges. Over the years, many mechanics and inspectors have faced their own challenges, referred to Joe for advice, and developed their own skills. Consequently, there are at least a dozen Joes around. They have mastered the art of collecting evidence, picking their battles, challenging management at the appropriate times, and ultimately winning their battles. The strong social support structure that Joe built also helps them deal with family issues. It is not unusual to have these mechanics watch out for each other's kids and help out at family events.

SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.

Module 7 - Canvas Assignment Information on Discussion Board: Can this industry, in the realm of international air travel, strike the proper balance between health (spread of disease) and economic trade?

Points Possible: 18

Due Date: 28 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: During the Module, Omicron was just beginning to spread in the U.S. and the CDC introduced new travel guidance that was including in the discussion.

Student Submission: Clifford Drozda

I believe that international air travel can reach a proper balance between health and trade. As seen in the previous year and a half, air travel has been able to adapt to a more careful way of travel. Cargo only flights took priority in a time of online shopping, and commercial flights have still been able to carry passengers by implementing ways to reduce the spread such as masks and spaced out flights when needed most. In March 2020, air travel almost ceased and airlines took a large hit. I am not saying this situation was close to ideal, but I do believe that airlines will be able to adapt easier in the future and will continue to find ways to transport passengers while also being safe with the spread of disease. The normalcy of air travel has seemed to return and the issue with COVID was at it all happened so fast. In the future, I think that airlines will be more ready to respond to pandemic-related issues if anything ever occurs. Health and trade in the airlines have been balanced and only time will tell but airlines may be able to quickly handle similar issues more effectively in the future if needed.

SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.

Module 6 - Canvas Journal Assignment: Create a 4-6 paragraph Diversity Statement using the guidance provided in “Writing a Diversity Statement” (University of Nebraska, 2021).

Points Possible: 50

Due Date: 14 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text in the assignment

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success, Sample Diversity Statement

Student Submission: CH Fairchild

While I grew up in a predominantly white neighborhood, played a predominantly white sport, and am pursuing a career in a predominantly white career field, I found inspiration in the individuals around me who did not fit that mold. There are two particular people who have made a significant impact on my development and my attitude towards diversity. One individual was a sports coach, and the other, a flight instructor.

I grew up as a hockey player and for the better part of 20 years, I grew up playing with athletes who mostly looked like me. It was not until one of my last years that I had the opportunity to play for a brilliant hockey coach who was a minority. His brilliance as a hockey coach came from his love and passion for the game, and for his players. He had the mindset that he was not just coaching athletes, but he was coaching leaders. He taught invaluable lessons from his experiences of racial abuse and insensitivity which taught us to be leaders of character. I learned more in one year from that coach than in the previous 15 years of hockey.

During my flight training at Saint Louis University, I had the good fortune to work with an instructor who taught me more about diversity and inclusion than anyone else. He grew up in an underserved neighborhood, graduated at the top of his class in high school and university, and shows everyday what professionalism in aviation means. His story of how he got into aviation is a simple one, but it speaks volumes to the importance of diversity in our industry. He saw the movie "Red Tails," a story about the Tuskegee Airmen in WWII. While this may seem very unassuming, it highlighted a key aspect of diversity that is not always thought about. It took for him to see people who looked like him, other minorities, in order to convince himself that he could become a pilot. He told me that people from his town do not become pilots. It is, frankly, something no one ever considers. He saw that movie, and convinced himself that he could become a pilot. What I learned from this is that I never had to have that experience. I did not need to see a pilot with the same color skin as me in order to convince myself that it was an option.

These two very influential leaders inspire my commitment to diversity and inclusion in my life. Hearing stories of racial abuse on the ice rink helps me to find that inclusivity of others around me so that they never have to experience the things I heard about. Having a flight instructor who comes from a very different background has helped me to learn and reflect on how we as aviation professionals can build a more diverse, inclusive, and accessible environment for anyone who wishes to be a part it.

Performance Indicator Rubric

Course: ASCI 4650 Economics of Air Transportation Course Instructor: _____BRUCE HOOVER_____

Semester Taught: _____SPRING 2022_____ Number of Students in Course: ____13____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	**Airline (simulation) Management Audit Presentation.** A management audit report A management audit accompanying slides 100% of the class achieved a 70% or higher BudJet Airlines: Three students 94 North&Simple Airlines: Three students 87 Commonwealth Billiken Air: Four students 81 Stratus Airlines: Three students 75	Airline (simulation) Management Audit Presentation. Benchmark achieved: Y**es** 100% of the class scored a minimum 70%. The 80% benchmark was met as all 13 enrolled students scored above the 70% minimum.
SLO 5: Apply knowledge of business principles in aviation-related areas.	**Online Airline Simulation decisions** 77% of the total enrolled students achieved a minimum of 70% or higher. Only one airline team of three students was unable to achieve a final score of at least 70%. BudJet Airlines: 842 (84.18%) Stratus Jet Airlines: 756.1 (75.6%) Commonwealth Billiken Air: 734.7 (73.5%) Plane&Simple Air: 662 (66%)	Benchmark achieved: **No** 77% of the enrolled students achieved the benchmark. Three of the 13 enrolled students were unable to meet the benchmark.

EVIDENCE

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

From the syllabus: Your airline team will make a brief presentation to the ASCI 4650 class and any guests who may be in attendance. You will conduct the audit from the perspective of an **outside consultant firm** your airline has contracted and you must be objective in your report findings. **Objectivity and honesty**—be brutally frank—are hallmarks of a good external audit. Any attempt to "whitewash" or omit critical points will be dealt with unkindly by the instructor. ***There are several methods of approaching this assignment and your team is encouraged to be creative. Keep in mind you are part of a consulting firm. Your report may follow any creative format appropriate for an outside consulting firm report. Any records, charts, graphs, etc., are welcome if they enhance the presentation.*** Handouts to class members are appropriate if they, too, enhance the presentation.

The Management Audit Content Guide provided the airline simulation teams with guidance on suggested content reflecting the economic principles and characteristics of the airline industry.

2022-Management Audit Content Guide.d

The four airline teams prepared and made an oral presentation of their airline management decisions and the results of those operational, economic and financial decisions during the course of the semester.

Example: North&Simple Airlines audit report:

North&Simple Airlines Audit Report-

North&Simple Audit Slides-final.pdf

Example: BudJet Airlines audit report

BudJet Airways Mgmt Audit Report-final.pdf

BudJet Airways Audit Slides-final.pdf

The oral and written presentations were scored by four independent members of the department faculty.

Example: Budget Airlines team presentation rubric results of four faculty member-evaluators:

Economics: It is the social science of how people (or organizations) choose to allocate their scare resources (money, people, equipment, time, etc.). The science that studies how people choose is indispensable if you really want to understand human beings both as individuals and as members of larger organizations. It is a methodology for analyzing situations where companies (human beings) have to make choices from limited options (and resources).					
Airline Name: **Students' last names:** **Attributes to be measured:**	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
PRESENTATION ORGANIZATION & MECHANICS	Presentation lacked organization & had little evidence of preparation. Spelling (visual) and/or grammatical (oral) errors; 4 or more. No sequence of information.	There were minimal signs of organization or preparation. Presentation has up to 3 **errors**; misspellings and/or grammatical. Difficult to follow; team members jump around information.	The presentation had organizing ideas but could have been much stronger with better preparation. Presentation has no more than 2 misspellings and/or grammatical **errors**. **Logical sequence**; somewhat interesting; can be followed.	The presentation was **well organized, well prepared &** easy to follow. No misspellings (visual) or grammatical (oral) errors. Presented in logical, interesting sequence. Very easy to follow.	11 10 9 10

This is an internal management audit of the airline.					
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
TEAM PRESENTATION DELIVERY Management Audit	Knowledge level of the audience has not been considered. Audience is not engaged. Team is not professional in appearance. Team members not confident & demonstrated little evidence of planning prior to presentation. No eye contact; no descriptive gestures; tension &	Opportunities for adjusting the presentation level for the audience have been missed. Audience's attention is weak. Team members lack in professional appearance. Presenters were not consistent with the level of confidence/preparedness, but had one or two strong moments.	Audience's knowledge level & interests have been considered. Attention has been maintained. Team appearance is acceptable under most circumstances. Team members were occasionally confident with their presentation; however, the presentation was not as engaging as it could have been.	Audience interests are piqued & well considered. Audience is drawn & engaged. Team members are very professional in appearance. Members were all very confident in delivery & excellent in engaging audience. Preparation is very evident.	11 10 10 11

	nervousness is obvious. Team shows little interest in conveying information to others.	Minimal eye contact while reading mostly from notes. Very little movement or descriptive gestures. Mild tension. Transitions are disorganized.	Consistent use of direct eye contact, but still returns to notes. Made movements or gestures that enhance. Minor mistakes, but quickly recovers from them. Little or no tension. Team members transitions fairly organized.	Direct eye contact; seldom looks at notes; fluid movements; relaxed, self-confident with no mistakes. Team members transitions organized & seamless.	
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
EVIDENCE OF TEAMWORK / EFFORT Management Audit	Little evidence of preparation. It seems as though not all members worked on the presentation.	Little or very weak research effort. Some preparation is evident. Seems as though certain people did not do as much work as others.	Team demonstrated good research. Preparation & pre-rehearsal was only adequate. Seems like everyone did some work, but some team members	Excellent research. Well prepared & rehearsed. Evident that all team members contributed equally.	10 11 10 11

	Transitions between team members are not smooth.		are carrying the presentation.	Smooth transitions between team members.	
OVERALL CONTENT & APPLICATION OF KNOWLEDGE:	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
Understand and apply economic concepts and theories to strategic management of an airline Expectation: **Team should understand and apply economic concepts and theories in a clear and effective manner in the audit report. Explain core economic terms, concepts, and theories**	Team fails to identify any **economic concepts and theories** in the audit report. No valuable material.	Superficial approach to **economic concepts & theories** in the audit report. Irrelevant or inaccurate concepts, terms, or theories. As a whole, content was lacking.	Team had good analysis with good supporting **economic concepts & theories in the audit report**. Good quantity & quality of economic information. Good amount of valuable material.	Team demonstrated in-depth analysis with strong supporting **economic concepts & theories**. Exceptional amount of valuable material.	10 10 10 10
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points**

					per attribute
Think critically and solve problems Audit is honest and objective Expectation: **Team should identify the questions at hand, think critically and solves problems in an illuminating way.** **Objectivity and honesty in the audit**	Problems are not well identified. Identifies inappropriate main issues; describes issues inaccurately; loses focus on given point. Fails to assess conclusion, raises no appropriate additional questions, fails to place the argument within a relevant larger context. Attempted to "whitewash" or omit critical points in the audit.	Team fails to define the problems adequately. Some ambiguity in description of issues. Indicates weak but relevant reflection on strength & implications of conclusions. Audit was objective and honest.	Team adequately defines the problems. Selects component points; does not recognize some priorities among details in relation to given question. Audit was objective and frank	Team states the problems clearly & identifies underlying issues. Describes it accurately; selects key component points; recognizes priorities; picks up unstated implications. Appropriately assesses conclusions in terms of reliability and need for further evidence, assesses implications of the conclusion within a larger context. Audit was objective, frank and honest	11 11 11 11

	1 – 3 Not Acceptable	4 – 6 Below Expectations	7 – 9 Meets Expectations	10 – 11 Exceeds Expectations	Total points per attribute
RESPONSE TO QUESTIONS	Team cannot answer expected questions.	Team has difficulty answering questions beyond a rudimentary level.	Team has sufficient knowledge of the material to answer questions.	Team demonstrates full knowledge of the material & can explain and even elaborate on questions.	10 10 10 10
Total Points: Maximum possible 66 66 x 4 evaluators = 264 Total points & letter grade equivalent: 59 – 66: A 53 – 58: B 46 – 52: C xx – 45: D					**TOTAL POINTS** **63** **62** **60** **63** **248/264** **= 94 (A)**
Example questions from reviewers					

What economic principles, economic characteristics of airlines, or economic issues stood out for you as a result of participating in this course and the airline simulation? What economic concepts or theories of the airline industry are most pronounced after taking this course?

If your airline had the opportunity to "start all over," what would your team do differently?

Did your airline's team make decisions (each quarter) on a rational, economic basis or did the team often just take a "stab in the dark" approach?

Of all the performance and operations metrics, which ones were most important to you and why?

Regarding the operating performance model (traffic/yield/output/unit cost = operating profit/loss): where did your airline succeed and where did it fail?

What unexpected risks or set-backs did the airline face during the 10 quarters (2.5 years)?

Did your airline team maintain any records or data worksheets as you progressed in the simulation?

How much total money did your airline spend on demand forecasts, market research information, information on other air carriers' fares, etc.?

Simulation Teamwork. What are your thoughts on teamwork during the simulation? Did all team members contribute their fair share of the workload and was the quality of the product produced by the team members of that expected?

SLO 5: Apply

knowledge of business principles in aviation-related areas.

Each student will participate in an airline simulation where each member is part of an executive team of a small airline firm. The simulation provider will contact you to register and practice round before the real simulation starts. Each team will meet to **formulate their firm level strategy** and submit ongoing decisions concerning critical issues facing the firm. Decisions are due online on the Airline Simulation site on a weekly basis by each team leader. Failure to submit a decision will have severe market consequences on your airline's performance, and as a result, on your simulation project grade.

The airline simulation activities are integrated into the classroom learning experience. The group project will require collaborative work and everyone is expected to carry an equal share of the work load within each airline team. The group project will be a better product if everyone shares their different knowledge and experiences.

Airline Simulation – Learning Objectives

Experience strategy formulation and implementation in a dynamic (ever-changing and competitive) environment
Learn about group and organizational processes (team work)
Understand the financial implications of air carrier operational, marketing and management decisions
Improve decision-making skills under ambiguous circumstances and time pressure
Experience the fun and challenges of running a small air carrier business

You will have to make weekly decisions and submit these decisions on the Airline Interpretive Simulations website. Each airline team will be graded on the quarterly (each decision period) performance measures for that period. For example, cumulative net income of the airline may be weighted as 10% of the quarterly score. Depending on how well the airline is managed by the team, these quarterly scores will vary from 60 to 90 points of a possible 100 points on the performance measures (reliability, yield, load factor, social performance, etc.).

This is a competitive simulation based on teamwork, analysis of data and good business decisions for the strategies you have decided upon for your particular airline. There will be only one airline (team) winner at the end of the simulation.

This spreadsheet contains the decision-making schedule.

Decisions & Incidents Student Sched 2022.xl

This spreadsheet is a track of the four airlines progress through the semester.

2022-airline sim quarterly results.xlsx

This spreadsheet provides the final operational, economic, and financial metrics results of the four airline management teams.

2022-final results & metrics.xlsx

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations by the instructor:

Reduce the final grade weight of the management audit oral and written presentation from 30 percent to a lower value. This activity was the most-heavily weighted in the syllabus.
Consider a different textbook. Students expressed some frustration with the textbook's lack of flow, editing errors and some chapters at a graduate level.
Give consideration as to how the "airline management teams" are to be constructed. This spring 2022 session involved a random drawing of numbers to see what students would be on each (of four) team. Is it better to let the students form their management team? Would this process result in achieving all the assessment values such as the benchmark?

**Attach description of assignment used for assessment and samples of student work.*

See attachments above.

Aviation Management – Data collected in support of Curriculum Goals and SLO 1

The department met over a 2-year period to revise the Aviation Management program to include additional business and management course content and to include the University required Common Core Components. Following is the revised curriculum.

Academic Year 2022 – 2023
Bachelor of Science in Aeronautics
Concentration in Aviation Management
Required Credit Hours in Curriculum: 120

SAINT LOUIS UNIVERSITY

School of Science and Engineering
Oliver L. Parks Department of Aviation Science

Fall Semester Year 1		**15**
CORE 1000 CORE 1500	Ignite 1st Year Seminar Cura Personalis 1: Self in Community ATTRIBUTE	3
ASCI 1300	Aviation Weather	3
ENGL 1500	The Process of Composition	3
PSY 1010	Gen Psychology – Ways of Thinking: Social and Behavioral Sciences	3
BTM 2000	Introduction to Business Technology Management	3

Spring Semester Year 1		**15**
ASCI 1510	The Air Transportation System	3
ASCI 1850	Safety Management Systems	3
MATH 1320	Survey of Calculus – Ways of Thinking: Quantitative Reasoning Prereq: MATH 1200 or equivalent	3
CORE (THEO) 1600	Ultimate Questions: Theology Prereq: CORE 1500	3
CORE 1900	Eloquentia Perfecta: Written and Visual Communication Prereq: ENGL 1500	3

Fall Semester Year 2		**15**
ASCI 2250	Aviation and Airport Security	3
ACCT 2200	Financial Accounting Prereq: 30 credit hours	3
PHYS 1350/1365	Aviation Physics w/Lab – Ways of Thinking: Nature and Applied Sciences Lecture and Lab are Coreq	4
UNIV CORE ELECTIVE	Ultimate Questions: Philosophy	3
UNIV CORE ELECTIVE	Eloquentia Perfecta: Creative Expression	2

Spring Semester Year 2		**15**
ASCI 2750	Accident Investigation	3
ECON 1900	Principles of Economics Prereq: MATH 1200 or MATH 1320	3
UNIV CORE ELECTIVE	Equity and Global Identities: Dignity, Ethics, and a Just Society ATTRIBUTE	3
UNIV CORE ELECTIVE	Eloquentia Perfecta Oral and Visual Communication	3
UNIV CORE ELECTIVE	Ways of Thinking: Aesthetics, History and Culture	3

Fall Semester Year 3		15
ASCI 3050	Operations and Business Environment of Aviation	3
ASCI 4050 CORE 1700	Human Factors – Cura Personalis 2: Self in Contemplation Prereq: PSY 1010	3
MGT 3000	Management Theory and Practice	3
OPM 2070	Introduction to Business Statistics Prereq: MATH 1200 or higher	3
ACCT 2220	Accounting for Decision Making Prereq: ACCT 2200	3

Spring Semester Year 3		18
ASCI 3100	Air Carrier Operations Prereq: 60 credit hours	3
FIN 3010	Principles of Finance Prereqs: ACCT 2200, OPM 2070, ECON 1900	3
MGT 3300	Management of Human Resources Prereq: MGT 3000	3
OPM 3050	Introduction to Management Science Prereqs: MATH 1320 and OPOM 2070	3
MKT 3000	Introduction to Marketing Management Prereq: 30 credit hours	3
UNIV CORE ELECTIVE	Equity and Global Identities: Global Interdependence ATTRIBUTE	3

Fall Semester Year 4		15
ASCI 4250	Professional Ethics and Standards Prereqs: UNIV CORE Philosophy and Ethics	3
ASCI 4450	Aviation Law Prereq: 75 credit hours	3
ASCI 4915	Internship with Industry	3
MGT 3800	Project Management Prereqs: BTM 2000 and 60 credit hours	3
UNIV CORE ELECTIVE	Equity and Global Identities: Identities in Context ATTRIBUTE	3

Spring Semester Year 4		12
ASCI 4350 CORE 4000	Team Resource Management – Collaborative Inquiry Prereqs: ASCI 4050 and 90 credit hours	3
ASCI 4650	Economics of Air Transportation Prereq: ECON 1900	3
ASCI 4900 (CORE 3500)	Senior Seminar – Cura Personalis 3: Self in World – Reflection-in-Action ATTRIBUTE Prereq: CORE 1900 and 90 credit hours	3
UNIV CORE ELECTIVE	Eloquentia Perfecta: Writing Intensive ATTRIBUTE	3

Performance Indicator Rubric

Course: **ASCI 1300 Aviation Weather** Course Instructor: **Alec Albright**

Semester Taught: **Fall 2021** Number of Students in Course: **8**

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	**7 of 8 Av. Mgmt. students achieved 70% or better (87%)**	**Yes (small sample size of only 8 Management students)**

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1: I am offering the following assignment as a sample of the assessment used to gauge student ability to apply student learning outcome "SLO 1: Conduct aviation operations in a professional, safe, and efficient manner." Students in ASCI 1300 were asked to find an Aviation Safety Reporting System (ASRS) report in which the primary condition causing the safety-related incident was weather. Students then used their knowledge of weather theory and aviation weather products gained from class to write a short essay (400-700 words) about what happened, the type of weather occurring, and how such an incident could be avoided in the future. Students then created a powerpoint presentation and shared their findings with the class. I have included a de-identified copy of a student's work.

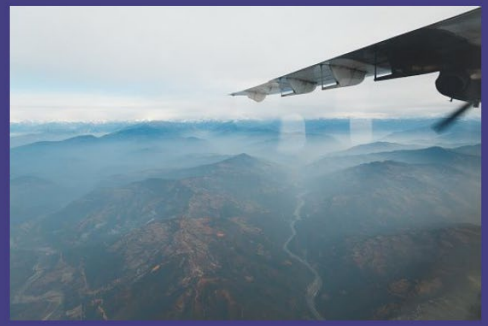
**Attach description of assignment used for assessment and samples of student work.*

ACN 1779262

[redacted]

Overview

- Small single-engined, fixed, low-wing aircraft
- Unexpected icing
- Fly over weather through opening
- Unable to copy IFR clearance

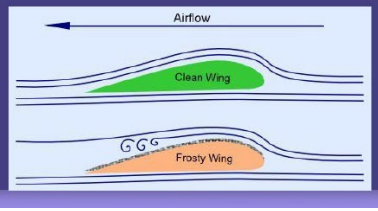


Issues Encountered

- Rapid forming vertical clouds
- MVFR conditions
- Icing
- Blockage of pitot port
- Instrument failure
- 02 tank malfunction

Icing hazard

- Accumulation of ice on aircraft from supercooled water droplets
- Necessary to form
  - Visible moisture
  - Freezing temperatures



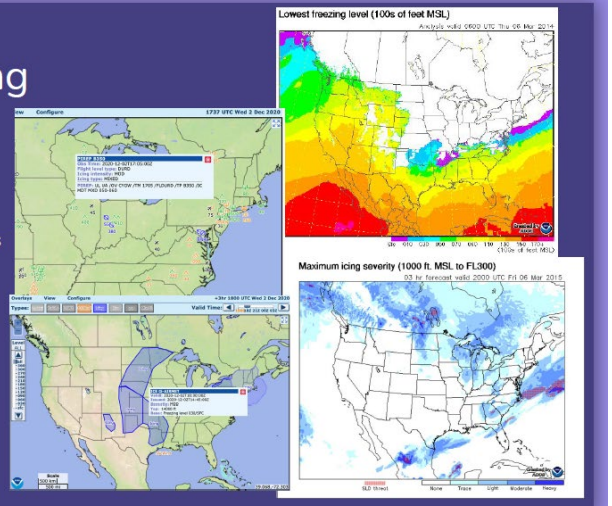
- Airfoil shape creates lift force
- Ice buildup on wings reduces lift

Pitot Tube

- Measures pressure
  - Used to calculate airspeed
- Icing can block tube and cause instrument failure
- Pilot lost all primary instruments
  - Able to use steam gauges

Preflight planning

- Important to be briefed of possible weather
- Be aware of freezing levels
- Aviation Weather resources
  - Freezing level charts
  - Icing charts
  - Icing AIRMETS
  - Icing SIGMETS



Takeaways

- Be consignant of weather and forecasts
- Do not overestimate abilities
- Avoid bad weather is possible
- Do not take unnecessary risks

Performance Indicator Rubric

Course: ASCI 1850 Safety Management Systems Course Instructor: Terrence Kelly

Semester Taught: Spring 2022 Number of Students in Course: 49

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Test #1 Class Average - 86.8% Test #2 Class Average - 84.0% Test #3 Class Average - 86.7% Final Exam Class Average – 75.4%	Benchmark Achieved Benchmark Achieved Benchmark Achieved Benchmark Achieved

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Test #1 Class Average - 86.8% Test #2 Class Average - 84.0% Test #3 Class Average - 86.7% Final Exam Class Average – 75.4%	Benchmark Achieved Benchmark Achieved Benchmark Achieved Benchmark Achieved
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	FDM/FOQA Assignment – 41/49 (83%) ASAP/ASRS Assignment – 43/49 (87%)	Benchmark Achieved Benchmark Achieved
SLO 5: An ability to apply the techniques, skills, and modern aviation tools to perform aviation related tasks of a professional pilot.	Risk Matrix Assignment – 45/49 (92%) Professional and Ethical Decisions Assignment – 43/49 (87%)	Benchmark Achieved Benchmark Achieved

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

ASCI 1850 is a freshman level course introducing Flight Science and Aviation Management students to formal aviation safety programs. Student Learning Outcome 1, Conduct aviation operations in a professional, safe and efficient manner aligns with both Aviation Management and Flight Science students. SLO 1 is somewhat broad and it is my belief the totality of the course applies. Consequently I have used in-c;ass test and the final examination as evidence in support of ASCI 1850 applying to SLO 1. Test scores and the final exam score indicated in the tables above represent aggregate averages of student performance. The 70% minimum threshold average score was achieved in all test and the final exam. In terms of continuous improvement, I would like to have a conversation with my colleagues to discuss whether SLO 1 to broad and should we consider a more precise narrative for the outcome.

SLO 2 discusses the historical trends, current issues and emerging opportunities in aviation applies to Flight Science students. I have used two separate assignments to support SLO 2. The FDM/FOQA assignment attempts to help students to grow in their understanding of the emerging technology available to better understand aircraft performance and the antecedents to negative events. These systems provide am operational perspective from the aircraft rather than the pilots and can compliment our understanding of aircraft operations. Similarly, the ASAP/ASRS assignment develops the students understand of traditional hazard reporting systems and the virtues associate with non-punitive reporting. The aggregate average score for both assignments exceeded the 70% threshold. From a continuous improvement perspective these assignments were voluntary (although over 90% of students submitted the assignments). Moving forward I plan to make these assignments mandatory.

SLO 5speaks to the ability of students to apply the techniques, skills and modern aviation tools to perform aviation related tasks of a professional pilot. Two assignments supported SLO 5. The risk matrix assignment required students to utilize risk assessment techniques in the interpretation of a risk matrix. The second assignment required students to respond to questions surrounding professional and ethical decision making. Both assignments exceeded the 70% aggregate average threshold. From a continuous improvement perspective, I hope to utilize additional exercises that require students to go beyond providing opinion to analysis and interpretation as a means of exercising their understanding of a previously discussed concept.

**Attach description of assignment used for assessment and samples of student work.*

Questions and answer examples from final exam.

Q. In your own words, describe a Safety Management System

A structured process for ensuring safety, identifying risks, mitigating them, and helping make any organization operate safely and efficiently.

A safety management system is an explicit, formal, holistic, and top-down set of strategies, activities, and procedures to systemize and document processes and events for the purpose of optimizing safety within the organization.

A Safety Management System is a formal top-down organization-wide approach to handling risks and ensuring the effectiveness of safety risk controls.

A safety management system is a formalized process for identifying and mitigating hazards as well as ensuring those mitigations are operating properly.

A Safety Management System is a Systematic Scalable and Organization wide approach to identifying, analyzing, and mitigating (along with assurance thereof) a risk.

Q. Describe what a 709-ride is in the context of in-class discussions.

When there is a safety issue with a flight instructor (or any pilot) that the FAA believes would require an evaluation of their skills as a pilot/instructor. If the pilot can demonstrate that the inciting incident was not a result of their consistent lack of skill or training, they will be able to hold onto all certs, if the pilot fails, they will lose all FAA certs.

A 709 ride is a check by the FAA to ensure that the pilot is competent enough to continue to hold their certificate, often used as a check against previous certificate actions.

A 709-ride is an event where a pilot has committed a mistake that results in a questioning of his or her ability to properly conduct flying operations. It typically consists of a representative from the FAA, and it is similar to a check ride. 709-rides are typically done to CFIs if a student commits a big mistake and blames the error on the teaching of their instructor.

A 709 ride is something that can result if a pilot's ability to perform their duties is brought into question by a report. An agent of the regulator rides with the pilot to determine if they should have their certificate revoked.

Q. In the context of ICAO, what is a SARP?

Standards and recommended practices are safety processes that ICAO advises member nations to implement in their domestic airlines.

Standards And Recommended Practices; the set of rules, methodologies, and strategies that ICAO uses as guidelines for its' members' aviation practices.

A SARP is a standard and recommended practice. Since ICAO does not have regulatory authority SARPs are only recommendations.

Standard and Recommended Procedures, procedures/rules produced by ICAO that while not bound by law are almost universally followed.

Q. Describe the concept of recklessness as discussed in class.

Knowingly disregarding rules and policies in a manner which endangers the safety of the operation

Recklessness is taking on unnecessary risks or disregarding safety regulations. Flying with a known landing gear problem or flying through the Gateway Arch are examples of recklessness.

The concept of recklessness is the idea of acting severely out of line and with no respect to rules and regulations. It is also the act of disregarding the safety of people and equipment in an effort to bypass any regulations.

Recklessness is an intentional disregard for safety that is generally disqualifying from non-punitive programs.

Done with blatant disregard to damage/injury it may cause and with disregard to any rules in place

Q, Define the acronym TEM

Threat and Error Management: A methodology to measure the ability of the flight crew to identify and manage threats (unexpected events and risks) and errors (miscalculations and mistakes from the crew). As no flight is free from threats or errors, the ability to recognize and respond to threats and errors is crucial to avoiding 'undesirable aircraft states' and is a key measure of the crew's operational resiliency.

Q. Describe the meaning of the term "mitigation strategy" in the context of an SMS.

A mitigation strategy is a method by which the severity or the likelihood of a risk is reduced, thereby reducing the overall risk. An example of this would be a seat belt, which does not reduce the likelihood of a car crash but does dramatically reduce the fatality rate and severity of injuries associated with one.

Any policy or practice used to decrease the risk (severity or likelihood or both) of an event.

FDM/FOQA Assignment Examples

Historically, before SMS, how are hazards identified and mitigated?

Before SMS hazards were identified by waiting for them to happen. After that they would Investigate it to see what went wrong. Finally after that step was completed they would make changes to avoid the same accident in the future

The commercial aviation environment needs to operate safely because it is responsible for the livelihood of many people. Should something go wrong, it has the chance to become catastrophic since travel holds so much power in our world. Money, lives, and the environment can be greatly affected by it.

The Safety Management System is the product of the continuous evolution of aviation safety. Early aviation pioneers had little safety regulations, practical experience or engineering knowledge to guide them. Careful regulation of aviation activities, operational experience and technological improvements have contributed to significant advances in safety over time. In the next major phase of safety improvement, focusing on individual and crew performance or "human factors" further reduces accidents. Each approach has made significant advances in safety. However, even with these major advances, we still have an opportunity to take precautionary measures to prevent accidents. That's the reason why we create the SMS

What is FDM/FOQA?
FOQA is a program for safety where the data is being collected from flights and being sent to safety programs and up to management

FDM is flight data monitoring which is where programs monitor the action of an aircraft during flight. The data collected used to improve operational efficiency and safety and reduce maintenance costs
FDM is a global term used to describe the capture and analysis of information in aircraft flight data recording systems. FOQA is the term used by FAA. It describes a more formal process.

FOQA basically involves collecting flight data, analyzing it, reporting any unsafe occurrences using flight data and flight trends, putting corrective actions into place to reduce or remove unsafe trends and monitoring flight data in order to make sure that unsafe flight trends are not occurring.

What equipment is required for an FDM/FOQA program?

For FOQA they need flight operations, air traffic control, and airports to share de-identified aggregate information with the FAA so that the FAA can monitor national trends in aircraft operations and target its resources to address operational risk issues

Currently in the near future, what is the greatest opportunity for improving safety?

In the near future, the greatest opportunity for improving safety is by safer ladings so there it reduces the chances of a costly runway excursion or other landing-related incident. Cost saving airports. Lastly, better passenger experience.

Greatest safety problems are work environments in which people are not receiving the respect they deserve or in which secrets are kept and blame is placed. The work environment influences both product quality and safety so heavily that without these, it puts everyone in danger. The aviation community specifically has a very far way to go on topics like health reform and increasing diversity.

The way I would go about challenging this problem is by opening up some kind of anonymous forum in which we can talk about the issues we face on a daily basis. This will be non-punitive much like ASAP and ASRS (to an extent), but those in the aviation industry can communicate with one another anonymously and push out ideas for bettering mental health and diversity without feeling like they may lose their medical or be publicly humiliated because of their opinions.

I think GPS will be the greatest opportunity for improving safety. Right now, the GPS is working really well, but if we improve it, let it can locate us more detail, and also tell us the weather data on the radar. Also, the reason I want the GPS to improve is there's so many flight that got lost, or after the accident, we can still use the GPS to locate the exact location of the aircraft.

Compare and contrast between professional, safe and efficient aviation operations. (How are the three interrelated?)

Compare: All of them tie back to one another because if one fails they all will fail. It is like the domino effect, if safety fails they all will fail and the other ways around as well.

Contrast: These can be all different because professionals can go in multiple ways by treating other people or just by overall just doing the right thing by having manners and following the guidelines to the exact. Also to add to that maintain an image. Save can be by making the passengers safe, making the airport safe and making all aspects of aviation safe. And lastly efficiency is just maintaining that and being up-to-date and not waiting until the last second or by not being ahead of the game.

The most important aspect of a safety management system to me would likely be assurance. Looking at numbers and data and other types of feedback information help me a lot to improve my skills and mentality. This feedback is something that I think we all need in some shape or form, and I'm especially glad that we have such great programs in place to allow us to see such feedback. As always there is room for improvement, but I think that we do a good job so far of increasing the dissemination of information.

I feel like if an airline taking care more on professional will be focus on how passenger enjoying the flight. But in professional doesn't mean it's not safe, but probably not efficient, because the money goes with professional and or other thing that provide on the aircraft. And for safety, we can look up for those airlines didn't have any flight accident. Because their safety culture will be created better than others. Maybe the airline is not famous or a big airline, but they always put safety first. Last, the efficient aviation operations, will think the airline need aircraft can carry more passengers in one time, or fly more as it can to create the maximum profit. The efficient aviation operation are usually cheap airline or the airline that doesn't care about safety or professional at first.

ASAP/ASRS Assignment Examples

Provide a description of the difference between Aviation Safety Action Program (ASAP) and the Aviation Safety Reporting System (ASRS).

ASAP promotes safety by encouraging voluntary self reporting of safety occurrences and situations to the Federal Aviation Administration (FAA) certificate holder. The reports are analyzed to reduce hazards and focus training

ASRS is a voluntary confidential reporting system that allows pilots and other aviation professionals to confidentially report near misses or close call events in the interest of improving aviation safety. Also NASA plays a big part in this.

ASAP programs are ran by airlines and the FAA, ASRS programs are funded by the FAA and ran by NASA. ASRS reports are more geared toward general aviation, whereas ASAP programs are seen more commonly in scheduled air carriers.

ASAP or Aviation Safety Action Program will report to the FAA whereas ASRS or Aviation Safety Reporting System is reported to the NASA. They are both considered non-punitive by the regulator, but if an ASRS is filed management can punish if they decide to. In an ASAP there will only be punishment if the big 5 rules are broken. Anyone can file an ASRS report, but it is mainly for GA aircraft whereas ASAP is only pilot reported and for big airlines.

Describe how an ASAP program is independent with Safety Policy

An ASAP program is independent of Safety Policy because Safety Policy is a document in aviation safety management systems that outlines what your organization's safety values are. It is like its name, the Policy of a company

An ASAP program follows through with the training and knowledge that pilots receive because of safety policy.

Safety Policy means safety is implemented, however the ASAP program is a form of Safety Assurance which shows that safety is truly valued within the program. Policy is the technical aspect whereas assurance is the workplace interaction aspect. You need both and they work together to form great safety management ethics.

Describe how an ASAP program is interdependent with Safety Risk Management

An ASAP program is independent of Safety Risk Management because it is a process within the Safety Management System composed of describing the system, identifying the hazards, and analyzing, assessing, and controlling the risk. While ASAP promotes safety by encouraging voluntary self reporting of safety occurrences

ASAP programs are interdependent with SRM because they help ensure that pilots are acting in the overall interest of safety.

ASAP is used for pilots to report issues so that they can be recognized and evaluated. Safety Risk Management is much of the same concept in that risks are acknowledged and then dealt with.

Describe how an ASAP program is interdependent with Safety Assurance

An ASAP program is independent with the Safety Assurance because their data acquisition is by using FOQA, LOSA, Safety reporting, audits, reviews, studies, surveys, performance data, investigations, organizational change, new equipment, procedures, and management. Also Safety Assurance is a formal management process within the SMS that systematically provides confidence that an organization's product or service meets or exceeds safety requirements.

An ASAP program is simply following through on safety, so it is kind of paired with the safety assurance process. It is essentially another level of safety assurance.

ASAP is connected to Safety Assurance in that the data that is utilized in Safety Assurance can come from the reports of pilots from ASAP. Safety Assurance contributed to ASAP in that any critiques can be used to adjust the ASAP in turn.

Describe how an ASAP program is interdependent with Safety Promotion

An ASAP program is independent of the Safety Promotion because safety promotion ensures personnel are trained and competent to perform their safety management duties. They communicate their information through bulletins, notices, newsletters', briefings, meetings, workshops, and media.

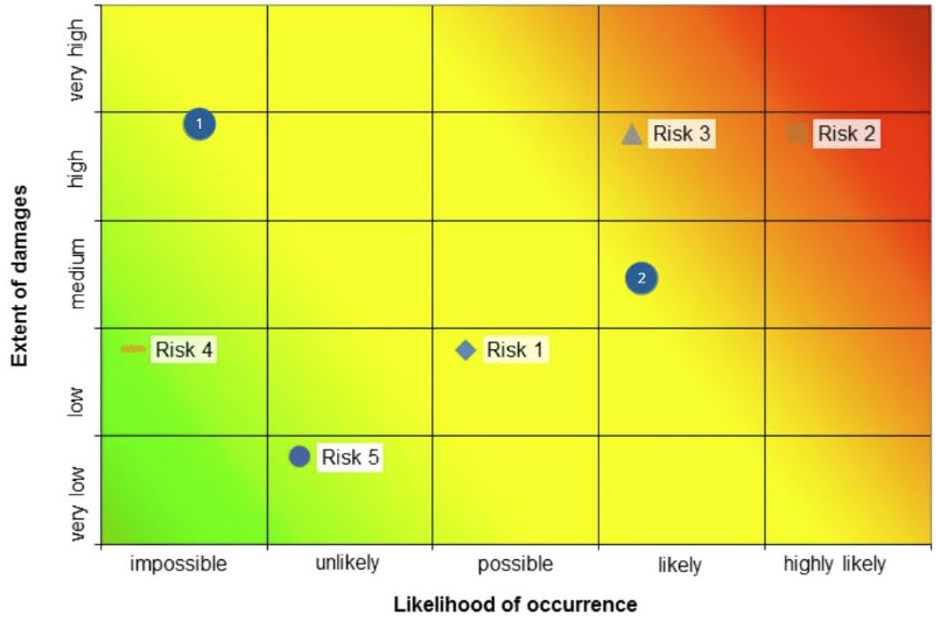
ASAP programs are directly interdependent with safety promotion because they are beneficial to the overall safety culture. They help create an ideal safety culture for an airline to strive for.

ASAP is connected to Safety Promotion because a community that is centered around reporting safety issues is a community that is working towards a safer and more appropriate environment.

Risk Matrix Assignment Examples

ASCI 1850 Risk Matrix Assignment Name: _____

Please respond to the five questions located below the risk matrix.



1. Explain the meaning of the terms used on the X-Axis

   The terms on the x-axis represent the likelihood of a risk happening. From impossible meaning that the risk is not probable of actualizing to highly likely or frequent, meaning that the risk is likely to occur of should be expected.

2. Explain the meaning of the terms on the Y-Axis.

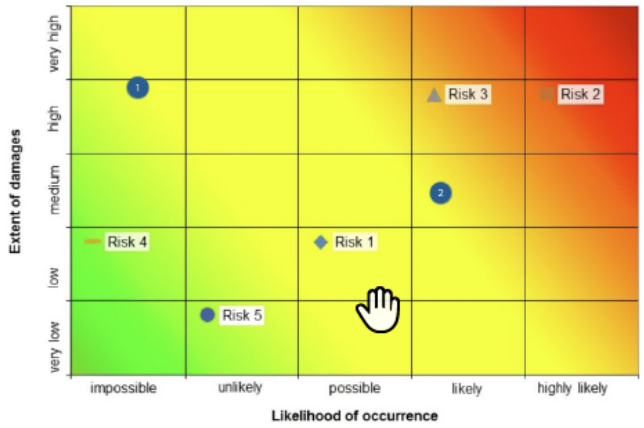
   The y-axis represents the damages or impact that a risk coud have. Ranging from very low extent of dammage to very high. This can be measured in cost and danger to passengers and crew. With very low meaning that there is minimal expences to come from the risk and little to no danger for passengers

3. Explain the changing color gradient used in the risk matrix.

   The color gradiant represents the relationship of likelyhood to damages. Green represents a low level of risk, yellow shows a medium level of risk, orange represents a high level of risk and red means that there is a very high lelel of risk.

ASCI 1850 Risk Matrix Assignment Name: Eleanor Bailey

Please respond to the five questions located below the risk matrix.



1. Explain the meaning of the terms used on the X-Axis

The X-axis terms represent how likely (common or uncommon) it is for a given risk to occur If the the risk is "impossible" it will never happen. If the risk is "highly likely" it is a risk that most likely happens frequently.

2. Explain the meaning of the terms on the Y-Axis.

The Y-axis terms represent the severity (very low-very high) of a damage. If a plane is scratched the damage is very low but if a plane crashed the extent of damage is high

3. Explain the changing color gradient used in the risk matrix.

I think of the colors like stop lights. Green means "OK." ther isn't anything risky about going through a green light. Yellow means "slow down." If you go through a yellow light it won't hurt you but you need to be cautious. Red means "STOP." Running a red ligh is very dangerus and can result in lose of life.

4. Briefly describe the risks associated with the following data points in the risk matrix

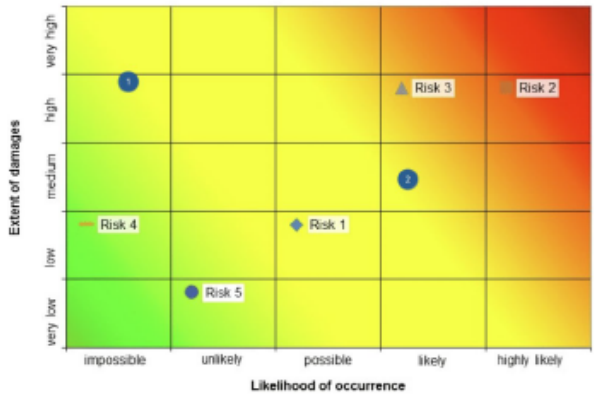
Risk 1 The liklihood of this risk occuring is not unusual and if it does happen the damage is only somewhat bad.

Risk 2 This is a risk that is guaranteed to happen. Every plane and pilot will experience at some point in there career and the damage is pretty bad

Risk 3 Not as likely as risk #2 but it is still common. A majority of pilots and aircrafts will

ASCI 1830 Risk Matrix Assignment Name: _____

Please respond to the five questions located below the risk matrix.



1. Explain the meaning of the terms used on the X-Axis

The meaning of the x-axis is how likely an event may occour. This axis does not determine how bad some thing will be if it were to happen.

2. Explain the meaning of the terms on the Y-Axis.

The meaning of the y-axis is how bad the damage would be if the event were to occur. This axis does not show how often the event may occour.

3. Explain the changing color gradient used in the risk matrix.

The color changing on the graph shows generally weather or not a risk would be accepted or weather it should be midigated. In the green area there is a combination of an event not happening and the outcome not being bad. This risk would most likely be allowed. However as we move into the red area that is an event that is likely to happen and would be catostrophic if it did. This risk would need immeadite midigation.

4. Briefly describe the risks associated with the following data points in the risk matrix

Risk 1 Risk one may happen, and that can be ok in some cases, however here it should be midigated as the extent of damage is low. While this does not seem that bad it is not ideal for this to be happening often.

Risk 2 Risk two is completly unacceptable. It is highly likely to happen and would cause a very large amount of damage. This is a risk that would need to be immeaditealy midigated. This would not be acceptable anywhere.

Risk 3 Risk three is not as bad as risk two, however it is still at an unacceptable level. It is likely to happen however the results are still high if the event were to occour.

Professional and Ethical Decisions Assignment Examples

Describe why it is an ethical imperative to operate safely in the commercial aviation environment.

It is an ethical imperative to operate safely in the commercial aviation environment because we need to be able to take responsibility, meet obligations, tell the truth, keep promises, and avoid harming people. By doing these things we are more likely to keep our job and climb the ranks faster.

Instead of the preventative approach we learned from mistakes which was oftentimes extremely destructive or fatal. We know now how to prevent these mistakes before they happen.

It is imperative that there is safety in a commercial aviation environment because we are responsible for the lives of a lot of people. Safety is vital because if we are not safe, the consequences are dire. Not only is a lot of money lost, lives are lost, infrastructure can be destroyed, and trust in the aviation environment can be lost .

Compare and contrast ethical versus professional obligation to commercial aviation safety.

Compare ethical versus professional obligation to commercial aviation safety:

- Discipline goes with safety
- Have to do the same thing every flight no questions asked about it
- Being very professional in both standards

Contrast:
Ethics include a number of features such as secrecy, respect and honesty while professionalism can be defined as the expertise, ability and the behavior displayed by an individual of a certain occupation.

Ethical obligations to commercial aviation safety have to do with making sure it is safe because safety should be a baseline. Ethical obligations should make sure that people are as safe as possible because it's the right thing to do. Professional obligations to commercial aviation safety have to do with making sure aviation is safe because that is the most cost effective thing to do. Being safe means you get more business and lose less money due to incidents. Both ethical and professional obligations ultimately work together to trying to have a safer industry with less hazards.

The greatest safety problem are unknown hazards. Hazards that we don't anticipate are the most dangerous because we have no way to prepare for them until they actualize. They can take lots of lives and cost a lot of money.

FDM stands for Flight Data Monitoring which allows us to see data from the important phases of flight. FOQA is Flight Operation Quality Assurance which is a program that utilizes the information from an FDM and compiles it to find potential hazards that could be latent or unseen.

Flight Data Recorders are used in FDM and FOQA in order to track flight information.

From both an ethical and professional perspective, identify the greatest safety challenge/problems associated with commercial aviation.

Ethical: Overbooked Flights, Cramped Seats, False Advertising, Discrimination.

Professional: Not handling the situation of an occupant the right away by going away from all the companies policies

From both an ethical and professional perspective, how would you suggest we go about solving the safety challenge/problem identified in the question above.

I would go about solving the safety challenge/problem identified in the question above by Cost savings - Airports. Never over-treat surfaces again, Operational savings, Fewer delays, Better passenger experience. I feel if we did all these things every customer would be happy and there would be far fewer issues regarding a lot of things. Another big one is discrimination which we need to work on more.

I believe that “Big Data” is the information that we refer to when there is too much information to analyze. FDR’s pull in a lot of info each flight and we receive a lot of data from other sources as well, so analyzing this is our best chance at improving safety.

The only thing you can really do to protect against unknown hazards is to have a really good reporting safety environment. If you have a reporting environment, you know about hazards as soon as they occur so that you can more as fast as possible to try and mitigate any risk that comes up.

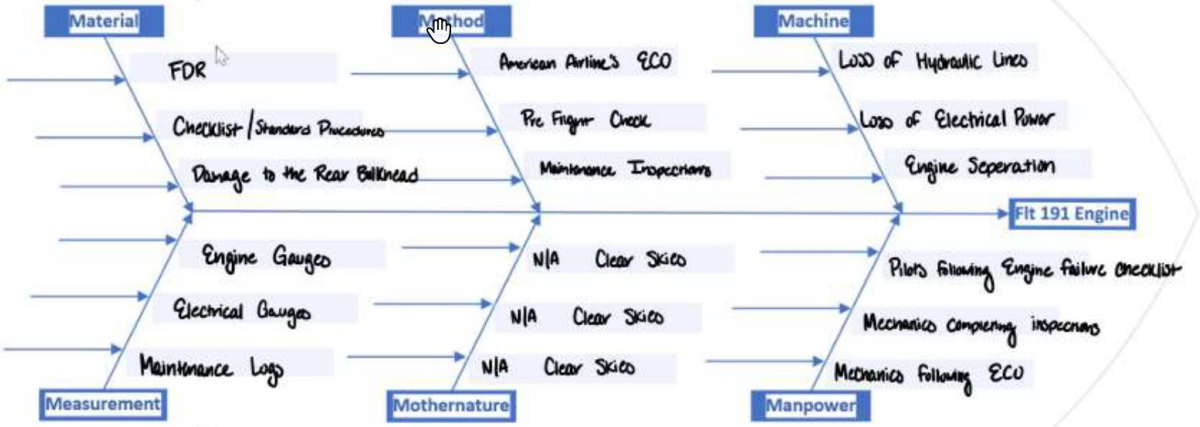
From a pilot‘s perspective, what are the most important aspect of a safety management system

In my opinion I would say the evaluation of tools. The tools that are created can help report incidents a lot more easier and investigate the cause of certain accidents that happen that we don’t understand. These tools will help us be more precise and have fewer issues in the future because we know now how to mitigate that problem.

Safe operations hold the safety of all people, places and things above all else. Efficient operations hold production and quality of production above all else. Professional maintains a respectful and responsible environment for all workers to thrive. Safe and professional often align however safe and efficient don’t always. There sometimes needs to be a median in which we maximize both safety and efficiency and if that is suitable then we can proceeds.

I would argue that Safety promotion is the most important aspect of SMS for pilots. This is the overall environment in which they work. If it is a bad environment, then pilots will be the ones to directly suffer. However, in a good reporting environment people trust each other and the company to report mistakes, ultimately making an even safer environment to work in. Having ASAP programs where pilots report and know it is non-punitive. Safety Promotion is the most important aspect of SMS from a pilot’s perspective.

Using the Fishbone Template below, evaluate some of the contributing causes to the engine on the American Airlines Flight 191 departing the aircraft.



Performance Indicator Rubric

Course: ASCI 3050 Operations and Business Environment of Aviation Course Instructor: Amelia Preis

Semester Taught: Fall 2021 Number of Students in Course: 24

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Midterm Exam Question 7 – 96% Midterm Exam Question 18 – 88% Final Exam Question 2 – 96% Final Exam Question 15 – 91% Final Exam Question 19 – 74%	Yes
SLO 5: Apply knowledge of business principles in aviation-related areas.	Midterm Exam Question 2 – 96% Midterm Exam Question 24 – 88% Final Exam Question 11 – 100% Final Exam Question 16 – 78% Final Exam Question 18 – 82%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

The current level of course content and presentation of materials is sufficient to achieve satisfactory outcomes. To better improve the online course experience for students (and further improve outcomes), the instructor might provide prerecorded lecture materials and additional means of assessment (and more frequently) in the course to ensure topics are internalized among students.

**Attach description of assignment used for assessment and samples of student work.*

Midterm and Final Exams are attached.

Sample student responses:

Midterm Exam Question 18: Identify two of a flight department manager's ideal traits. In your own words, explain what each trait means and how that is demonstrated in a flight department?

Response: To me, vision is seeing things in the long run and thinking of ways to get there. Vision is seeing what the department could be and having a plan for how to get there. If a flight department is just starting, or needs a remodel, a manager would need vision to see the potential the department has and communicate how she sees the deparment running more effectivly and efficiently in the futer and how they plan on acheiving that vision. Another trait is appreciation of people power. Just because the manager has the title of a leader, does not make them a good leader. An actual good leader is one who accepts that the power comes from their subordinates and their respect. Appreciating the power of the other people in the flight department is imporant for any manager because it creates a culture of respect and hard workers. By appreciating and valuing the other people in the deprtment more vluable work can be done. It is important for the flight department manager to have this because they can better lead their people and the other workers will feel valued and be more productive.

Final Exam Question 15: Discuss the role of culture within a flight department. How does the culture of a flight department affect its team of workers? As a future leader in the business aviation industry, how would you contribute to the culture of a flight department?

Response: Culture plays an immense role in a flight department. Whether the department has a culture of openness, high performance, motivation to work and contribute, and teamwork says a lot about the department's success and ability to distinguish themselves as the best. Company culture sets the tone for how employees will work and contribute to the department. If employees feel encouraged to show up to work and go above and beyond in their position, the department will produce the best results. As a future leader in business aviation, I would cultivate a culture of the tenets I listed above - openness, high performance, motivation to work and contribute, and teamwork. I would incorporate some cultural aspects from the corporate culture into the department. In addition, I think that individuals within the department should feel compelled to bring any issues to the department leaders. I would align my department with the best practices in the industry while reaching out to those who come behind us to mentor them and foster a positive environment in business aviation. The flight department manager assumes a large responsibility in ensuring the culture of the department is maintained. They set the tone for the culture in how they value feedback and create a culture of openness where employees voices can be heard. The flight department manager has the responsibility of receiving feedback from employees on the culture to maintain or produce better results for the department's culture.

Final Exam Question 19: Discuss, in detail, one ethical challenge within business aviation today. Provide enough information to summarize the issue, varying viewpoints (as applicable), and where the issue may stand in the future.

Response: An ethical challenge within business aviation is the environmental impact of business aviation. Business aviation has long distinguished their sector of aviation as being environmentally friendly through various initiatives. An initiative that was recently created by the National Business Aviation Association is the Sustainable Flight Department Accreditation Program, which encourages business aviation organizations to meet high standards for environmental sustainability, so that the goals of a sustainability culture in the community can be advanced. This program highlights sustainability in flight through carbon emissions and sustainable aviation fuel, in operations through recycling and reducing resources, in ground support through sustainable equipment and vehicles, and in the infrastructure through hangar and facilities. This program is effective for flight departments to become leaders within the industry and align themselves with industry best practices. The business aviation industry does its best to promote ethical behaviors from the manufacturers who produce parts and aircraft that are more efficient performance and fuel wise to the operators who uphold the use of sustainable aviation fuels and work to be recognized as a Sustainable Flight Department. As the rest of the world makes strides to reduce emissions and protect our environment through the changes we experience, it is the most ethical decision for the business aviation does the same.

Midterm Exam Question 2: Company executives appreciate the convenience for one-time trips and the chance to explore what on-demand aviation services have to offer without committing to aircraft purchase. One downside is that they don't have too much control over the specific aircraft used each trip. Which type of operation does this statement best describe?

Aircraft charter Fractional
ownership In-house aircraft
Management company

Midterm Exam Question 24: Respond, in your own words, to the question: Are budgets necessary in corporate flight departments?

Response: Budgets are completely necessary in corporate flight departments, so that the department can receive the funds they need to operate. Some years prices differ, especially fuel and maintenance costs, so the department's budget takes into account the increases or decreases in a given year of operating. If a department plans to fly more in a year, their budget needs to be larger. The budget helps align the operational plans with the costs associated with operating. Tracking financial information is crucial for a department, so they can create a cost analysis and analyze how to save the company money.

Final Exam Question 11: This ethical situation occurs when a person's private interest(s) interferes or appears to interfere with the company the professional is representing.

Full disclosure Decision-making
model Moral evaluation
Conflict of interest

Final Exam Question 16: When evaluating pilots and employees within corporate flight departments, what are some characteristics or behaviors that should be considered and evaluated? How could a flight department manager make employee evaluations a more useful exercise in a corporate aviation department?

Response: When evaluating pilots and employees within corporate flight departments, some characteristics and behaviors that should be evaluated are personality, fit-in-role, teamwork ability, creativity, motivation, enthusiasm, professionalism, ability to learn and grow, communication, and service-mindedness. These can all be evaluated in a yearly performance meeting with a manager. It is important to sit down and get an understanding for how an employee is growing and what the department manager can do or offer to them to help them grow. A flight department manager can make employee evaluations a more useful exercise in a corporate aviation department by having goals and objectives that the employee should reach in their meeting and rewarding the employee for going above and beyond. They should also make this exercise useful by asking the employee what their needs are for success. If a department manager sees someone continually going above and beyond, they can challenge them year after year with new tasks or projects. I think it is important that the department manager is consistent with evaluations and eliminates any bias they may have towards an employee.

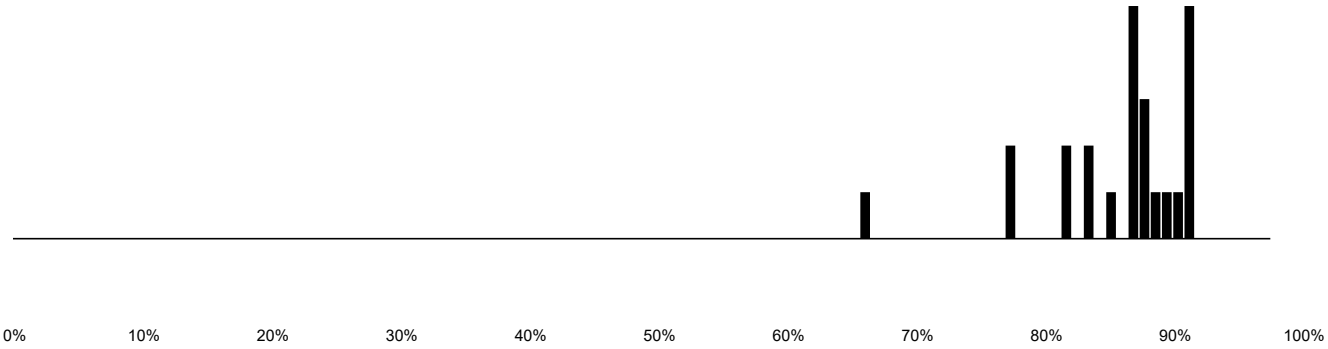
Final Exam Question 18: Why is it important for business aviation professionals to consider ethical decision making in their work? What are some scenarios where a strong sense of ethics could serve the professional well?

Response: Within business aviation, ethics can be a stand for building integrity among key personnel and professionals in the industry. It is important for business aviation professionals to consider ethical decision making in their work because ethics is essential for representing the company well and being a well-regarded professional. In making an ethical decision, one must consider their own character and integrity and the consequences of their actions to act on the situation in question. Both Individuals, corporations, and organizations should seek to live by ethical code. They should act so that their choices would not appear in a newspaper because they disobeyed what is viewed to be ethical.
Conducting oneself in an ethical manner means doing things for the better of those around you. Being ethical is not a selfish behavior and it shows one has the morals and understanding to work with and adapt to others. Ethics comes from the top down and it is essential for those in management positions to act ethical towards employees, passengers, and all they interact with. Some scenarios that having a strong ethical code would serve professionals is with regards to social media, travel policies, and confidentiality. I would say that an employees social media is a reflection of the company they work for. They shouldn't be posting about passengers or voicing harsh feelings about the company on their social media. In addition, they should represent the company well and post appropriate images. Travel polices are also important such

as abiding by alcohol policies as well as representing the company well and being respectful to line service, customer service representatives and other pilots and people you come across. As a professional, you are not only a representation of yourself, but also your company.

Quiz and Item Analysis Midterm Exam

100%	71%	93%	13.135	01:10:05	0.659
High Score	Low Score	Mean Score	Standard Deviation	Mean Elapsed Time	Cronbach's Alpha



Data Last Updated: Jan 6, 2022

Item Analysis

Multiple Choice | 5 points possible

A company purchases a ⅛ share of a fleet of aircraft. The scheduling, staffing, flight planning, maintenance and insurance are handled by a provider. Which type of operation does this statement best describe?

1.00	0.00	--	5.00/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Multiple Choice | 5 points possible

Company executives appreciate the convenience for one-time trips and the chance to explore what on-demand aviation services have to offer without committing to aircraft purchase. One downside is that they don't have too much control over the specific aircraft used each trip. Which type of operation does this statement best describe?

0.96	0.08	1.00	4.79/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Multiple Choice | 5 points possible

Which of the following are not elements of execution?

0.96	0.08	1.00	4.79/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Multiple Answer | 5 points possible

Which of the following are skills that effective managers should utilize? (Select all that apply)

0.63	0.69	0.91	4.17/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Multiple Choice | 5 points possible

The aviation department manager or chief pilot must do what with an organization's vision?

1.00	0.00	--	5.00/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Multiple Choice | 5 points possible

Within a flight department, all personnel should be provided with a detailed_____to ensure that they understand what is expected of them and to coordinate their tasks with others in the department

1.00	0.00	--	5.00/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

True or False | 5 points possible

The most important aspect of feedback development is a means to measure progress, be it time, quality,

quantity, or resources allocation.

0.96	0.08	1.00	4.79/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

True or False | 5 points possible

Operational plans should be used to create strategic plans.

0.83	0.31	1.00	4.17/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

True or False | 5 points possible

The flight department must keep a record of all flights made, providing at least the date, departure and arrival points, names of passengers, and whether the passengers were employees and whether they had a business purpose for the flight.

1.00	0.00	--	5.00/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Fill in the Blank | 5 points possible

The NBAA defines_____as “aircraft owned or leased and operated by a corporation or business firm for the transportation of personnel or cargo in furtherance of the corporation’s or form’s business and which are flown by professional pilots receiving a direct salary or compensation for piloting."

0.92	0.15	1.00	4.58/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Fill in the Blank | 5 points possible

Goals must be_____so that progress towards them may be measured.

0.96	0.08	1.00	4.79/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 5 points possible

Define on-demand transportation in your own words.

0.96	0.08	1.00	4.79/5 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 10 points possible

Briefly describe two pros and two cons of a company owning business aircraft.

1.00	0.00	--	10.00/10 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 10 points possible

What is an aircraft use policy? Why is it used?

1.00	Essay | 10 points	0.00	rimination Index
Difficulty Index	possible	Disc	

-- RPB	9.96/1 0 pts Mean Earned Score		

What is the difference between strategic and operational planning?

1.00 Difficulty Index	0.00 Discrimination Index	-- RPB	10.00/10 pts Mean Earned Score

Essay | 10 points possible

Identify two of a flight department manager's ideal traits. In your own words, explain what each trait means and how that is demonstrated in a flight department?

0 79	0 09	--	9 13/10 pts

Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 10 points possible

Explain why the flight department needs to be connected to the company (headquarters) it serves. How does the flight department manager reinforce that value?

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.83	0.31	--	9.38/10 pts

Essay | 10 points possible

What is a strategic plan?

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.96	0.00	0.98	9.50/10 pts

Multiple Choice | 5 points possible

This measure of performance asks the question "Is a given action being performed with minimum effort and resources?"

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
1.00	0.00	--	5.00/5 pts

Multiple Choice | 5 points possible

This performance measure asks the questions, "Is this product or service fulfilling the organization's mission adequately?"

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
1.00	0.00	--	5.00/5 pts

Essay | 10 points possible

Provide one reason why a report of information about the flight department would be needed.

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.88	0.23	0.95	8.88/10 pts

Essay | 10 points possible

Why might an audit be initiated in a flight department?

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.88	0.23	0.65	9.46/10 pts

Essay | 10 points possible

In your own words, what is a budget?

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.96	0.08	--	9.88/10 pts

Essay | 10 points possible

Respond, in your own words, to the question: Are budgets necessary in corporate flight departments?

Difficulty Index	Discrimination Index	RPB	Mean Earned Score
0.88	0.15	--	9.21/10 pts

Essay | 10 points possible

Identify and define the two types of costs that are associated with aircraft operation.

0.42	0.92	0.98	4.38/10 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 10 points possible

Explain the differences and advantages/disadvantages of leasing versus purchasing an aircraft.

0.96	0.08	--	9.79/10 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Essay | 10 points possible

Summarize a new concept or term that you have learned so far in this course. What about it is compelling? How might you apply that knowledge to your future career?

0.96	0.08	--	9.79/10 pts
Difficulty Index	Discrimination Index	RPB	Mean Earned Score

Performance Indicator Rubric

Course: ASCI 3100 Air Carrier Operations Course Instructor: ____Weinberg_____

Semester Taught: __Spring 2022_____ Number of Students in Course: __45_____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	98%	Yes
SLO 5: Apply knowledge of business principles in aviation-related areas.	98%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

To: The Magis Air Board of Directors
From: Saint Louis Consulting, Team 1 (Karabas, Deles, Carlson, Warren, and Alotaibi)
Topic: Counterfeit Parts, Improper Tool calibration

A recent audit from the Coordinating Agency for Supplier Evaluation (CASE) has discovered that counterfeit parts were installed on another carrier's aircraft by Flemco Tecknic, a Maintenance, Repair, and Overhaul (MRO) vendor, of which Magis Air is also a client. Furthermore, the auditors discovered improperly calibrated tooling.
An EMB-145 from Magis Air's fleet was serviced and repaired last month at this facility, and it is not clear yet whether the aircraft has been impacted by the faulty tools or calibration. We've also received reports that certain managers have suggested that the aircraft be put in service anyway, since no in-flight issues have yet been reported and the airframe is scheduled to be retired soon anyway.

Magis Air has a legal obligation under 14 CFR 121.363 and 14 CFR 135.413 to ensure the airworthiness of its aircraft, and that all maintenance and servicing is performed in accordance with the manual, even when that work is performed by an MRO. Failure to comply with these directives could result in Magis Air's certificate being revoked. Furthermore, the International Air Transport's Association requires that Operators have processes to ensure that all aircraft parts and materials are from approved sources. Ignoring this directive could jeopardize Magis Air's campaign to join Big Globe Alliance as a full member.

Therefore, We at Saint Louis Consulting recommend that the airframe be grounded immediately for inspection and, if necessary, servicing to correct any discrepancies. Furthermore, we also recommend the management team receive refresher safety training that covers an Air Carrier's legal responsibilities with regards to counterfeit parts and improper tool calibrations. The safety of our passengers and crew is paramount, and the risks associated with shortcuts in maintenance are so catastrophically high as to be unacceptable.

We would like to also refer this case to Magis Air's legal team. Sale and Use of counterfeit parts is a serious federal crime, and we believe a case exists to recoup some of the costs of grounding and inspecting the airframe via civil suit action against Flemco Tecknic.

Week 3 Discussion

You are part of a team of consultants hired by the Board of Directors of Magis Air, a Part 121 air carrier that has operated regional jets as a partner airline for Span America Airlines a legacy major airline. Span America has had its air carrier certificate revoked by the FAA and ceased operations.

The Board of Directors of Magis has decided to fill the void left by Span America and would like to grow the airline. They are focused on being the best airline in the industry for employees, customers and the general public. They strive to design the airline with an eye for "quamplurimi et quam apptissimi", that is "as many as possible of the very best". Unlike Span America, safety and compliance are paramount for them and the foundation of their operation. As ethical executives they expect sound moral judgement in the guidance you will provide to them even if it seems to conflict with their initial proposals.

Over the next 8 weeks you will be consulting them on decisions that they post to your team. You must provide them with sound advice from the content covered in that week from lectures, the text book, online references, material learned from other courses outside this, life experiences and possibly guest speakers. Discuss that advice on the discussion board and then make your final recommendation to Magis Air in bold type.

Week 3: Technical Operations/Maintenance

Magis has just been made aware through CASE auditors that counterfeit parts were used on another carrier's aircraft at Flemco Tecknic one of the MRO's that Magis also uses for heavy maintenance. In addition they found some critical tooling out of calibration. Magis has an aircraft that has come out of Flemco Tecknic in the last month due to some damage that occurred earlier but the aircraft is due to be retired soon. It is not known if Magis' aircraft was impacted by the parts or tooling yet. Some in management are saying that "the parts found were probably not used for our repair. The aircraft has been operating for the last month without issue. It will be retired soon and would cost too much to ground it and inspect it."

From what you now know about CASE, MROs, tooling, calibration and maintenance responsibility, what is your general recommendation and detailed plan for Magis leadership?

Week 6: Flight and Cabin Operations

Issue 1:

Recently on Magis a gate agent required a customer to gate check a bag that did not meet the size requirements in Magis' FAA approved Carry On Baggage Program. The customer was a famous politician and elite customer and voiced his displeasure. The Senior Flight Attendant and First Officer intervened and wanted to let the customer on with the bag because they determined there was room for the bag in the overhead bins so that it could be securely stowed. The gate agent explained that while there might be room the bag exceeded the approved size from Magis' FAA approved program. What is the correct resolution to this issue?

Follow up Policy Question

Post 9/11 at the creation of the TSA, the TSA established a requirement for carry on baggage allowing only one carry on and a small personal item such as a purse or briefcase, which became known as 1+1. This was done to ensure efficiency in scanning and reduce the population of bags that could conceal weapons. If this restriction were to be lifted Magis would have freedom to revise it's carry on baggage program. The program would still need FAA approval.

With this in mind if Magis were to consider revising their carry on bag program from 1+1 and limiting the size to 9"x14"x22", what does your group suggest as a more effective way to manage carry on bags?

Should they allow passengers to bring what they want until bins are full and too bad for late boarders?

Should they not allow any carry on bags?

Should they charge for carry on bags?

Should they be unlimited?

Consider the repercussions of your recommendation on safety as well as customer satisfaction and provide Magis leadership with options to select from and your recommended option.

To the Board of Directors of Magis Air,

In regards to the incident that's related to the baggage size requirements of Magis Air, the gate agent is justified and made the correct choice to not allow the passenger to board the aircraft. Even if the passenger connected to this event is high-profile, it would not be in Magis Air's best interest to allow anyone to board with a bag that does not meet the size requirements of Magis' FAA-approved carry-on baggage program. If any passenger, regardless of their position, were to board Magis Air's aircraft with a carry-on that does not meet its approved program, it would be in direct violation with **14 CFR § 121.589 (a).** This particular FAR specifically states that **no passenger may board** an airplane if their baggage **exceeds** the baggage allowance that is prescribed in the operating carrier's carry-on baggage program. Furthermore, allowing the passenger to board would be a breach of safety. It is Magis Air's responsibility to uphold its operations specifications and ensure that safety is being maintained. It would be advisable to send out an announcement or memo to address this situation. Magis Air should explain and specify its commitment to following regulations and upholding safety for every passenger equally, regardless of their position.

1. Even if there are other possible options for revising Magis Air's carry-on baggage program from the traditional 1+1 and size limit policies, **we believe that the current policy that is in place is ultimately the best choice.** Our reasoning for believing this is the best option can be broken down into various perspectives:

-
    - By changing the limitations for baggage sizes, it could lead to a conflict with baggage screening devices due to the possibility of passengers choosing to fly with carry-on bags that are too large for the devices to properly scan.
    - There are weight and balance issues to consider when changing the size limitations of carry-on bags, such as the predetermined average weight of what Magis Air would expect for a passenger to bring onboard. If size limitations change, the averages will also have to be reevaluated.

- Increasing the limit of carry-on bags could lead to a lack of space available for every passenger's carry-on luggage, as well as possible conflicts with baggage scan devices due to an influx of carry-on bags that require scanning.

If Magis Air were to choose to change its policy, it would need to take these considerations into account. Even so, if a change were to be implemented, one of the better options would be to give passengers a choice to pay an extra fee to carry an additional carry-on bag with them. This could act as another form of revenue and could act as an extra selling point for Magis. Yet, once again, it's important to reiterate that research would need to be done before this change was implemented to ensure that it would be feasible in Magis Air's current operation.

2. It would be highly problematic if this policy were to be used. It could cause issues such as delays in boarding due to an increase in passengers that would need to check their bags, as well as create an issue with customer satisfaction. By choosing to show favor to passengers who show up earlier, passengers would feel rushed to get to the gate as soon as possible, and it may lead to altercations between passengers as board the aircraft. Magis Air would also likely lose potential customers who would prefer to have a guaranteed place on the aircraft to put their carry-on luggage. Essentially, if a passenger pays for a seat on a Magis aircraft that includes a carry-on, they should feel safe knowing that their carry-on will have a guaranteed spot on the plane.

3. Magis Air would lose potential customers if it chose to not allow any carry-on baggage options. Passengers like the convenience of having their luggage with them. They often like the option to save time by bringing their bags with them rather than checking them, and many passengers like the peace of mind of knowing that their bag is with them versus worrying about an air carrier potentially losing their luggage. Not offering a carry-on bag option would have a detrimental financial outcome.

4. The option of charging an extra fee for carry-on baggage could either be a positive or negative choice based on the type of operation the extra fee would be established on. Some low-cost and discount carriers have carry-ons as an added fee, but these airlines also offer cheap, competitive tickets. These types of operations also tend to try to encourage people to purchase extra options, such as carry-on baggage to increase revenue. Even so, in the case of Magis Air, charging an extra fee for carry-on baggage may lead

to a **negative** outcome rather than a positive one. Customers may see that Magis Air charges an extra fee for carry-on bags and instead decide to choose another carrier that includes it in their ticket price. Even so, another potential option is to offer a "basic" economy ticket which essentially acts like a class of seating below economy, which could offer carry-on bags as an extra fee rather than part of the ticket fare. Generally speaking, though, it would not be in Magis Air's best interest to charge extra for carry-on bags unless enough research has been done to ensure that it would be a viable financial option.

5. By allowing passengers to have an unlimited option for carry-on bags, there would be no standard to which aircraft would expect to carry or scanning devices would expect to process. By having no restriction on the size or amount of carry-on bags, there could be the potential of a massive influx of bags, as well as baggage sizes. This would be a plethora of issues to be concerned about, such as:

-
    - Security concerns – Due to a possible increase in luggage to scan, it could lead to backups in TSA lines. Furthermore, an increase in variation of baggage sizes could create further issues with scanning devices becoming unable to properly process different types of luggage.
    - Customer satisfaction issues – By not setting a strict limitation for carry-on bags, there is no guarantee that a passenger will have a place to put their carry-on luggage.
    - Weight and balance concerns – If there is no limitation to baggage sizes, there is no way to properly estimate what the average weight and size of carry-on baggage will be on a given flight. This could create a dangerous situation where far heavier and larger carry-on bags could be placed in one area of an aircraft and lead to an unstable aircraft condition.

It's important to remember that space is at a premium when it comes to aircraft and it is important to ensure that every paying passenger is given the proper amount of space that they paid for. By not setting a standard to follow, a paying passenger cannot be guaranteed that they will get what they paid for. If Magis Air chose this policy route, it would be losing out to other carriers that offer a more standardized carry-on baggage policy.

Best Regards,

Magis Air Consulting Team

Performance Indicator Rubric

Course: ASCI 4050 Human Factors

Course Instructor: Terrence Kelly

Semester Taught: Fall 2021

Number of Students in Course: *35

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester.

ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	<u>On Ground Cohort</u> *Test #1: 82.5%* Human performance and individual differences *Test#2: 88.1%* Altitude physiology *Test #3: 81.2 %* Vision and visual illusions	<u>*Online Cohort*</u> *Test #1: 91.9%* Human performance and individual differences *Test#2: 82.7%* Altitude physiology *Test #3: 92.5 %* Vision and visual illusions	<u>On Ground Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes Final Examination: Yes	<u>Online Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes Final Examination: Yes

	Final Examination: 84.0% Hearing, the vestibular system, and communication.	*Final Examination: 88.9%* Hearing, the vestibular system, and communication		
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	<u>On Ground Cohort</u> Paper Avg: 92.6% PowerPoint Avg: 92.7% Presentation Avg: 90.1%	<u>Online Cohort</u> Paper Avg: 91.3% PowerPoint Avg: 90.0 % Presentation Avg: 91.3%	<u>On Ground Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes	<u>Online Cohort</u> Paper average: Yes PowerPoint average: Yes Presentation average: Yes
SLO 5: Apply knowledge of business principles in aviation-related areas.	Not measured – see recommendation below		Not measured – see recommendation below	

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 3 – Effective oral and written communication skills are a prerequisite to safe operations. Oral and written communication assessment was conducted using a paper and presentation (including a PowerPoint presentation) surrounding an aviation accident involving human factors. This assessment was made using three measures. The paper average is the score based on the group report submission discussing a human factors accident (see Paper Average in SLO 3 table above). The PowerPoint average is the score based on the overall quality of the PowerPoint presentation submitted by each group (see PowerPoint Average in SLO 3 table above). The Presentation average is the score based on oral presentation made by each group in front of the class (see Presentation Average in SLO 3 table above). Although the SLO 3 assessment was positive, one recommendation arises based on the extremely limited amount of time I provided this semester covering the important topic of communication. Although I can include communications content in the Team Resource Management course (a follow-on course related to human factors), I plan to discuss some deemphasis on altitude physiology in order to expand on topics involved in communication.

SLO 5 – The application of business principles in aviation-related areas is somewhat out-of-place in a course surrounding Human Factors. Although Human Factors is rooted in safe operations and safe operations are a necessary component for the operation of a business, the connection between Human Factors and business principles is indirect. A review of some the available textbooks on Human Factors suggests a similar observation. Consequently, my recommendation is to remove SLO 5 as something to assess in Human Factors.

Performance Indicator Rubric

Course: ASCI 4050 Human Factors (-01/-10) Course Instructor: Terrence Kelly

Semester Taught: Fall 2021 Number of Students in Course: *35/11

This assessment includes all students (both Flight Science and Aviation Management) registered in ASCI 4050 Human Factors for the Fall 2021 semester.

ASCI 4050 Human Factors was taught on ground (-01 section) and online (-10 section) during the Fall 2021 Semester. Assessment results are provided for both.

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results:** **(Indicate what % of class achieved a minimum 70%)**		**Benchmark achieved?** **(Benchmark: 80% of students will score a minimum of 70% = "C")**	
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	<u>On Ground Cohort</u> Test #1: 82.5% Human performance and individual differences Test#2: 88.1% Altitude physiology Test #3: 81.2 % Vision and visual illusions Final Examination: 84.0% Hearing, the vestibular system, and communication	<u>Online Cohort</u> Test #1: 91.9% Human performance and individual differences Test#2: 82.7% Altitude physiology Test #3: 92.5 % Vision and visual illusions Final Examination: 88.9% Hearing, the vestibular system, and communication	<u>On Ground Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes Final Examination: Yes	<u>Online Cohort</u> Test #1: Yes Test #2: Yes Test #3: Yes Final Examination: Yes

SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	On Ground Cohort Test #1: 82.5% Human performance and individual differences	Online Cohort Test #1: 91.9% Human performance and individual differences	On Ground Cohort Test #1: Yes	Online Cohort Test #1: Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	On Ground Cohort Paper Avg: 92.6% Presentation Avg: 90.1% Peer Assessment: Generally positive	Online Cohort Paper Avg: 92.7% Presentation Avg: 90.5% Peer Assessment: Generally positive	On Ground Cohort Paper: Yes Presentation: Yes Peer assessment: Qualitative measure	Online Cohort Paper: Yes Presentation: Yes Peer assessment: Qualitative measure

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

SLO 1 – Human Factors seeks to help the student understand characteristics within the scope of human performance (capabilities and limitations) to assist in making decisions on flight operations and crew interactions in effort to conduct aviation operations in a professional, safe, and efficient manner. The course is focused primarily on flight crews, however, managers with responsibilities for flight operations and safety will benefit from a better understanding of human performance. I did not include a specific measure targeting this SLO so my first recommendation for Fall 2022 will be to develop a more exacting measure. Much like other classes, Human Factors serves as an adjunct to flight operations; in that the material covered in the course is designed to support professional, safe and efficient flight without actually occurring on the flight deck. As such, in supporting professional, safe and efficient flight, a preponderance of course performance will serve as a facsimile to a more-specific assessment measure. Topical course content included altitude physiology, vision and visual illusions, hearing and the vestibular apparatus including vestibular illusions and communication. Each of the four topical content areas informs safe flight operations. It should be noted that these measures are not ideal and my recommendations include developing more-specific measures for all of the SLO performance indicators.

SLO 2 – The first few weeks of Human Factors (ASCI 4050) involves the discussion of the historical underpinnings of human capability and human limitations. From the onset of research on human performance in aviation to the contemporary use of human factors cockpit measurement through Line Operations Safety Audits (LOSA) to inform contemporary training paradigm (Advanced Quality Programs (AQP)). As mentioned previously, I did not identify a specific way of assessing SLO 2. That said, Test #1 is an ideal fit as it corresponds to the past, present, and future of human factors in aviation. That said, one recommendation I

plan to apply is to identify a more-comprehensive assessment measure for SLO 2 that speaks more specifically and explicitly to a timeline associated with the evolution of human factors.

SLO 3 – The paper and presentation exercise stressed the importance of diversity in team operations, leadership of diverse teams and generating consensus on teams. The results were generally quite positive as evidenced by the paper and presentation score detailed above. Additionally, each team member was asked to rate the performance of other team members. Generally speaking, the feedback provided by the peer assessment was positive suggesting, with a few exceptions, teams were generally cohesive and worked well together. Although integrity and lifelong learning were touched on, I did not assess the effectiveness of those discussions. In terms of recommendations, it is clear I need to dedicate more class time to discussion of the importance of lifelong learning. Additionally, I need to develop a formal means of assessing the impact of discussions surrounding integrity and lifelong learning.

Examples

Human Factors Test #1

ASCI 4050 Human Factors Test #1 Fall 2021

Please indicate the best answer on the answer sheet provided.

What country was not involved in the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

Where did the Pan Am flight originate? (Tenerife accident)

New York.

Los Angeles.

Chicago.

Miami.

Which crew involved in the Tenerife accident had more total flying experience/time?

Pan Am.

KLM.

TWA.

Northwest.

Which captain had more 747 experience/flight time?

The Pan Am captain.

The KLM captain.

The TWA captain.

The Northwest captain.

Which duty-time regulations were considered for more draconian at the time of the Tenerife accident?

The United States.

The Netherlands.

Spain.

France.

The captains of both accident aircraft mentioned weather as an issue prior to the Tenerife accident.

True.

False.

The _____ aircraft has an ongoing hydraulic leak that was serviced in Tenerife prior to the accident.

Pan Am

KLM.

TWA.

Northwest.

Select the following condition that is best described as a Hardware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Software-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as an Environment-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Select the following condition that is best described as a Liveware-Liveware issue.

Hydraulic problem – Crew stress.

Incorrect airport documentation – Crew missing the assigned runway exit.

Poor visibility – Crew unable to see other aircraft.

Flight engineer intimidated – Captain speaking emphatically.

Both captains demonstrated confusion regarding which exit from the runway they were assigned.

True.

False.

The Tower Controllers exhibited some frustration with the _____ flight crew regarding which runway exit they should use.

Pan Am

KLM.

TWA.

Northwest.

The physical environment did not contribute to the Tenerife accident.

True.

False.

According to the in-class presentation, data suggests that over _____ of aviation accidents are attributable to adverse human factors events.

50%.

60%.

70%.

80%.

The focus of Human Factors is the fundamental engineering principles surrounding a system.

True.

False.

The study of Human Factors is focused on?

Humans.

Machines/Systems.

The interface between people and systems.

System factors affect human performance.

True.

False.

Human factors affect system performance.

True.

False.

One focus of human factors should be to improve the quality of life of system users.

True.

False.

_____ performed research on sensory and motor capabilities.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on intellectual differences.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on scientific management.

Cattell.

Galton.

Taylor.

The Gilbreths.

_____ performed research on motion and surgical procedures.

Cattell.

Galton.

Taylor.

The Gilbreths.

During WWII, researchers determined so-called human factors were the principal cause of aviation fatalities. What was the second leading cause of aviator fatalities?

Combat.

Structural failure.

Engine failures.

Fuel starvation.

Throughout the 1980s and 1990s _____ of Human Factors Society members served as expert witnesses in courts of law.

5%.

10%.

15%.

20%.

In what decade did human factors become a mandate within the Federal Aviation Administration?

1960s.

1970s.

1980s.

1990s.

What airline was first in establishing a formal human factors program for flight crew?

American Airlines.

Delta Airlines.

Northwest Airlines

United Airlines.

In what decade did, did the Air Transportation Association host nits first conference focused on human factors?

1960s.

1970s.

1980s.

1990s.

The first rudimentary simulators training aids were developed in the Applied Psychology Laboratory at?

The University of Southern California.

The University of Illinois.

Cambridge University.

The Ohio State University.

Three additional questions appear on the answer sheer

ASCI 4050 Human Factors Test#1 Fall 2021 Name: _____

Answer Sheet

Please indicate the correct answer in the space provided and answer questions 31 – 33 at the bottom of the page.

1.	16.
2.	17.
3.	18.
4.	19.
5.	20.
6.	21.
7.	22.
8.	23.
9.	24.
10.	25.
11.	26.
12.	27.
13.	28.
14.	29.
15.	30.

In your own words, define Human Factors.

Differentiate between the terms Human Factors and Ergonomics.

Differentiate between capabilities and limitations.

Human Factors Final Examination

ASCI 4050 Human Factors Final Examination Fall 2021

Please place the best answer on the sheet provided at the end of this test (feel free to tear off the answer sheet) Good luck!

Of the following, which sense contributes most to spatial orientation?

Vision

Vestibular

Proprioceptive

Auditory

The vestibular system is in?

The outer ear

The middle ear

The inner ear

Spatial orientation includes the ability to perceive motion and position in?

One dimension

Two dimensions

Three dimensions

Most spatial orientation is provided by?

The vestibular system

The eyes

The proprioceptive receptors

All pilots are vulnerable to spatial disorientation

True

False

_____ of fatal aircraft accidents are a direct result of spatial disorientation.

20%

40%

60%

80%

Spatial disorientation occurs more frequently in?

General aviation accidents

Commercial aviation accidents

Generally, when vision is compromised, pilots should fall back to instruments to ascertain position and balance.

True

False

True/actual positional orientation and relative motion may not be consistent with the way our body feels.

True

False

How many semi-circular canals contribute to spatial orientation?

1

2

3

4

Extremely low rates of acceleration may result in the vestibular system not sensing movement.

True

False

What is one purpose of the eustachian tubes?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear side of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Between the Pupil and the Iris, the amount of light allowed into the eye can change at a ratio of

3 to 1

5 to 1

7 to 1

9 to 1

The _____ acts like an electronic image sensor of a digital camera, converting optical images into electronic signals.

Crystalline lens

Cornea

Iris

Retina

The fovea surrounds the macula.

True

False

The optic disk is sensitive to both colors and shades of grey.

True

False

The _____ protects the eye from dust, debris and infection-causing microorganisms.

The Sclera

The Choroid

The Conjunctiva

The Macula

_____ provides approximately 65 to 75 percent of the focusing power of the eye.

The Cornea

The Pupil

The Lens

The Retina

What part of the eye determines eye color?

The Lens

The Iris

The Pupil

The Retina

Tears have a slightly antiseptic property.

True

False

What part of the eye acts as an “aperture?”

The Iris

The Pupil

The Cornea

The Sclera

The human eye has approximately _____ neurons proving input to the visual cortex.

50,000

250,000

1,000,000

5,000,000

Both rods and cones are sensitive to light.

True

False

The center of the macula consists primarily of?

Rods

Cones

The fovea primarily contains

Rods

Cones

Of the following, what is not a primary color sensed by cones

Red

Blue

Orange

Yellow

The human eye can distinguish approximately _____ different shades of color.

1,000

5,000

50,000

1,000,000

Each _____ has its own neuron.

Rod

Cone

_____ are responsible for our peripheral vision.

Rods

Cones

As light level decreases, the sensing task is passed over from the _____ to the _____.

Rods to the cones

Cones to the rods

Which of the following carriers were not involved in the 1956 midair collision over the Grand Canyon?

United

American

Trans World

Stressors may be described as the body's responses to the demands placed upon it.

True

False

What part of the eye has the best visual acuity?

The retina

The fovea

The lens

The cornea

Where is the so-called "Blind Spot" located?

On the iris

On the fovea

On the edge of the lens

At the optic disk

Peripheral vision is generally accomplished by?

Rods

Cones

Colorblindness effects acuity.

True

False

Colorblindness is far more prominent in?

Men

Women

Images projected on the retina are inverted.

True

False

The _____ is the light sensitive screen lining the inside of the eyeball.

Sclera

Choroid

Retina

Generally, Rods require higher intensity light than Cones, to provide effective acuity.

True

False

Groups of cones are connected to a single neuron.

True

False

What is the purpose of the Eustachian tube?

To pass sound waves across the middle ear to the Auditory nerve

To allow ambient pressure to equalize on both sides of the ear drum

To allow ambient pressure to equalize on the middle ear of the ear drum

To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

Accommodation is controlled by the

Ciliary muscles

Iris

Lens

Cornea

Generally, Cones are better able to resolve detail than Rods

True

False

Proprioceptive receptors are concentrated?

In the eye

in the ears

In the muscles

Ultimately, avoiding midair collisions is the responsibility of Air Traffic Controllers.

True

False

The frequency band that a healthy young person can hear is

70 - 15,000 cycles per second

80 - 20,000 cycles per second

500-15,000cyclespersecond

20 - 20,000 cycles per second

A healthy ear does not produce wax.

True

False

Epithelial migration tends to move from the ear drum to the Pinna

True

False

The outer ear can alter the amplitude of sound waves.

True

False

The outer ear plays a role in the spatial hearing of sounds.

True

False

One side of the tympanic membrane is normally exposed to a liquid.

True

False

The compensation for liquid incompressibility within the inner ear occurs in the?

Fenestra Cochleae

Fenestra Vestibuli

Oval Window

A pilot suffering a head cold may experience pain at altitude due to blocking (clogging) of the?

Cochlea

Eustachian Tube

Tympanum Membrane

Fenestra Vestibuli

People must use caution when standing near a jet engine due to the excessive?

Sound frequency

Sound magnitude (decibels)

Both above

What are the times of useful consciousness at 20,000 ft. (moderate activity)?

5 minutes.

1minute.

10 minutes.

30 seconds.

If the symptoms of hyperventilation occur at an altitude where hypoxia is not a consideration, what is the correct remedial action?

Descend to MSL.

Decrease rate and depth of breathing.

Increase rate of breathing.

If possible, lay flat and help to calm sufferer.

What increases the risk of DCS occurring in flight?

Scuba diving shortly before flight.

Snorkel diving shortly before flight.

Alcohol.

Smoking.

Dark adaption is one of the first symptoms of hypoxia.

True.

False.

Hypoxic Hypoxia affects night vision.

True.

False.

Anemic Hypoxia can be:

brought on by altitude.

caused by decompression.

caused by smoking.

brought on by fatigue.

In commercial aircraft cabin pressure is normally maintained at:

sea level.

6,000 - 8,000 ft.

10,000 ft.

below 5,000 ft.

DCS is considered a medical emergency.

True.

False.

The "chokes" are associated with:

NIHL.

DCS.

blockage of the alveoli.

oxygen loss.

Breathing 100% oxygen at 40,000 ft. is equivalent of breathing normally at:

sea level

20,000 ft.

40,000 ft.

10,000 ft.

Of the gases in earth's atmosphere, which is the 3rd highest in terms of percentage?

Xenon

Helium

Argon

Hydrogen

Altitude and ambient pressure are linearly related.

True.

False.

Typically, cabin pressure differential is limited to approximately?

2-4 psi

4-6 psi

6-8 psi

8-10 psi.

Generally, oxygen saturation (approximately 97.5%) is maintained in the human body to an altitude of?

10,000 ft.

15,000 ft.

20,000 ft.

25,000 ft.

Hypoxia may be caused by all the following except for?

Inadequate supply of oxygen

Inadequate transportation of oxygen

Inability of the body tissues to use oxygen

Inadequate hemoglobin in the blood

Generally, the pressure differential between the inside and the outside of a pressurized aircraft is limited to?

3 – 5 psi

5 – 8 psi

8 – 10 psi

10 – 12 psi

Cabin rate of change is generally more-limited (lower) when?

Descending

Ascending

The most common symptom of decompression sickness is?

Joint pain

Lethargy

Distended stomach

Belching

The “creeps” are a condition associated with the respiratory system.

True

False

The Time of Useful Conciseness (TUC) generally describes how long it takes to lose consciousness after a decompression.

True

False

The Effective Performance Time (EPT) generally describes how long it takes before an individual will lose the ability to alleviate a hypoxic condition.

True

False

The four stages of hypoxia include: a) The disturbance stage, b) The indifference stage, c) The critical stage, and d) The compensatory stage. Which of the following represents the transition from bad to worse?

b, c, d, a

a, c, d, b

d, b, a, c

b, d, a, c

Carbon monoxide is necessary for regulating the breathing process.

True

False

The _____ blood cells carry the oxygen throughout the body.

Red

White

Yellow

Grey

Generally, the average rate of respiration in a healthy male adult is?

11

16

21

30

When an excess of Carbon Dioxide exists in our blood, our breathing will tend to

Increase

Decrease

How many bones are located between the tympanic membrane and the cochlea?

2.

3.

4.

5.

PowerPoint Presentation Examples

United Airlines Flight 173

•••

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1

Introduction/Overview of Accident - Joseph

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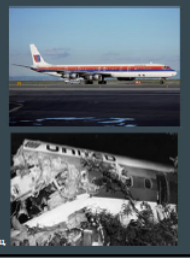

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2

Stakeholders who experienced the Human Factors "Failure" -Joseph

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3

Sequence of Events - Marike

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Asiana Airlines Flight 214

- NICHOLAS BOHN, ADAM BURKE, SAMUEL BYRNE, RUTH CALIX, TYLER LAMBERT

1

Pertinent Details

- The Pilots
  - Captain Lee Kang-Kook (69 hrs)
  - Captain Lee Jeong-Min (9k hrs)
- The Accident
  - Captain Kook mismanaged speed of aircraft
  - They were low and slow on approach to Runway 28L
  - Impacted sea wall and tore off tail and landing gear
  - Ignited a fire
- The Passengers
  - 291 passengers, 181 injuries, 3 fatalities
- Boeing
  - Not held liable and didn't listen to ICAO
- The Airline
  - Asiana airlines' reputation was ruined
- The Flight Attendants
  - Carried passengers on their backs
  - Experienced injury when slide deployed

http://www.youtube.com/watch?v=Cwk1qN_Mc-o&feature=player_embedded#!
(Please show from 2:29-2:43 and 7:09-7:49)

2

Accident Chain

- Last 1 minute of flight, from 1,000 feet down to impact with the sea wall
- Transition from being too high to being too low and too slow

3

Human Factors Issues

- Software-Liveware: Lack of critical information in the training manual pertaining to the autothrottle system and speed control (787 v 777)
- Hardware-Liveware: 777 autothrottle system will provide speed protection in 3 different scenarios, but not when the aircraft is set up like it was at the time of the accident
- Liveware- Environment: NTSB member Mark Rosekind says the crew had experienced sleep disruption and was operating at the "low point" of their circadian rhythm. They subsequently made "nearly a dozen fatigue-related cockpit crew errors throughout the approach, landing, and delayed go-around phases of Asiana flight 214" (p.142).
  - The Pilot Flying reported not being able to sleep for most of his rest period during the flight, and the observer reported feeling tired while returning to the cockpit to monitor the approach
- Liveware-Liveware: The pilot flying did not verbalize his anxiety about flying the visual approach, and the instructor pilot did not appropriately monitor the approach speed and glidepath or instruct the pilot to go around once it was clear that the approach was unstable

4

Human Factors Issues (cont.)

- The 777's autothrottle system did not provide underspeed protection while in HOLD mode
- Asiana's training department did not adequately understand this issue and did not properly train their pilots on situations where the autothrottle would NOT provide underspeed protection
- According to NTSB member Robert Sumwalt's statement, "I believe setting the stage for the crash was expectancy: the pilot flying expected the airplane to do something that it wasn't designed to do. Specifically, he expected the autothrottle system to provide speed control for him, but unbeknownst to him, the system would not do so while in a HOLD mode."
- The lack of understanding of the system inspired a false confidence in both pilots, leading to neither of them accurately monitoring the speed of the aircraft

5

Mitigation

- NTSB recommended Asiana should reinforce flight crew adherence to SOPs involving the inputs to the operation of autoflight system controls on the 777 mode control panel and related callouts.
- NTSB recommended Boeing to revise the 777's Flight Crew Training Manual
  - Include an explanation of the circumstances in which the autothrottle does not provide low-speed protection in demonstration section
- Gap in mitigation - NTSB ultimately voted against recommending the redesign of the 777's automation system even though it may have been beneficial to safety
  - Boeing's design philosophy: "pilots are very proficient in monitoring their speeds" – not supported by data: LOSA data from over 14,000 flight ops show that 15-10% of flights have poor monitoring & cross-checking performance

6

Could this happen again?

- Yes, an accident of this type can happen again.
  - Automation is a powerful tool that simplifies the task of flying
  - Although automation can greatly increases pilot efficiency and safety, when mismanaged it can become dangerous
- Pilots who are not properly trained or are not proficient in their automation systems can make similar mistakes to those of the Asiana Airlines Pilots
  - Lapses in training exist and will always exist and there will always be pilots that try fly above their proficiency level
- As pilots we need to make sure that we are comfortable and competent with our automation systems or else there is a possibly for us to mishandle it and put ourselves and others in danger

7

References

8

Example Papers

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

Al Schulz, Nathan Seliner, Drew Sinelli, Minsu Song

Department of Aviation Science, Saint Louis University

Human Factors, ASCI-4050-01

December 10, 2021

Group 4 Accident Rockwell Aero Commander 690A N690SM, November 23, 2011

On November 23rd, 2011, the airplane N690SM impacted the top of the Superstition Mountains near Apache Junction, Arizona. It had just flown from Safford Regional Airport (SAD) to Falcon Field (FFZ), Mesa, Arizona, about 110 miles away and was planning on conducting the same flight in the opposite direction (Aviation Safety Network, 2018). The return flight to SAD from FFZ was conducted under night visual flight rules (VFR) with no moon. The last radar return was received at 18:30 and was approximately coincident with the impact location. The impact location was near the top of a steep mountain that projected to over 5,000 feet MSL. The plane had 6 occupants including the pilot and all 6 people perished. The main human factors building up to this accident were ensuring airworthiness of aircraft, limited visibility due to night without the moon, pilot's lack of vigilance due to familiarity with the route and surrounding terrain, and lack of communication with ATC.

One of the stakeholders is Ponderosa Aviation, Inc. (PAI). According to the NTSB report they purchased the airplane and relocated it from Indiana to PAI's base at Safford Regional Airport (SAD), Safford, Arizona, about 1 week before the accident (2013). PAI's president conducted the relocation flight under a Federal Aviation Administration (FAA) ferry permit due to an unaccomplished required 150-hour inspection on the airplane (NTSB Report, 2013). The airplane's arrival at SAD terminated the ferry permit, and no inspections were accomplished to render the airplane airworthy after its relocation.

Also of note turbine powered aircraft produced before 2002 with 6 seats or more were required to have a Terrain Awareness and Warning System (TAWS) installed prior to 2005 (NTSB Report, 2013). There was no indication in the aircraft maintenance records nor the crash site that this regulation was complied with. If this aircraft was equipped with a TAWS system perhaps the pilot could have taken appropriate corrective action and the occupants would not have been harmed.

Even though other airworthy airplanes were able to make a flight, PAI's director of maintenance (DOM), who was the accident pilot, and the director of operations (DO), who were co-owners of PAI along with the president, decided to use the non-airworthy airplane (N690SM) to conduct a personal flight from Safford Regional

Airport (SAD) to Falcon Field (FFZ), Mesa in Arizona. As stakeholders in the accident, the DO and DOM planned to fly from SAD to FFZ under night VFR in visual meteorological conditions (VMC). After a safe arrival at the destination, the return flight was to be conducted under night VFR in VMC only by the DOM. The pilot's children were 3 of the passengers creating more stakeholders in this case (Christie and Berry, 2011). The passengers and their families are all stakeholders in the accident.

The greater community is also a stakeholder in this accident as it occured in the somewhat famous Superstition Mountains. Many people recreationally hike these mountains and the aircraft impacted very close to a hiking trail. Many people in the nearby city of Apache Junction, AZ witness the flames from the impact. A memorial was constructed in the community for the tragic loss of life in this unfortunate accident (Rupcich, 2020).

A possible contributing human factor was the pilot not using all available equipment and information. According to the pilot's brother the pilot used to use an iPad for navigation and flew using the ForeFlight software app that has a 'moving map' function (NTSB report, 2013). Thus, if he was using the moving map function of ForeFlight he should have been able to determine that the aircraft's track was on a collision course with the terrain. The investigation found remains of the iPad but was unable to determine whether the pilot adhered to his normal practice of using the iPad for the flight (NTSB report, 2013).

The human factor of complacency played a crucial role in this accident as the pilot was very familiar with the route. He had flown between the two airports several times and had previously accomplished the same flight 2 days before the accident (NTSB Docket, 2013). This familiarity with the flight could have led to complacency in proper planning and avoidance of terrain. A direct course from FFZ to SAD puts the aircraft approximately 3 miles south of the impact mountain but the aircraft did not start its turn on course until 2 miles north of the field as they were instructed to fly straight out for traffic by Falcon Tower (NTSB Report, 2013). Once ATC cleared the turn on course the pilot turned flying directly to the destination airport from their current location and not FFZ airport. This new course put the aircraft directly in line with the impacted mountain. This oversight by the pilot resulted in loss of situational awareness. The pilot did not realize that the combination of the new flightpath and altitude resulted in a collision with the terrain. Further exacerbating this was the fact that there was no moon at the time of the flight which went over mountainous terrain surrounded by sparsely lit terrain. This combination made it impossible to see the approaching mountain.

Another human factor contributing to the collision was the pilot was not in contact with ATC. The airspace directly overlying the area before the mountain was Phoenix Sky Harbor's class B (Bravo) airspace which went down to 5,000ft mean sea level (MSL) and the highest charted elevation of the impact mountain just outside the class B shelf is 5,070ft MSL. It is possible that since the flight was being conducted under VFR that the pilot thought that they would not get cleared into the class B airspace. This led him to fly below the class B shelf which put the airplane at an altitude lower than the surrounding terrain. Considering how familiar the pilot was with this flight you would think he would have flown in the class B airspace considering out of 619 VFR flight requests 598 were given clearance to enter the Bravo under a subsequent NTSB investigation (NTSB Report, 2013). Nevertheless, the pilot leveled off and was flying at 4,500ft MSL at the time of the collision which occurred about four minutes after the turn on course.

If we take a look at the SHELL model we can see aspects from all sides present in this accident. First looking at Software (maps, documents, checklists), we can see that it seems that there was a lack of map use and a failure to realize the changing altitude. Hardware: the aircraft technically was unairworthy, which shows poor decision making. Also the NTSB had trouble locating an installed TAWS in the wreckage or maintenance logs. Environment: Interestingly the pilot had completed this same exact flight multiple times before just not on this different flight path. The pilot had become complacent with the surrounding area and failed to maintain situational awareness. An example of liveware to liveware is perhaps the pilot was distracted by the passengers in the aircraft. Three of the passengers were the pilot's own children so perhaps he was even more distracted than if it were passengers that he did not know. It is important that pilots avoid distractions

as much as possible and maintain positive control of the aircraft and situational awareness. In this case it seems like positive control of the aircraft was maintained but situational awareness was lost so the airplane collided with the terrain.

Another human factor at play in this accident is possible night illusions relating to eye physiology. The flight was conducted at night under VFR in VMC with no moon. The area was sparsely light and mountainous terrain. The featureless terrain could have caused an illusion of the airplane being higher than it actually was. At night the eye functions mainly on rods instead of cones which only see in black and white. Since the mountain was not lit and the surrounding terrain was sparsely lit, there was not enough contrast to see the mountain. It is important that we remember when flying at night that it is harder to see and there could be invisible obstructions such as terrain. This is why it is so important to maintain situational awareness, especially at night, so that we alway know where we are and can avoid any vertical obstructions.

To mitigate this type of accident, the pilot should make sure that the airplane is completely airworthy and if it is not airworthy, do not fly with the airplane. Even though it looks fine with the naked eyes, it may have some severe defects inside. It should only be flown after all required inspections have been conducted by a certified aviation mechanic. Airworthiness is not the only concern in this accident.

Pilots also should be aware of the environment such as weather, terrain, time of day, and visibility around the planned route and file a flight plan for each segment. The pilot should be familiar with the flight environment and current situation. In this case the combination of the airscape with the terrain made it more likely for a pilot to be at a lower altitude than the surrounding terrain. Although the pilot could have requested access into the class B airspace it is not required. Perhaps the airspace itself should be investigated to see if any changes should be made so that it is not lower than terrain so close to its lateral borders.

As for other high consequence industries some things that could be taken from this accident is getting into a routine to double or triple check equipment regardless of recent use. You also must keep focus and not have predetermined expectations while executing any mission or operation that can result in tragedy. It also could be beneficial to ask for direction if you are not sure about something. In this case not asking for clearance into the Bravo created an unnecessary dangerous situation.

In this case of this accident, the DOM should have known to ensure airworthiness relating to required equipment. If the airplane was equipped with TAWS equipment as it should have been this accident most likely could have been avoided. According to Title 14 CFR 91.223 turbine-powered, U.S registered airplanes configured with six or more passenger seats and manufactured before early 2002 could not be operated after March 29, 2005, unless the airplane was equipped with an approved TAWS unit. In addition, it would be helpful to get information via sectional chart or other topographic references, maintaining awareness of visual limitations for operations in remote areas, following instrument flight rules practices until well above surrounding terrain, advising ATC and taking action to reach a safe altitude to prevent from causing the accident.

A possible “gap” that could lead to this exact same accident is that the airspace and terrain are still the same so if another pilot lost situational awareness in the same area at night in an aircraft without TAWS they could come into contact with the mountainous terrain. That is really only one mistake that could lead to fatal consequences. Pilots must be vigilant in maintaining concentration, situational awareness, and not fall victim to complacency.

A lot can be learned from this accident as these factors can be related to many high consequence industries. If a worker lost concentration in a factory or healthcare setting there could be disastrous results. If you lost situational awareness in a mine or powerplant there could be harmful consequences. If an employee became complacent in a chemical plant there could be a devastating outcome. Maintaining concentration and situational awareness of your surroundings will almost always keep you safe in any part of life. As humans we will make mistakes but what is important is that we learn from mistakes to make a better future.

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Air New Zealand Flight 901, Mt. Erebus

Jerry Cockrum, Devin Henneberry, Yu Feng, Akio Hansen, Sam Lehmann

ASCI-4050-01 Human Factors

Dr. Kelly

During the 1970s, a market emerged for tourism flights to sightsee over Antarctica. Air New Zealand (ANZ) had been aware of the opportunity to operate these flights, but was unable to do so because their flagship DC-8s did not make the trips economically viable. This changed in 1973 when ANZ acquired their first DC-10 aircraft. This allowed the airline to operate a non-stop long haul flight, and ANZ began offering these flights in 1977. The flights were immediately popular and had no trouble filling seats. Passengers were afforded the opportunity to walk around the cabin during flight and gaze at the spectacular view of the least-inhabited continent while enjoying luxury food and drink service. Educational films about Antarctica were also shown during the duration of the flight.

Two years after the launch of the flights, they were as popular as ever. Around a month before the disaster, the pilots participated in a route briefing for the upcoming flight, which was scheduled for November 28, 1979. The pilots, Jim Collins and co-pilot, Gregg Cassian, had never flown this Antarctica sightseeing flight before. The pilots were given briefing material a month before for the flight and noted no issues. Air New Zealand Flight 901 (TE901), a McDonnell-Douglas DC-10-30, took off from Auckland International Airport bound for the Antarctic sightseeing flight. 257 passengers and crew were on board.

At 8:21, New Zealand time, the plane took off from Auckland International Airport. Around noon New Zealand time, the aircraft made contact with McMurdo Station ATC, which was operated by the US Navy. The pilots had learned in their briefing that if visual meteorological conditions existed, they could step down to 6000 feet. They did so and advised ATC they would continue down to 2000 feet. Even though the lowest authorized altitude for the route in visual conditions was 6000 feet, past flights had also descended lower, likely to provide passengers with a better view of the scenery. The flight descended then descended to 1500 feet with the autopilot engaged. This was likely in an attempt to descend under a low cloud layer at 2000 feet to ensure the passengers had a clear view.

Four minutes later, the Ground Proximity Warning System on the aircraft sounded an alarm, warning that the aircraft was approaching the ground quickly. Captain Collins quickly advanced the throttle to go-around power in an attempt to clear the terrain. Collins still didn't know that there was a volcano ahead, the nose was only raised 15 degrees as according to the training guidelines, instead of a higher angle.. The aircraft then impacted the lower slopes of Mount Erebus and was instantly destroyed, killing all aboard.

The ATC station that was in contact with the flight was unable to reach them, and soon organized a search and rescue effort. The aircraft wreckage was located the next morning. It was strewn over a large area and the search teams were only able to identify the aircraft by its tail logo. News that the aircraft was missing and likely crashed had already reached New Zealand by this time.

TE901 Wreckage National Erebus Memorial

The driving human factor behind this accident was a miscommunication between the crew of the flight and the navigation office of Air New Zealand. There was a convoluted background for this miscommunication. In 1977, the original approved routing for the flight was a route directly over the 10,000 ft.+ peak of Mount Erebus on the way to McMurdo Sound. A little over a year before the disaster flight, the route was computerized by ANZ. During this, a typing error occurred, shifting the route coordinates 27 miles away and over the flat McMurdo sound. Up until the time of the disaster flight, many of the flights before had used this non-approved route, unaware of the discrepancy.

The captain of TE901 however noticed this discrepancy, and notified ANZ's navigation office. The night before the flight, the office updated the Inertial Navigation System of the plane so that the coordinate was fixed. The plane would now fly over Mount Erebus per the approved route when autopilot was engaged. Crucially, the pilots were not informed of this change. They were under the impression throughout the flight that it would be flying and descending over the flat water and ice of the McMurdo sound, well clear of terrain. This was tragically not the case.

This can be described using the SHELL model as a liveware to liveware issue. The navigation office failed to communicate to the pilots the change. It can also be described as a software to liveware issue. The INS had been programmed in the aircraft to fly over (or into in this case) Mount Erebus, and the pilots did not realize this. This miscommunication was crucial to placing the plane in a position where the pilots would be affected by more human factors issues to come.

While miscommunication and improper data input were the driving factors for the Mount Erebus disaster, other human factors components can be attributed to this aviation tragedy as they relate to a pilot-environment relationship. First of all, the aircraft was flying in adverse atmospheric conditions. Though conditions did not technically qualify as IMC, the cloud layer was low enough to create a phenomenon known as "sector whiteout" in conjunction with the all-white terrain of Antarctica. Sector whiteout is a visual illusion where factors, in this case clouds and snow, give the illusion of mostly clear visibility and adversely affect depth perception. In these conditions, the human eye ultimately can't gauge distances from and among outside objects, such as the terrain, sky ahead, and overhanging clouds. This illusion is comparable to that of empty field myopia, where the eye essentially relaxes and the iris/lens bend light to the retina as if the object in focus were closer than they actually are.

One of the biggest outcomes of TE901 was the development and implantation of Crew Resource Management (CRM). CRM was developed after safety investigators and psychologists came together to understand how human performance can deliver an enhanced level of safety. CRM, rather than encouraging an autocratic flight deck, encourages crew teamwork and, when/if necessary, assertion of authority by crewmembers that are, in the flight deck hierarchy, subordinate to the captain. It was first used by United Airlines in 1981, however Air New Zealand was an early adopter of CRM. Before the Erebus disaster and any type of CRM was in place, pilots were the only ones who could call the shots and there was little tolerance for other crew voicing their concerns or asking questions. In other words, communication among the flight crew was weak. However, following TE901, flight crews were trained and encourage to speak up if they didn't see something right. Another valuable lesson that came as a result of the Erebus Disaster was a concept called "systemic error" used to explain how a system can go wrong. This systemic error is also referred to as the Swiss Cheese Model. The Swiss Cheese metaphor that suggests multiple contributors (holes in cheese slices) must be aligned for any adverse event to occur. Each slice of cheese is considered a barrier or safeguard against an accident. If the holes line up you can have a series of little incidents that end up in an accident. Pilots now understand that an accident doesn't happen by itself, there's generally a chain of little things that cause the accident.

One unresolvable issue that many pilots face is the inability to see through and past cloud layers. This is something that not only concerns that of instrument rated pilots, but also pilots who are flying under visual flight rules and wander into Instrument meteorological conditions. We as an aviation community have put

in place legislation to prohibit non IFR (Instrument flight rule) rated aircraft and persons from flying in such adverse conditions. Pilots that are trained to fly only VFR (visual flight rules) are trained to properly handle these situations. Regardless, even with these safety margins implemented, we still run into the issue of how an event is handled when the stress of an actual incident is in place.

Another issue that is difficult to fully eliminate is error in communication. Crew Resource management has helped with streamlining information pertinent for flight operations, but when information is handed down data can be lost, like the confusion the pilots of Air New Zealand faced when improperly inputting the waypoints. Information hand off is simpler now and has more opportunity for error correction compared to 1997. Although we moved in the right direction, eliminating total miscommunication is near impossible.

When considering the human factors associated with the Mount Erebus disaster and comparing it to outside fields, you will notice that improper communication can hurt essentially every field out there. When information is passed person to person the original information starts to stray from the original message. Without proper communication and an inability to manage systems properly, human error is inevitable.

Works Cited

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Peer Feedback Form

Peer Feedback Instructions

For each member of your team, provide honest feedback on this form. You will rate each person on your team on items related to cooperative learning skills, self-directed learning, and interpersonal skills. It is important that you assign scores that reflect how you really feel about the extent to which your team members and you contributed to your learning and the final product of both the paper and the presentation.

You will also be given the opportunity to provide written feedback to each of your team members by answering two open-ended questions. These comments will be anonymous and provided to your team members after the deadline. This feedback should be constructive- quality feedback is important. Keep the following guidelines in mind as you provide your written feedback:

Are specific behaviors described? (vs. non-specific generalizations)

Are those behaviors described clearly, so your teammate recognizes what she/he has done to help the team, and what he/she can adjust or change?

Are the content and tone constructive and helpful? (vs. petty, mean)

Is the feedback descriptive ("I feel our team would benefit if you gave us your opinion earlier in the discussion.") rather than evaluative? ("You treated us unfairly by keeping quiet during our discussions.")

Do you define specific areas for improvement?

Peer Feedback Form

Team: _____

Peer Learner you are evaluating: _____

Your name (evaluator): _____

PART ONE: QUANTITATIVE ASSESSMENT *(*CHECK ***ONLY ONE BOX*** FOR EACH OF THESE 12 ITEMS)

Cooperative Learning Skills:	**Never**	**Sometimes**	**Often**	**Always**
Arrives on time and remains with team during work time				
Demonstrates a good balance of active listening & participation				
Asks useful or probing questions				
Shares information and personal understanding				

Self-Directed Learning:	**Never**	**Sometimes**	**Often**	**Always**
Is well prepared for work time				
Shows appropriate depth of knowledge				
Identifies limits of personal knowledge				
Is clear when explaining things to others				

Interpersonal Skills:	Never	Sometimes	Often	Always
Gives useful feedback to others				
Accepts useful feedback from others				
Is able to listen and understand what others are saying				
Shows respect for the opinions and feelings of others				

PART TWO: QUALITATIVE ASSESSMENT (*FOR EACH ITEM, ANSWER THE FOLLOWING QUESTIONS*)

1) What is the single most valuable contribution this person makes to your team?

Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: __30_____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 1 - Canvas Assignment Information on Discussion Board: Describe an ethical dilemma based on your experience. In 1-2 paragraphs, use Kohlberg's Theory of Moral Development to discuss how you addressed that dilemma (Safety Ethics, p. 19).

Points Possible: 30

Due Date: 25 August 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Student Submission: Daniel Igra

When I was a student pilot (pre-ppl), I decided to conduct my first solo cross country to the near town of Centralia, IL (KENL). As I entered the uncontrolled airspace of KENL, I discerned the following two facts: 1) From my point of view, it seemed that there was only one other pilot in the traffic pattern who seems to be flying a P-51 mustang. 2) I also recognized that a fellow BILLIKEN plane was executing maneuvers just outside the KENL uncontrolled airspace. Although I have entered uncontrolled traffic patterns before, I was rendered anxious and complicit due to this being my first solo cross-country flight. As a result, I entered the uncontrolled airspace without making any of the required position reports. In addition, the realization that the P-51 pilot isn't making position reports too, gave me an excuse to resume my negligent and dangerous behavior. As I neared my base turn, I was faced with an ethical dilemma that demanded an immediate decision: Will I overcome my newfound anxiety induced by this novel situation and report BASE on CTAF, or will I continue in the pattern silently?

Were this ethical dilemma to be viewed through "Kohlberg's theory of moral development (Patanker et al., 2020, p. 7)", the problem would be analyzed into the following three levels: First, the basic level where one is motivated to make a decision that is based on ***self-interest*** (Patanker et al., 2020, p. 7) may have caused me to make a leg report due to the fear of the neighboring BILIKEN instructor listening to KENL's CTAF. Here, I would be acting out of fear of personal punishment, hence acting out of pure self-interest. Second, the intermediate level where one is motivated to make a decision that is based on ***conformity*** (Patanker et al., 2020, p. 7) may have caused me to follow in conformity after the actions of the P-51 pilot who decided not to report his legs as well. After all, P-51s require more experience and therefore the pilot must be a professional, I reasoned. Third, the final level where one is motivated to make a decision that is based on ***a principle of respect*** (Patanker et al., 2020, p. 8) may have caused me to cognize that I am the pilot-of-command and therefore bound by duty to conduct this operation in the best and safest way possible, by virtue of duty and respect for the roll I currently assume, I decide to overcome my anxiety and report as best as I could in order to complete this operation as best possible.

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

Module 1 - Canvas Assignment Final Paper/Presentation:
The final paper or presentation, with a minimum of 7 references, may be completed through any of the following methods (due 13 DEC 2021):
1. Individual 3–7-page paper
2. Group paper 8-11 pages
3. Individual recorded presentation
4. Group recorded presentation (Zoom or Canvas recording 15-20 minutes)
Title, students' names, course, and due date on first slide.
Make sure to include citations on the slides where you are using someone else's material when either paraphrasing or quoting.
Reference list in APA 7th formatting at the end of the presentation.
Group size may be 2-4 students. You are welcome to partner with students from ASCI 4250-01 and ASCI 4250-10.
Identify the style of paper in the first paragraph or on the introduction slide (Argumentative, Descriptive, Expository, or Literature Review).
Select a topic: You may choose any topic covered throughout the class for the final paper or presentation. Below are a list of topics from the syllabus to help you decide…

Points Possible: 100

Due Date: 13 December 2021

Notification thru: Schedule, Module Lesson Plan, Discussion, Announcement, Email

Submission: Attach of paper or presentation using the assignment link

Guidance and resources: Module Lesson Plan, Discussion, Instructions/Steps to success, weblinks to Purdue OWL, SLU Writing Center, sample paper, etc.

Student Submission: Annie Phan and Jordan-Chase Fines

Please select "view in new tab."

https://slu.zoom.us/rec/share/SqgWEaPX9Xa_VViEAIhBelg433gz66YzegjmO6jf3dcIq5u2ornYxsVSI6phHut_.6UtwSOFaeUqy_RWf?startTime=1639460258000

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Performance Indicator Rubric

Course: ASCI 4250 Professional Ethics and Standards Course Instructor: _____Janice McCall_____

Semester Taught: _____Fall 2021_____ Number of Students in Course: ___30_____

FLIGHT SCIENCE CONCENTRATION

Student Learning Outcome Assessed	**Assessment Results: (Indicate what % of class achieved a minimum 70%)**	**Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")**
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	99%	Yes
SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.	99%	Yes
SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.	99%	Yes

Course Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

**Attach description of assignment used for assessment and samples of student work.*

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Module 2 - Canvas Assignment Information on Discussion Board: Working together, let's see if we can identify the "key personal characteristics that enable a person to fight ethical violations" mentioned by Patankar (2021) when writing about Joe's experience.
Name one personal characteristic that helped Joe (the mechanic-> manager) deal with the many ethical challenges throughout his career.
Please, do not duplicate or use the same answer as other students.

Points Possible: 10

Due Date: 19 September 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment, Zoom Lecture

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: Student's compiled a list of over 30 professional and personal characteristics that promote aviation safety

Student Submission: Yu Feng

The key characteristic of which led to Joe's success is his ability to institutionalize leadership which means that Joe doesn't just demonstrate personal capacity at dealing with aviation challenges and ethical responsibilities, which means that he lives by the standards of which ensure that the values he possessed that led to his success will become the cornerstones of future managers and engineers who will most likely deal with similar problems as he did. This is evidenced by the fact that Joe has a number of protégés who also share his values and are referred to him for advice when facing their own challenges as mechanics. The result is that Joe's values and capabilities are standardized and constantly referenced in a practical manner. Just like Joe, they pick their own battles, are willing to challenge management at the right time challenge their evidence. Joe certainly has his share of proteges. Over the years, many mechanics and inspectors have faced their own challenges, referred to Joe for advice, and developed their own skills. Consequently, there are at least a dozen Joes around. They have mastered the art of collecting evidence, picking their battles, challenging management at the appropriate times, and ultimately winning their battles. The strong social support structure that Joe built also helps them deal with family issues. It is not unusual to have these mechanics watch out for each other's kids and help out at family events.

SLO 2: Describe historical trends, current issues, and emerging opportunities in aviation.

Module 7 - Canvas Assignment Information on Discussion Board: Can this industry, in the realm of international air travel, strike the proper balance between health (spread of disease) and economic trade?

Points Possible: 18

Due Date: 28 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text on the Discussion Board

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success

Note: During the Module, Omicron was just beginning to spread in the U.S. and the CDC introduced new travel guidance that was including in the discussion.

Student Submission: Clifford Drozda

I believe that international air travel can reach a proper balance between health and trade. As seen in the previous year and a half, air travel has been able to adapt to a more careful way of travel. Cargo only flights took priority in a time of online shopping, and commercial flights have still been able to carry passengers by implementing ways to reduce the spread such as masks and spaced out flights when needed most. In March 2020, air travel almost ceased and airlines took a large hit. I am not saying this situation was close to ideal, but I do believe that airlines will be able to adapt easier in the future and will continue to find ways to transport passengers while also being safe with the spread of disease. The normalcy of air travel has seemed to return and the issue with COVID was at it all happened so fast. In the future, I think that airlines will be more ready to respond to pandemic-related issues if anything ever occurs. Health and trade in the airlines have been balanced and only time will tell but airlines may be able to quickly handle similar issues more effectively in the future if needed.

SLO 4: Articulate the value of integrity, lifelong learning, and building diverse teams in serving and leading others.

Module 6 - Canvas Journal Assignment: Create a 4-6 paragraph Diversity Statement using the guidance provided in “Writing a Diversity Statement” (University of Nebraska, 2021).

Points Possible: 50

Due Date: 14 November 2021

Notification thru: Schedule, Module Lesson Plan, Discussion Assignment

Submission: Online text in the assignment

Guidance and resources: Module Lesson Plan, Zoom Lecture, Directed Reading of the textbook, Optional Reading of short article, Instructions/Steps to success, Sample Diversity Statement

Student Submission: CH Fairchild

While I grew up in a predominantly white neighborhood, played a predominantly white sport, and am pursuing a career in a predominantly white career field, I found inspiration in the individuals around me who did not fit that mold. There are two particular people who have made a significant impact on my development and my attitude towards diversity. One individual was a sports coach, and the other, a flight instructor.

I grew up as a hockey player and for the better part of 20 years, I grew up playing with athletes who mostly looked like me. It was not until one of my last years that I had the opportunity to play for a brilliant hockey coach who was a minority. His brilliance as a hockey coach came from his love and passion for the game, and for his players. He had the mindset that he was not just coaching athletes, but he was coaching leaders. He taught invaluable lessons from his experiences of racial abuse and insensitivity which taught us to be leaders of character. I learned more in one year from that coach than in the previous 15 years of hockey.

During my flight training at Saint Louis University, I had the good fortune to work with an instructor who taught me more about diversity and inclusion than anyone else. He grew up in an underserved neighborhood, graduated at the top of his class in high school and university, and shows everyday what professionalism in aviation means. His story of how he got into aviation is a simple one, but it speaks volumes to the importance of diversity in our industry. He saw the movie "Red Tails," a story about the Tuskegee Airmen in WWII. While this may seem very unassuming, it highlighted a key aspect of diversity that is not always thought about. It took for him to see people who looked like him, other minorities, in order to convince himself that he could become a pilot. He told me that people from his town do not become pilots. It is, frankly, something no one ever considers. He saw that movie, and convinced himself that he could become a pilot. What I learned from this is that I never had to have that experience. I did not need to see a pilot with the same color skin as me in order to convince myself that it was an option.

These two very influential leaders inspire my commitment to diversity and inclusion in my life. Hearing stories of racial abuse on the ice rink helps me to find that inclusivity of others around me so that they never have to experience the things I heard about. Having a flight instructor who comes from a very different background has helped me to learn and reflect on how we as aviation professionals can build a more diverse, inclusive, and accessible environment for anyone who wishes to be a part it.

Performance Indicator Rubric

Course: ASCI 4450 Aviation Law

Course Instructor: BRUCE HOOVER

Semester Taught: FALL 2021

Number of Students in Course: 27 ((ON CAMPUS: 9. ONLINE: 18 (COVID protocols))

AVIATION SCIENCE CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.	Achieved both online and on campus: **Yes** Two case briefs assigned. Total possible: 168 points On campus 9 students 89% achieved a minimum 70% (117-plus points). Only one student failed to achieve a minimum 70% Online 18 students Total possible: 144 points (no oral presentation score) All 18 students achieved a minimum 70% on the case briefs.	Achieved both online and on campus: **Yes** Two case briefs assigned. On campus 9 students 89% of the 9 students scored at or above 70. Online 18 students Total possible: 144 points (no oral presentation score) 100% of the 18 online students scored above the minimum 70%

SLO 1: Conduct aviation operations in a professional, safe, and efficient manner.

Aviation operations encompasses multiple areas but must include airports operations, flight operations and administrative operations. Students in ASCI 4450, Aviation Law, were exposed to case law examples to inform them of their rights, responsibilities, and accountability in this industry.

Students were assigned one case brief from within one of the following general areas: criminal law, torts and contracts law, property law, or international air law.

Students were also assigned one case brief from within administrative law. This concentration of case studies was important since the vast majority of class members were involved in flight operations and interactions with the FAA, DOT, DOL, and NTSB were critical to acquiring knowledge to promote safe and professional operations.

ATTACHMENTS:

The lengthy list of cases from which the two case briefs were assigned
The major topic titles covered in the course illustrating inclusion of multiple aviation operations areas.
The outline of the content of each case brief. NOTE the requirement at the end of each case brief for the student to articulate the implications of the case to aviation professionals and its impact on aviation activities.
A guide to reading and understanding cases.
Case brief rubric (NOTE online students were not graded on oral presentation)

Note: Not all cases listed within the chapter topics will be examined. Some of the listed cases will be referenced during the class lectures for illustration of issues. ***New cases may be inserted as the course progresses***. Monitor for revisions. Some students with specializations may wish to examine cases relevant to their job or interests. Other cases deemed important, current, relevant or precedent-setting will be selected by the instructor.

TOPIC	TEXT	DISCUSSION CASES
Legal System Fundamentals Litigation process Trial court; jury verdict Jurisdiction Summary judgment	Chapter 1	*Newberger v. Pokrass* 33 Wis. 2d 569 (1967) Appeal of trial court *Lucia v. Teledyne* 173 F. Supp. 2d 1253 (2001) Federal jurisdiction *Sky-Med, Inc., DBA Pacific Int'l Skydiving Center v. FAA*, 9th Cir (2020) Subject matter jurisdiction in civil penalty case *FAA v. Joseph F. Corrao* NTSB EA-5448 (2009) Motion for summary judgment *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018) Theory of standing
The Constitution and Aviation Federalism Preemption Express / Implied / Field / "Complete" Takings Clause Airspace Aerial trespass Avigational easement Just compensation Local airspace regulation	Chapter 2	*Kent v. Dulles,* 357 U.S. 116 (1958) Right to travel *Northwest Airlines, Inc. v. Minnesota* 322 U.S. 2929 (1944) State vs. National Taxing Authority *Morales v. Trans World Airlines, Inc.* 504 U.S. 374 (1992) *Int'l Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992) *American Airlines, Inc. v. Wolens.* 513 U.S. 219 (1995)

Supremacy Clause Savings Clause Airline Deregulation Act (ADA) Airline immunity (ATSA) Bill of Rights First Amendment Fourth Amendment; Privacy; UAVs		*Air Transport Ass'n of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Casey v. Goulian* 273 F. Supp. 2d 136 (D. Mass. 2002) *Bailey v. Rocky Mountain Holdings, LLC* 136 F.Supp. 3d 1376 (S.D. Fla. 2015) *Guille v. Swan* 19 Johns. 381 (N.Y. Sup. Ct. 1822) *United States v. Causby et ux.* 328 U.S. 256 (1946) *City of Burbank et al. v. Lockheed Air Terminal, Inc. et al.* 411 U.S. 624 (1973) *Griggs v. County of Allegheny* 369 U.S. 84 (1962) *Singer v. City of Newton* 284 F. Supp. 3d 125 (D. Mass. 2017) *United States v. Long* 674 F.2d 848 (1982) Criminal drug and aviation laws *Northwest, Inc., et al. v. Ginsberg* 572 U.S.___ (2014) *Electronic Privacy Information Center v. FAA* 892 F.3d 1249 (2018)
Airline Passenger Rights Aviation consumer protection Discrimination Air Carrier Access Act NY pax bill of rights Contract claims Shrinking airline seats	N/A	*Stone v. Continental Airlines* 804 N.Y.S.2d 652 (N.Y.C. Civ. Ct. 2005) *Delta Air Lines, Inc. v. Barnard* 799 So. 2d 208 (Ala. Civ. 2001) *Buck v. American Airlines, Inc*. 476 F.3d 29 (1st Cir. 2007) *Air Transport Association of America v. Cuomo* 520 F.3d 218 (2d Cir. 2008) *Al-Watan v. American Airlines, Inc*. 658 F. Supp. 2d 816 (E.D. Mich. 2009) *Deterra v. America West Airlines, Inc.* 226 F. Supp. 2d 298 (D. Mass. 2002) *American Airlines, Inc. v. Wolens.* 513 U.S. 219 (1995)

		Flyers Rights Education Fund, Inc. v. FAA (2017) *Paralyzed Veterans of America et al. v. Department of Transportation* (2017)
Criminal Law Wire fraud False statements Endangering safety of aircraft Conspiracy Criminal conduct onboard Sexual assault Transportation of drugs Operating aircraft without airman certificate Operating commercial aircraft under the influence State criminal charges Laser pointers Assault onboard	Chapter 3	*U.S. v. Sabretech, Inc.* U.S. Court of Appeals 11th Circuit (ValueJet crash 1999) *United States v. Evinger* 919 F.2d 381 (1990) *USA v. Sasso* 695 F.3d 25 (2012). First Circuit *USA v. Smith* 756 F.3d 1070 (2014). Eighth Circuit *U.S. A. v. Aaron Jason Cope* (2012). Tenth Circuit *U.S.A. v. David Hans Arnston* (California; Alaska Airlines) *United States v. Brassington.* Platinum Jet Management and Darby Aviation; Michael and Paul Brassington and others (cases 2005-2011 FAA DOT NTSB U.S. Dist. Ct. NJ) *Garza v. Northwest Airlines, Inc*. 305 F. Supp. 2d 777 (2004) *Ward v. State* 374 A.2d 1118 (Md. 1977). Court of Appeals, Maryland
Administrative Law Administrative Procedure Act (APA) Congress Rulemaking Enforcement FAA sanctions Adjudication NTSB ALJ DOL ALJ Administrative & Legal Enforcement Actions	Chapter 5 FAA Order 2150.3C and FAR part 13	*Air Transport Association of America v. DOT and FAA*, 900 F.2d 369 (1990). U.S. Court of Appeals for the District of Columbia A large number of administrative law/administrative agency cases will be examined. Most are appeals cases through the NTSB ALJs, appeals courts, etc. Sample topics: Challenges to government rulemaking Civil penalties (fines) Drug & alcohol testing

Certificate action and civil penalties Airline Deregulation Act (ADA) Equal Access to Justice Act (EAJA) Pilot's Bill of Rights		DUI/Motor vehicle actions FAA enforcement & sanctions DOT enforcement Flight instruction Mechanics Medical certificate actions (FAA) Pilot certificate actions (FAA) Passengers with disabilities (DOT rules) Air carrier sanctions Air ambulance issues Flying and the sharing economy (e.g. Uber)
Tort Law; Negligence; Wrongful Death; Liability Theories; Strict Liability; Damages; Tort Reform; FTCA Intentional torts False imprisonment Negligence Strict liability Wrongful death Educational malpractice Preemption revisited Liability vs. probable cause GARA Fed Tort Claims Act (FTCA) Interference with crew and co-passenger torts	Chapter 4	*McPherson v. Buick* Motor Co. (1961) *Goldberg v. Kollsman Instrument Corp. and American Airlines*, 12 N.Y.2d 432 (1963) *Crosby v. Cox Aircraft Co. of Washington* 746 P.2s 1198 (Wash. 1987) *Cleveland v. Piper* 890 F.2d 1540 (1989) *Goldberg v. Kollsman* 12 N.Y.2d 432 (1963) *McGee v. Cessna Aircraft Company*, 139 Cal.App.3d 179 (1983) *Brock v. United States* 18,246 (E.D. Va. 1977) *Brocklesby v. U.S.,* 767 F.2d 1288 (1985) *Abdullah v. American Airlines, Inc.* 181 F.3d 363 (3d Cir. 1999)

Refusal to transport Injury onboard Failure to warn		*Catherine Ray v. American Airlines* (2010) *Cross et ux v. Harris* 230 Ore. 398 (1962) *Steven Robert Hirtzinger v. Pinnacle Airlines, Inc*. (2008) *Sikkelee v. Precision Airmotive Corp.* 822 F.3d 680 (3d Cir. 2016) *Rubin v. United Air Lines, Inc.* 117 Cal. Rptr. 2d 109 (Cal. Ct. 2002) *United States v. Spellman* 243 F. Supp. 2d 285 (E.D. Pa. 2003) *Inmon v. Air tractor, Inc*. 74 So. 3d 534 (4th DCA 2011) GARA *Starks and Oswell v. American Airlines Inc.* Columbia Div. Dist Ct S. Carolina complaint (2018) *Glorvigen v. Cirrus Design Corp*., 796 N.W.2d 541 (2011) Training, Ed Malpractice, Duty of care
Property Law & Insurance Aircraft Aircraft transactions "As is, where is" Types of conveyance Airplane UAVs Aircraft ownership and registration Priority Drone registration Sales and use taxes Airport issues Noise Flight restrictions Easements Zoning laws Insurance	Chapter 8	*Ickes v. Federal Aviation Administration* 299 F.3d 260 (3d Cir. 2002) *Huerta v. Pirker* 2014 WL 8095629, NTSB Order No. EA-5730 (2014) *Philko Aviation, Inc. v. Shacket*, 462 U.S. 406 (1983) *Godwin Aircraft, Inc. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992) *Koppie v. US of America and Ligon "Air",* 1 F.3d 651 (1993) *Dowell v. Beech Acceptance Corporation, Inc.,* 3 Cal.3d 544 (1970) *Aerowake Aviation, Inc. v. Clifford M. Winter, Jr. and Avemco Insurance Company,* 423 So.2d 165 (1982) *AVEMCO v. Auburn Flying Service,* US 8th Circuit Ct App, (2001) *Godwin Aircraft, In. v. Houston* 851 S.W.2d 816 (Tenn. Ct. App. 1992) *Taylor v. Huerta* 856 F.3d 1089 (D.C. Cir. 2017) *FAA v. Davis NTSB Order EA-4255 (1994)*

The Wright Amendment (Love Field)		*International Society for Krishna Consciousness, Inc. v. Lee* 505 U.S. 672 (1992) *Goodspeed Airport, LLC v. East Haddam Inland Wetlands and Watercourses Common* 681 F. Supp. 2d 182 (D. Conn. 2010) *Example Supreme Court of Missouri cases 1987-2019* *U.S. v. Causby* *Griggs v. Allegheny County* *City of Burbank v. Lockheed Air Terminal, Inc.* 411 U.S. 624 (1973) *National Aviation v. City of Hayward* *Santa Monica Airport Association v. City of Santa Monica* *Northwest Airlines v. FAA* *Sneed v. County of Riverside* *Stagg v. City of Santa Monica* *British Airways Board v. Port Authority of NY and NJ* *Houston v. Federal Aviation Administration* 679 F.2d 1184 (5th Cir. 1982) *City of Phoenix v. FAA* (2018)
Commercial Law Form barring claims **Business Entities** Liabilities	Chapter 6 Chapter 7	*Northwest Airlines, Inc. v. Crosetti Bros., Inc.* (1971) *Kissick v. Schmierer*, 816 P.2d 188 (1991)

Labor Issues Employee/Employer Railway Labor Act (RLA) Major & minor disputes Dept. of Labor (DOL) AIR21 Whistleblowing Age Discrimination and Employment Act Americans with Disabilities Act Sexual harassment Gender, Age, Race, Nationality	Chapter 9	*Linam v. Murphy 360 Mo. 1140 (1950)* *Cooper v. Delta Air Lines, Inc.* 274 F. Supp. 781 (E.D. La. 1967) *Estell v. Barrickman (1978)* *Airline Pilots Ass'n, Int'l v. Eastern Air Lines.* 701 F. Supp. 865 (D.D.C. 1988) *Baker v. Federal Aviation Administration* 917 F.2d 318 (7th Cir. 1990) *Hawaiian Airlines, Inc. v. Norris* 512 U.S. 246 (1994) *Blakey v. Continental Airlines, Inc. (1997-2000)* *EEOC v. Exxon Mobil Corporation* *Avera v. United Air Lines* 465 Fed. Appx. 855 (2012) *Sheena Jones v. United Air Lines* DOL (2014) *Laverne B. Kelly-Lusk v. Delta Air Lines, Inc*. DOL (2014) *Don Douglas v. Skywest Airlines, Inc*. DOL (2009) *Estabrook v. FedEx* DOL (2017 & 2019) *Gerald Moses v. Dassault Falcon Je*t U.S. Court of Appeals for the Eighth Circuit (2018)
Security Issues Aircraft security in flight Airline pilot and TSA National security and the APA; Alien Flight Student Program	N/A	*United States of America v. Abdulmutallab*, U.S. District Court, E.D. Michigan, Southern Division, 16 September 2011 *Air Wisconsin Airlines Corp. v. Hoeper* 571 U.S. ___ (2014) *Jifry v. Federal Aviation Administration* 370 F.3d 1174 (D.C. Cir. 2014)
International Air Law Public Private	Chapter 10	*Air France v. Saks* 470 U.S. 392 (1985) *Eastern Airlines, Inc. v. Floyd* 499 U.S. 530 (1991) *Olympic Airways v. Husain* 540 U.S. 644 (2004)

Preemption of local law "Accident" Mental or psychic injuries Emotional damages Bodily injury Criminalization; international flights		*El-Al Israel Airlines Ltd. v. Tseng* *In re Korean Air Lines Disaster of September 1, 1983* *Wallace v. Korean Air* 214 F.3d 293 (2d Cir. 2000) *Aviation Professionals and the Threat of Criminal Liability-How do we maximize aviation safety?* 67 J. Air L. & Com. 875 (2002) Brazilian federal court trial and US general aviation pilots: mid-air 2006 *Doe v. Etihad* 870 F.3d 406 (6th Cir. 2017)

Fundamentals of U.S. Legal System					
Chapter 1					
Constitutional Law	Criminal Law	Administrative Law	Torts and Contracts	Property Law	International Air Law
Chapter 2 Chapter 8	Chapter 3	Chapter 5 Chapter 9	Chapter 4 Chapters 9	Chapter 8	Chapter 10
Federalism	Alcohol/Drugs	Administrative agencies	Torts/Negligence	Aircraft	Warsaw/Monteal
Preemption	Assault	Labor/Employment	Labor/Employment	Airports	Public/Private
Airsapce	Laser pointer	Airmen	Passenger rights	Airspace	Passenger rights
Airline Deregulation Act	Fraud		Accident Investigation	Insurance	Accident Investigation
Federal Aviation Act	Falsification				
Passenger rights	Federal vs State				
Privacy	Airport security				

AVIATION LAW

CASE BRIEFS

Oral presentations will be in front of the class.

The brief should occupy no more than one page. A copy of the brief will be given to the instructor for grading. See the Case Brief Rubric for details.

Oral presentation of no more than seven to ten minutes in length.

1. TITLE AND CITATION: Who is opposing whom? Case name; court name; date of decision; Reporter reference
2. VERY BRIEF HISTORY/BACKGROUND: What incident or issue lead up to this court case? What happened that got us here?
3. TOPIC/ISSUES/LEGAL ISSUES/RELEVANT LAW/RULE OF LAW: What was the overall issue(s) or legal question(s) before the court? What are the parties debating, and what are they asking the court to decide? Determine the relevant rules of law used to make its (the court's) decision. What rule did the court apply to the facts to determine the outcome?
4. FACTS/SUMMARY OF RELEVANT FACTS: Relationship of parties. Identify legally relevant facts of the case.
5. FINDING/FINAL DECISION/JUDGMENT: What was the opinion (holding) of the court? How did the court answer the issue? What was the final outcome of the case? This is usually found at the end of the opinion. This is a statement of law that is the court's answer to the issue. Where there separate concurring or dissenting opinions?
6. REASONING/RATIONALE: This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in which the court applied the rules or legal principles to the facts in the case. What was the chain of argument which led the judge(s) to rule as they did? Here the student should evaluate the significance of the case, its relationship to other cases, its place in history, and what it shows about the court, its members, its decision-making processes, or the impact it has on litigants, government, or society.
7. **APPLICATION: What are the implications to aviation professionals? How does this case impact activities in aviation**? It is critically important to know how this case is relevant to the students of this class.

Aviation Science
ASCI 4450 - Aviation Law
Saint Louis University

Reference: Chapter 1, Fundamentals of the U.S. Legal System, within the textbook

This paper is written to help aviation students, unfamiliar with law, understand how to read cases for the Aviation Law class. This paper explains opinions, how they are generally structured, and what you should look for when you read them. Chapter 1 of your course textbook provides a detailed guide to the litigation process. This class uses real cases to illustrate important concepts needed for understanding law in the field of aviation. These are real life disputes and you will learn about the law by picking up various pieces of it from what the cases tell you. Most cases in this course have taken place in National Transportation Safety Board (NTSB) Administrative Law Judges' (ALJ) hearings, federal and state appeals courts, and the U.S. Supreme Court. There will be an examination of civil and criminal cases.

Why do we have to read and understand cases?

Why are you required to examine these cases? After reading Chapter 1, Fundamentals of the U.S. Legal System, you learned that the U.S. has inherited from England a legal system that is largely judge-focused (although this class will study many legislative and administrative laws). The judges have made the law what it is through their written opinions. To understand that law, you need to study the actual decisions that the judges have written. In the U.S. system of government, judges can only announce the law when deciding real disputes: they cannot just go out and have a press conference and announce a set of legal rules. You need to look at the law the way that judges do and study actual cases and controversies, just like the judges. For example, a pilot has a beef with the Federal Aviation Administration's (FAA) action to suspend her pilot's certificate for several weeks and wishes to contest this with a lawyer in front of an NTSB administrative law judge in a formal court hearing. These real cases and disputes historically have been the primary source of law. Common law generally means law that has developed from adjudicated cases. It is sometimes called case law (Chapter 1, p. 4).

A second reason we will study these selected cases is that it can be hard for an aviation student to understand a particular Federal Aviation Regulation (FAR) or legal rule, and the merits as a matter of policy, without applying the rule in the real world. Some rules are a bit ambiguous, others are quite specific and easy to understand the spirit and intent behind them. You need to understand real-life applications of a rule before you can understand what the rule really means. These rules have both strengths and weaknesses. By studying cases, you can train your brains to think of specific factual situations that reveal the strengths and weaknesses of a particular aviation-related rule. Hopefully, as a future leader in this industry, you can take that skill to help develop better rules as a participant in aviation.

Category	Evaluator's Comments	1 – 5 Unacceptable or Poor	4 – 8 Marginal or Average	9 – 10 Good or Satisfactory or Well Done	11 – 12 Exemplary or Outstanding	Total pts. per category
CITATION Case name; court name; date of decision; page number; Reporter reference. NTSB Opinion and Order No., date served, Docket. DOL, ARB Case No., date		Does not cite the court case.	Cites the court case inaccurately or incompletely.	Cites the court case accurately and completely in most respects. Citation may be in an incorrect format, but with all information.	Cites the court case accurately and completely. Identifies the case name and citation in the correct format and with all information.	
BRIEF HISTORY / BACKGROUND / SUMMARY OF RELEVANT FACTS Briefly indicate the reasons for the lawsuit. What happened that got us here? Identify the relationship/status of the parties (Note: Do not merely refer to the parties as the plaintiff/defendant or appellant/appellee; be sure to also include more descriptive generic terms to identify the relationship/status at issue, e.g., buyer/seller, employer/employee (etc.) Identify legally relevant facts, that is, those facts that tend to prove or disprove an issue before the court. The relevant facts tell what happened before the parties entered the judicial system.		Presents few, if any, legally relevant facts of the case. Does not include all key facts and reasoning is absent or incoherent or is not in accord with the opinion.	Presents some legally relevant facts of the case. Does not include all key facts.	Presents the legally relevant facts of the case. Includes all key facts and the reasoning may contain weaknesses, but is basically cogent and accords with the opinion.	Presents and explains the legally relevant facts of the case. Includes all relevant facts and the reasoning logically connects the facts to the rule in accord with the opinion.	

Identify procedurally significant facts. You should set out (1) the cause of action (the law the plaintiff claimed was broken), (2) relief the plaintiff requested, (3) defenses, if any, the defendant raised.						
Category	**Evaluator's Comments**	**1 – 5 Unacceptable or Poor**	**4 – 8 Marginal or Average**	**9 – 10 Good or Satisfactory or Well Done**	**11 – 12 Exemplary or Outstanding**	**Total pts. per category**
ISSUES / LEGAL ISSUES/ ***LEGAL QUESTION / LEGAL PRINCIPLE / RULE / RELEVANT LAW / RULE OF LAW*** The legal question(s). Concisely phrase the essential issue before the court. A substantive statement of the issue consists of the point of law in dispute and the key facts of the case relating to that point of law in dispute (legally relevant facts). Procedural issue: What is the appealing party claiming the lower court did wrong (e.g., ruling on evidence, jury instructions, granting of summary judgment, etc.)? What are the parties debating, and what are they asking the court to decide?		Incorrect issue is identified. Incorrect rule is identified. Incorrect or irrelevant rules of law were stated.	Issue is not completely identified. Rule is not completely identified or is irrelevant.	Issue correctly identified, but may contain extraneous information and is not stated in the form of a question. Identifies and describes the topic and issue(s) of the case. Relevant rule correctly identified, but may contain extraneous info and is not in the form of a statement.	Issue correctly identified and is stated in the form of a question. Identifies and describes in detail the topic and issue(s) of the case. Relevant rule is correctly identified in detail and is in the form of a statement.	

Determine the relevant rules of law used to make the court's decision. What rule did the court apply to the facts to determine the outcome? This is the rule of law that the court applies to determine the substantive rights of the parties. The rule of law could derive from a statute, case rule, regulation, or may be a synthesis of prior holdings in similar cases (common law). The rule of legal principle may be expressly stated in the opinion or it may be implied.						
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
DECISION / FINDINGS / JUDGMENT This is the court's final decision as to the rights of the parties, the court's response to a party's request for relief. Generally, the appellate court will either affirm, reverse, or reverse with instructions. The judgment is usually found at the end of the opinion. What was the outcome of the case? What was the opinion (holding) of the court? Was there a dissent?		Fails to answer the issue question. Provides an incomplete summary or omits a summary of the court's decision. Outcome of the case is not addressed.	Fails to answer the issue question. Provides a partial summary of the court's decision. Outcome of the case is incorrectly identified.	Correctly answers the issue question. Summarizes the trial court's decision and, if applicable, appellate court's decision.	Correctly answers the issue question. Summarizes comprehensively the trial court's decision and, if applicable, appellate court's decision.	
REASONING / ANALYSIS / RATIONALE This is the court's analysis of the issues and the heart of the case brief. Reasoning is the way in		Merely repeats what the court said in analyzing the facts.	Merely repeats what the court said in analyzing the facts.	Accurately explains the reason(s) for the decision.	Accurately and fully explains the reason(s) for the decision in detail.	

which the court applied the rules / legal principles to the particular facts in the case to reach its decision. This includes syllogistic application of the rules as well as policy arguments the court used to justify its holding.		Incompletely explains the reason(s) for the decision.	Partially explains the reason(s) for the decision.	Fails to summarize the court's analysis in own words.	Summarizes the court's rationale in own words.	
APPLICATION / IMPLICATIONS FOR AVIATION PROFESSIONALS For this course, this is an important section. How does this opinion impact {us} aviation professionals? What are the implications to aviation professionals? How may we apply this case to our activities in aviation? What are the political, economic or social impacts of this decision going forward?		Incompletely / Incorrectly assesses the implication(s) of the decision and its importance for aviation professionals. Error.	Somewhat assesses the implication(s) of the decision and its importance for aviation professionals. Some error.	Adequately assesses the implication(s) of the decision and its importance for aviation professionals. No error.	Thoroughly assesses the implication(s) of the decision and its importance for aviation professionals. No error.	
Category	**Evaluator's Comments**	**1 – 5** **Unacceptable or Poor**	**4 – 8** **Marginal or Average**	**9 – 10** **Good or Satisfactory or Well Done**	**11 – 12** **Exemplary or Outstanding**	**Total pts. per category**
ORAL PRESENTATION Completeness: Detail, depth, appropriate length, adequate background information Grammar/Mechanics: Correct grammar and usage Delivery: Volume, pace, diction, appearance, energy, posture		Presentation does not provide adequate depth; key details are omitted or undeveloped; presentation is too short or too long Presentation contains several major grammar/usage errors; sentences are long, incomplete or contain excessive jargon Low volume or energy; pace too slow or fast; poor diction; distracting gestures or posture;	Additional depth needed in places; important information omitted or not fully developed; presentation is too short or too long Presentation may contain some grammar or sentence errors; sentences may contain jargon or are too long or hard to follow More volume/energy needed at times; pace too slow or fast; some distracting gestures or posture;	Presentation provides adequate depth; few needed details are omitted; major ideas adequately developed; presentation is within specified length Presentation has no serious grammar errors; sentences are mostly jargon-free, complete and understandable Adequate volume and energy; generally good pace and diction; few or no distracting gestures; professional	Presentation provides good depth and detail; ideas well developed; facts have adequate background; presentation is within specified length Presentation contains no grammar errors; sentences are free of jargon, complete and easy to understand Good volume and energy; proper pace and diction; avoidance of distracting gestures; professional	

Interaction: Eyes and Q & A		unprofessional appearance; visual aids poorly used Little or no eye contact with audience; poor listening skills; uneasiness or inability to answer audience questions	adequate appearance; visual aids could be improved Additional eye contact needed at times; better listening skills needed; some difficulty answering audience questions	appearance; visual aids used adequately Fairly good eye contact with audience; displays ability to listen; provides adequate answers to audience questions	appearance; visual aids used effectively Good eye contact with audience; excellent listening skills; answers audience questions with authority and accuracy		d **Course**
Total Points: Maximum possible 84							

Assessment (Intended Use of Results)
The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations from the instructor:

For fall 2022 course session, expand the listing of cases which illustrate airport operations and administration.
For fall 2022 course session, consider reducing the emphasis on administrative law cases as the department is seeing an increasing number of students majoring in non-professional pilot emphasis areas. They do not need an intense study of administrative law cases centered around pilot and medical certifications and flight operations.

**Attach description of assignment used for assessment and samples of student work.*

SAMPLE STUDENT CASE BRIEFS

Don Douglas v. SkyWest Airlines, Inc. DOL (2009)

HISTORY/BACKGROUND: The complainant of this case, Don Douglas, is a veteran pilot for SkyWest Airlines from Salt Lake City (SLC). After a week of flying five continuous 12-hour shifts to Jackson Hole (JAC), the individual had a surgical procedure completed on March 18, 2005. As a result of the operation, Douglas took painkilling medication for the following two days before returning to work on the following Monday. On Wednesday, March 23, 2005, the complainant met with

the first officer (Brewer) who complained of a lack of sleep and flight attendant who had strep throat. The departure for JAC was initially delayed due to snowstorms, but worsening conditions after departing resulted in a diversion back to SLC around midnight. The same crew was scheduled a few hours later for a 4:00am departure back to Jackson Hole morning. Douglas claimed that he and his crew would not be capable of completing that flight after such little rest. The flight was later cancelled after the complainant called crew scheduling to report to the System Chief Jim Breeze that the crew would not complete the flight safely.

Breeze informed the Regional Chief Pilot Tony Fizer who then called Breeze about the decision. Fizer told the complainant to complete an "Irregular Operations Report" and imposed disciplinary action of a week's suspension and counseling statement in his record the following day. Douglas appealed the decision to SkyWest's review board, resulting in the board reversing the suspension and counseling statement. Fizer replaced the statement with a "verbal warning" in stating that each crew member will make determination for fitness of flight and that Douglas would not cause a "loss of revenue" in performing his duties.

In the following months, explicit graffiti was posted in the crew lounge in response to Fizer's actions. After gathering a report from a handwriting analyst, Fizer interrogated Douglas trying to pressure him to admit guilt for the graffiti. Douglas denied the accusations with Fizer stating that if he was later to be found guilty of the incident he would be fired. Douglas was then suspended during this investigation. Further samples of only the complainant's handwriting were examined by other analysts. On August 31, 2005, Douglas was fired by Fizer for "dishonesty" and would not be eligible for rehire due to this involuntary termination. The reasoning for this termination was due to the results of the graffiti investigation. Even though Douglas appealed to the internal review board of SkyWest, the board ultimately upheld the termination.

In the following months, Douglas filed a complaint with the Labor's Occupational Safety and Health Administration (OSHA) and requested an ALJ hearing after the case was dismissed from OSHA. The ALJ concluded that SkyWest violated the employee protection provision of AIR 21 and that he should be reinstated to his formal position with seniority. SkyWest filed a motion to understand its appeal rights, with the ALJ issuing an order recommending an award of back pay and other expenses. Both parties conclusively filed appeals.

TOPIC/ISSUES/LEGAL ISSUES: In *Don Douglas v. SkyWest Airlines, Inc.*, the main topic at hand relates to the firing of the complainant for his "dishonesty" which relates back to his determination of unfitness for flight on the morning of March 23, 2005. Fizer claimed to have fired Douglas due to the results of the handwriting examinations conducted during the graffiti investigation. However, the issue at hand falls under an AIR 21 provision relating to employee protection. By use of a preponderance of the evidence, Douglas must prove that he engaged in a protected activity, that SkyWest Airlines knew that he engaged in the said activity, that the air carrier took adverse actions against him, and that the protected activity was a factor contributing to the personnel action.

RELEVANT LAW/RULE OF LAW: The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, also known as "AIR 21" (P.L. 106-181) was signed into law on April 5, 2000 as a measure to improve airline safety. Under Sec. 519, it is quoted that "No air carrier or contractor or subcontractor of an air carrier may discharge an employee or otherwise discriminate against an employee with respect to compensation, terms, conditions, or privileges of employment because the employee…provided…to the employer or Federal Government information relating to any violation or alleged violation of any order, regulation, or standard of the Federal Aviation Administration or any other provision of Federal law relating to air carrier safety under this subtitle or any other law of the

United States" (AIR 21, 2000). In short, an air carrier such as SkyWest is not allowed to fire an employee for a protected activity. A protected activity under AIR 21 is when an employee produces information relating to an alleged violation of a FAA order/regulation related to the safety of the air carrier.

FINDING/FINAL DECISION/JUDGEMENT: The U.S. Department of Labor (DOL) Administrative Review Board (ARB) reviewed the findings of this case under the substantial evidence standard, meaning that evidence that is deemed substantial will be conclusive in findings of fact. With regard to determining the final decision in *Don Douglas v. SkyWest Airlines, Inc.*, the ARB reviewed the case *de novo*, meaning without reference to the previous court's decision. The court determined after reviewing the substantial evidence presented in the case that SkyWest violated AIR 21. This was due to the fact that Douglas's protected activity was a factor in his dismissal from the air carrier. With this notion, the ARB affirms the ALJ's recommended decision in reinstatement, back pay (with correction to include pay for September/October 2005), and attorney's fees being covered.

REASONING/RATIONALE: After examining the facts of the case, the court determined that there was substantial evidence to support the previous ALJ's findings that Douglas would have violated safety regulations if he flew on March 23. This was driven by credible testimonies from the complainant that he was experiencing exhaustion from multiple factors, which caused him to declare himself unfit to fly per his training on the matter. With this protective action, the court concluded that Fizer's adverse actions in firing Douglas was made in part due to his decision not to fly. Also, it was evidenced that Fizer's accusation on Douglas badmouthing him was "baseless." For the graffiti, Fizer targeted the complainant as evidenced through misinformation of the sequence of events and facts during the testimony. The court determined that Douglas had ultimately no motivation to write the graffiti. With these facts, the court affirmed the ALJ's findings that the protected activity of Douglas led to his firing by Fizer. The ARB further agreed that SkyWest did not prove that it would not fire Douglas even without the protected activity due to the handling of punishments between the complainant and Brewer. Finally, the court agreed on reinstatement, pack pay, and attorney's fees to be paid with the addition of entitlement pay for the months of September/October in 2005. The reimbursement coincides with a successful AIR 21 complaint being successful in court.

APPLICATION: As professional pilots entering the space most likely through the regional airline sector, it is important to know your rights under AIR 21. If you feel that you are unfit to fly, do not hesitate to document and report to your superiors to ensure safety and compliance with regulations. If there is resistance from your superiors, know that you are protected from unlawful firing by use of AIR 21.

AVEMCO v. Auburn Flying Service, US 8th Circuit Ct App, (2001)

HISTORY/BACKGROUND. Fred Farington was a pilot who flew Aero Commander Lark aircraft and was the owner of Auburn Flying Service based in Auburn, Nebraska. On October 5, 1997, there was a "fly in" event in which people could come to the Auburn Municipal Airport and pay Farington ten dollars to fly around the Auburn, Nebraska area for a short ten-to-fifteen-minute flight. On his ninth flight of the day, Farington attempted to land but struck a semi tractor-trailer.

As a result of this collision, all three of Farringdon's passengers passed away while Farington was rendered severely injured. Four months later, Farington eventually succumbed to his injuries and passed away.

Farington's aircraft was insured by AVEMCO Insurance Company, an aviation insurance company based in the state of Maryland. The coverage he had was under a policy that did not cover commercial operations. According to law.justia.com, "'Commercial purpose' means any use of your insured aircraft for which an insured person receives, or intends to receive, money or other benefits. It does not include: the equal sharing among occupants of the operating costs of a flight." Based on this, AVEMCO refused to cover the flying service for the accident since it did not fill the qualifications.

TOPIC/ISSUE/LEGAL ISSUES. From the perspective of Auburn Flying Service, they believed that they were entitled to AVEMCO covering the cost of the accident. This is because of the exemption stated in their insurance policy that stated commercial service does not apply if passengers share equal operating costs of the flight. They argued that when passengers paid the ten dollars, they were contributing to the splitting of operating costs. Therefore, the "fly in" event did not count as commercial service and they were entitled to coverage.

From the perspective of AVEMCO, they argue that Auburn Flying Service was not eligible for coverage since the "fly in" was indeed a commercial service. While passengers did pay Farington for their rides, ten dollars per passenger is not sufficient to cover the costs of a flight. Had Farington required the passengers to pay a higher price to evenly split the cost of operations, Auburn Flying Service would have been covered by the accident.

RELEVENT LAW/RULE OF LAW. This case was handled based on the laws in the state of Nebraska. For Auburn Flying Service, they state that their insurance contract was ambiguous and subject to debate on whether the accident was considered commercial service. To argue this, Auburn Flying Company used the case of *Farm Bureau Ins. Co. v. Bierschenk,* 548 N.W. 2d 322, 324 (Neb. 1996). This states that an insurance contract must be unambiguous, and the language stated in the contracts must not be able to be manipulated to create ambiguities. If the court views that an ambiguity can be interpreted by the receiver of the insurance in a certain way, they will rule it as ambiguous.

In terms of what is considered ambiguous, the case of *Plambeck v. Union Pac. R.R. Co.,* 509 N.W. 2d 17, 20 (Neb. 1993). This states that "[a] document is ambiguous if a word, phrase, or provision of the document has, or is susceptible of, at least two reasonable but conflicting interpretations." According to the Auburn Flying Service, they believe that the exception of the commercial service aspect of their contract is ambiguous and can be argued for AVEMCO to cover them. However, AVEMCO states that their contract is clear in defining what "commercial service" is.

FINDINGS/FINAL DECISION. The U.S. Court of Appeals for the Eighth Circuit ruled in the favor of AVEMCO. This is because the court found that the insurance policy was not ambiguous and Auburn Flying Service's accident was not covered by their policy. One of the reasons this decision was made was by the formal definition of the phrase "commercial purpose". Commercial purpose is when a party intends to receive money or other forms of compensation. It was clear that Farington received the money from the passengers as a fee rather than to split the cost of the aircraft operations. Had he intended to split the cost, he would

have charged much more than ten dollars per person. The court concluded that the passengers did not have the intention of splitting the cost of flight operations but instead agreed to just pay a fee for a short ten-to-fifteen-minute flight.

APPLICATION. This is an important case to study because it shows how different parties can interpret written contracts differently. For Auburn Flying Service, they believe that the accident that occurred in 1997 was covered by the exception written in their contract as well as the fact that the contract was ambiguous. However, AVEMCO argued that their contract was clear in what it considered commercial operations and that Farington was indeed engaging in commercial services at the time of the accident.

Language is something that can be interpreted in a variety of ways. While it can appear clear to some, it can also be rendered in a way that portrays a different meaning. However, when looking at what the contract states, it is clear what the insurance company defines commercial services and how Farington's actions on the day of the accident did not fall under the exception of splitting the cost of flying.

Performance Indicator Rubric

Course: ASCI 4650 Economics of Air Transportation Course Instructor: _____BRUCE HOOVER_____

Semester Taught: _____SPRING 2022_____ Number of Students in Course: ____13____

AVIATION MANAGEMENT CONCENTRATION

Student Learning Outcome Assessed	Assessment Results: (Indicate what % of class achieved a minimum 70%)	Benchmark achieved? (Benchmark: 80% of students will score a minimum of 70% = "C")
SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.	**Airline (simulation) Management Audit Presentation.** A management audit report A management audit accompanying slides 100% of the class achieved a 70% or higher BudJet Airlines: Three students 94 North&Simple Airlines: Three students 87 Commonwealth Billiken Air: Four students 81 Stratus Airlines: Three students 75	Airline (simulation) Management Audit Presentation. Benchmark achieved: Y**es** 100% of the class scored a minimum 70%. The 80% benchmark was met as all 13 enrolled students scored above the 70% minimum.
SLO 5: Apply knowledge of business principles in aviation-related areas.	**Online Airline Simulation decisions** 77% of the total enrolled students achieved a minimum of 70% or higher. Only one airline team of three students was unable to achieve a final score of at least 70%. BudJet Airlines: 842 (84.18%) Stratus Jet Airlines: 756.1 (75.6%) Commonwealth Billiken Air: 734.7 (73.5%) Plane&Simple Air: 662 (66%)	Benchmark achieved: **No** 77% of the enrolled students achieved the benchmark. Three of the 13 enrolled students were unable to meet the benchmark.

EVIDENCE

SLO 3: Apply effective oral and written communication skills to function effectively in the aviation environment.

From the syllabus: Your airline team will make a brief presentation to the ASCI 4650 class and any guests who may be in attendance. You will conduct the audit from the perspective of an **outside consultant firm** your airline has contracted and you must be objective in your report findings. **Objectivity and honesty**—be brutally frank—are hallmarks of a good external audit. Any attempt to "whitewash" or omit critical points will be dealt with unkindly by the instructor. ***There are several methods of approaching this assignment and your team is encouraged to be creative. Keep in mind you are part of a consulting firm. Your report may follow any creative format appropriate for an outside consulting firm report. Any records, charts, graphs, etc., are welcome if they enhance the presentation.*** Handouts to class members are appropriate if they, too, enhance the presentation.

The Management Audit Content Guide provided the airline simulation teams with guidance on suggested content reflecting the economic principles and characteristics of the airline industry.

2022-Management Audit Content Guide.d

The four airline teams prepared and made an oral presentation of their airline management decisions and the results of those operational, economic and financial decisions during the course of the semester.

Example: North&Simple Airlines audit report:

North&Simple Airlines Audit Report-

North&Simple Audit Slides-final.pdf

Example: BudJet Airlines audit report

BudJet Airways Mgmt Audit Report-final.pdf

BudJet Airways Audit Slides-final.pdf

The oral and written presentations were scored by four independent members of the department faculty.

Example: Budget Airlines team presentation rubric results of four faculty member-evaluators:

Economics: It is the social science of how people (or organizations) choose to allocate their scare resources (money, people, equipment, time, etc.). The science that studies how people choose is indispensable if you really want to understand human beings both as individuals and as members of larger organizations. It is a methodology for analyzing situations where companies (human beings) have to make choices from limited options (and resources).					
Airline Name: **Students' last names:** **Attributes to be measured:**	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
PRESENTATION ORGANIZATION & MECHANICS	Presentation lacked organization & had little evidence of preparation. Spelling (visual) and/or grammatical (oral) errors; 4 or more. No sequence of information.	There were minimal signs of organization or preparation. Presentation has up to 3 **errors**; misspellings and/or grammatical. Difficult to follow; team members jump around information.	The presentation had organizing ideas but could have been much stronger with better preparation. Presentation has no more than 2 misspellings and/or grammatical **errors**. **Logical sequence**; somewhat interesting; can be followed.	The presentation was **well organized, well prepared &** easy to follow. No misspellings (visual) or grammatical (oral) errors. Presented in logical, interesting sequence. Very easy to follow.	11 10 9 10

This is an internal management audit of the airline.					
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
TEAM PRESENTATION DELIVERY Management Audit	Knowledge level of the audience has not been considered. Audience is not engaged. Team is not professional in appearance. Team members not confident & demonstrated little evidence of planning prior to presentation. No eye contact; no descriptive gestures; tension &	Opportunities for adjusting the presentation level for the audience have been missed. Audience's attention is weak. Team members lack in professional appearance. Presenters were not consistent with the level of confidence/preparedness, but had one or two strong moments. Minimal eye contact while reading mostly from notes. Very little	Audience's knowledge level & interests have been considered. Attention has been maintained. Team appearance is acceptable under most circumstances. Team members were occasionally confident with their presentation; however, the presentation was not as engaging as it could have been.	Audience interests are piqued & well considered. Audience is drawn & engaged. Team members are very professional in appearance. Members were all very confident in delivery & excellent in engaging audience. Preparation is very evident.	11 10 10 11

	nervousness is obvious. Team shows little interest in conveying information to others.	movement or descriptive gestures. Mild tension. Transitions are disorganized.	Consistent use of direct eye contact, but still returns to notes. Made movements or gestures that enhance. Minor mistakes, but quickly recovers from them. Little or no tension. Team members transitions fairly organized.	Direct eye contact; seldom looks at notes; fluid movements; relaxed, self-confident with no mistakes. Team members transitions organized & seamless.	
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
EVIDENCE OF TEAMWORK / EFFORT Management Audit	Little evidence of preparation. It seems as though not all members worked on the presentation. Transitions between team members are not smooth.	Little or very weak research effort. Some preparation is evident. Seems as though certain people did not do as much work as others.	Team demonstrated good research. Preparation & pre-rehearsal was only adequate. Seems like everyone did some work, but some team members are carrying the presentation.	Excellent research. Well prepared & rehearsed. Evident that all team members contributed equally.	10 11 10 11

				Smooth transitions between team members.	
OVERALL CONTENT & APPLICATION OF KNOWLEDGE:	**1 – 3** **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**
Understand and apply economic concepts and theories to strategic management of an airline Expectation: **Team should understand and apply economic concepts and theories in a clear and effective manner in the audit report. Explain core economic terms, concepts, and theories**	Team fails to identify any **economic concepts and theories** in the audit report. No valuable material.	Superficial approach to **economic concepts & theories** in the audit report. Irrelevant or inaccurate concepts, terms, or theories. As a whole, content was lacking.	Team had good analysis with good supporting **economic concepts & theories in the audit report**. Good quantity & quality of economic information. Good amount of valuable material.	Team demonstrated in-depth analysis with strong supporting **economic concepts & theories**. Exceptional amount of valuable material.	10 10 10 10
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**

Think critically and solve problems Audit is honest and objective Expectation: **Team should identify the questions at hand, think critically and solves problems in an illuminating way.** **Objectivity and honesty in the audit**	Problems are not well identified. Identifies inappropriate main issues; describes issues inaccurately; loses focus on given point. Fails to assess conclusion, raises no appropriate additional questions, fails to place the argument within a relevant larger context. Attempted to "whitewash" or omit critical points in the audit.	Team fails to define the problems adequately. Some ambiguity in description of issues. Indicates weak but relevant reflection on strength & implications of conclusions. Audit was objective and honest.	Team adequately defines the problems. Selects component points; does not recognize some priorities among details in relation to given question. Audit was objective and frank	Team states the problems clearly & identifies underlying issues. Describes it accurately; selects key component points; recognizes priorities; picks up unstated implications. Appropriately assesses conclusions in terms of reliability and need for further evidence, assesses implications of the conclusion within a larger context. Audit was objective, frank and honest	11 11 11 11
	1 – 3 **Not Acceptable**	**4 – 6** **Below Expectations**	**7 – 9** **Meets Expectations**	**10 – 11 Exceeds Expectations**	**Total points per attribute**

RESPONSE TO QUESTIONS	Team cannot answer expected questions.	Team has difficulty answering questions beyond a rudimentary level.	Team has sufficient knowledge of the material to answer questions.	Team demonstrates full knowledge of the material & can explain and even elaborate on questions.	10 10 10 10
Total Points: Maximum possible 66 66 x 4 evaluators = 264 Total points & letter grade equivalent: 59 – 66: A 53 – 58: B 46 – 52: C xx – 45: D					**TOTAL POINTS** **63** **62** **60** **63** **248/264** **= 94 (A)**
Example questions from reviewers					

What economic principles, economic characteristics of airlines, or economic issues stood out for you as a result of participating in this course and the airline simulation? What economic concepts or theories of the airline industry are most pronounced after taking this course?

If your airline had the opportunity to "start all over," what would your team do differently?

Did your airline's team make decisions (each quarter) on a rational, economic basis or did the team often just take a "stab in the dark" approach?

Of all the performance and operations metrics, which ones were most important to you and why? Regarding the operating performance model (traffic/yield/output/unit cost = operating profit/loss): where did your airline succeed and where did it fail? What unexpected risks or set-backs did the airline face during the 10 quarters (2.5 years)? Did your airline team maintain any records or data worksheets as you progressed in the simulation? How much total money did your airline spend on demand forecasts, market research information, information on other air carriers' fares, etc.? Simulation Teamwork. What are your thoughts on teamwork during the simulation? Did all team members contribute their fair share of the workload and was the quality of the product produced by the team members of that expected?	**SLO 5: Apply**

knowledge of business principles in aviation-related areas.

Each student will participate in an airline simulation where each member is part of an executive team of a small airline firm. The simulation provider will contact you to register and practice round before the real simulation starts. Each team will meet to **formulate their firm level strategy** and submit ongoing decisions concerning critical issues facing the firm. Decisions are due online on the Airline Simulation site on a weekly basis by each team leader. Failure to submit a decision will have severe market consequences on your airline's performance, and as a result, on your simulation project grade.

The airline simulation activities are integrated into the classroom learning experience. The group project will require collaborative work and everyone is expected to carry an equal share of the work load within each airline team. The group project will be a better product if everyone shares their different knowledge and experiences.

Airline Simulation – Learning Objectives

Experience strategy formulation and implementation in a dynamic (ever-changing and competitive) environment
Learn about group and organizational processes (team work)
Understand the financial implications of air carrier operational, marketing and management decisions
Improve decision-making skills under ambiguous circumstances and time pressure
Experience the fun and challenges of running a small air carrier business

You will have to make weekly decisions and submit these decisions on the Airline Interpretive Simulations website. Each airline team will be graded on the quarterly (each decision period) performance measures for that period. For example, cumulative net income of the airline may be

weighted as 10% of the quarterly score. Depending on how well the airline is managed by the team, these quarterly scores will vary from 60 to 90 points of a possible 100 points on the performance measures (reliability, yield, load factor, social performance, etc.).

This is a competitive simulation based on teamwork, analysis of data and good business decisions for the strategies you have decided upon for your particular airline. There will be only one airline (team) winner at the end of the simulation.

This spreadsheet contains the decision-making schedule.

Decisions & Incidents Student Sched 2022.xl

This spreadsheet is a track of the four airlines progress through the semester.

2022-airline sim quarterly results.xlsx

This spreadsheet provides the final operational, economic, and financial metrics results of the four airline management teams.

2022-final results & metrics.xlsx

Course Assessment (Intended Use of Results)

The following will be used for recommendations to improve the quality of course delivery based on assessment results. These recommendations may include prerequisite change; changing course outline and adding more topics; adding a third assessment; changing the course sequence, etc.

Recommendations by the instructor:

Reduce the final grade weight of the management audit oral and written presentation from 30 percent to a lower value. This activity was the most-heavily weighted in the syllabus.
Consider a different textbook. Students expressed some frustration with the textbook's lack of flow, editing errors and some chapters at a graduate level.

Give consideration as to how the “airline management teams” are to be constructed. This spring 2022 session involved a random drawing of numbers to see what students would be on each (of four) team. Is it better to let the students form their management team? Would this process result in achieving all the assessment values such as the benchmark?

**Attach description of assignment used for assessment and samples of student work.*

See attachments above.

Aviation Management – Data collected in support of Faculty and Staff Goals and SLO 1

PARKS COLLEGE FACULTY T/TT ANNUAL EVALUATION SUMMARY 2022 (for calendar year 2021)

[redacted]	Annual Evaluation Score		3.78
Total Workload Assignment for 2021	**24.5**	**Proportion**	**Area Score (1-4)**
Research & Grants and Contracts Assignment	7	0.29	3
Teaching Assignment	14	0.57	4
Service and Professional Development Assignment	3	0.12	4
Administrative Assignment	0.5	0	3

All input data expressed in workload units

Enter data into light gray squares.

Department Chair's Assessment: Evaluate the faculty member's performance in accordance with the mission of the department, college, and university. Consider performance norms for the rank and seniority of this faculty member, overall workload, and the faculty member's overall engagement in the college. List key strengths and weaknesses and suggest strategies for improvement. Comment on any weaknesses or concerns noted in previous evaluations.

[redacted] role in the department is that of a tenured, associate professor. As such, he has successfully fulfilled the duties of his appointment. Hid performance in teaching has been outstanding. He successfully taught the courses assigned to him and he continually works to imrove his teaching methods. He has actively mentored both undergradute and graduate students and has served on the graduate committees of several of our graduate students. [redacted] exceeds expectations in conducting research, collaborating within the department as well as inter-departmentally within the college. He has made presentations, published papers and actively written grant proposals, some of which if awarded, would bode well for the department and its research goals. [redacted] performance in the area of service has been outstanding, both internally at SLU and within the community. He serves on committees at various levels at SLU and serves the college as its Chief Diversity Officer. [redacted] is active in service to the Ville area of the St. Louis community. I highly commend his service to the Revitalization 2000 initiative, including his work at the Claver House and the Hickey Elementary School. His use of his students in a service learning opportunity is will received by his students and those in the Ville. I recommend that in his role as Chief Diversity Officer, [redacted] has exceeded the expectations of the position, working to establish the position within the college. There are no weaknesses or concerns that carry over from previous evaluations. I ask that [redacted] continue the efforts given to date and I thank him for those efforts.

Faculty Member's Response: Please provide your response to the overall assessment. At the minimum, you are expected to sign the document to acknowledge the receipt of this review.

It is an honor to be counted amongst the faculty of Aviation Science. I am most grateful.

I acknowledge receipt of the annual evaluation as presented in this document.

Signed: [redacted] 4-19-22

Faculty Member — Date

PARKS COLLEGE FACULTY T/TT ANNUAL EVALUATION TEMPLATE 2022 (for calendar year 2021)

[redacted]		2021
Number of Items	*This is imported from Table 3 of "Parks-001 Faculty Workload and Annual Evaluation Policy"*	**3**
	Research Activities	**8**
	Presentations	
0	Contributed by student in group	0
4	Contributed by PI	2
1	Invited	2
	Publications and Patents	
0	Papers or patents submitted (provide details for each in FAR)	0
1	Papers or patents published (provide year of submission in FAR)	3
	Books	
0	When contract obtained	0
0	While book is in process	0
0	When book is completed	0
	Grants and Contracts	
0	Internal proposal funded	0
0	External proprosal funded (<$50K)--PI	0
0	External proprosal funded (<$50K)--co-PI/co-I	0
0	External proposal funded (>$50K)--PI	0
0	External proposal funded (>$50K)--co-PI/co-I	0
0	External proposal not funded--PI	0
1	External proposal not funded--co-PI/co-I	1
0	PI on current externally-supported grant	0
0	co-PI or co-I on current externally supported grant	0

PARKS COLLEGE FACULTY T/TT ANNUAL EVALUATION TEMPLATE 2022 (for calendar year 2021)			
[redacted]			2021
Number of Items	*This is imported from Table 4 of "Parks-001 Faculty Workload and Annual Evaluation Policy"*		4
	Service Activities	**Total pts**	**25**
	Internal Service		
4	Smaller activity (meeting with prospective students, etc.)	0.1-0.25	.25
4	Committee member (department, college, or university)	2	8
1	Committee chair (department, college, or university)	5	5
3	Professional development activity (workshop, conference, course)	1-3	3
2	Major activity (significant administrative responsibility, major initiative)	6-10	10
	External Service		
0	Reviewer for papers, grant proposals	0.5-1	0
0	Chairing or organizing symposia, sessions at conferences	3	0
1	Leadership role in external/professional service	3	3
	Undergraduate Mentoring		
	0-10 students	3	0
	11-20 students	6	0
1	21+ students	9	9

PARKS COLLEGE FACULTY T/TT ANNUAL EVALUATION TEMPLATE 2022 (for calendar year 2021)				
[redacted]			2021	
Number of Items	*This is imported from Table 5 of "Parks-001 Faculty Workload and Annual Evaluation Policy"*		3	Enter Area Score (1-4)
	Teaching Activities	**Total pts**		**24**
	Teaching Productivity & Quality			
	Base teaching productivity	5-7		7
	Student satisfaction/Teaching quality	5-7		7
0	New course development	8		0
0	Major course redesign	2-4		
0	Teaching a large section	3		0
0	Teaching an extra course	4		0
	Pedagogical Activities			
0	Attend a teaching-related conference	1-5		0
0	Teaching seminar or other teaching professional development	1-5		0
	Mentoring and Student Research			
4	Graduate student committee member	0.5		2
0	Directing undergraduate in research	1		0
4	Directing graduate or postdoctoral student in reasearch	2		8
0	Visiting researcher in laboratory	1		0

2021 Year End Review

Coordinator

Organization: Aviation Science-General (Stephen Magoc)

Manager: Stephen Magoc

Location: Center for Aviation Science Evaluated By: Stephen Magoc 01/01/2021 - 12/31/2021

Manager Overall Evaluation

Rating: Exceeds Expectations

Employee

Entered by: Date: 03/10/2022 Status: Acknowledge

Comment: Thank you for your time during the review and the support you continue to give to the flight line. I enjoy working with the students and providing a positive space for students to learn and grow.

Goal_1

Participate in and support the CAS efforts in community and industry outreach.

Due Date: 12/31/2021 Status: Successfully Completed

Completion Date: 12/31/2021

Supports:

Manager Evaluation Rating: Exceeds Expectations

Employee Evaluation Rating: Exceeds Expectations

Comment: has taken on and or assisted with organizing various events held by the department both at and away from the CAS.

Comment: Continues to work with main campus to organize Girls in Aviation Day (virtual due to Covid) along with camps and student school visits. Also works with student organizations including Women in Aviation and Flying Billikens. Attendance at WAI conference in 2021 (virtual due to Covid).

Always available to speak with parents and students during visits to the Center for Aviation Science and on the Friday meetings held here with the Department Chair.

Coordinates annual charity donations by the Center for Aviation Science staff to sponsor a family or make a donation during the holiday season.

Goal_2

Continue to improve your own personal education and skills as an example to the CAS staff. Continue to encourage and enable CAS staff to develop professionally.

Due Date: 12/31/2021

Status: Successfully Completed

Completion Date: 12/31/2021

Supports:

Manager Evaluation Rating: Exceeds Expectations

Employee Evaluation Rating: Exceeds Expectations

Comment: has taken on the role of the emergency building action plan and other services which go above and are outside of her normal duties as Dispatch Coordinator.

Comment: Completed certification in Mental Health First Aid - 11/1/21 (3 year certification) Emergency building coordinator - participates in on-campus meetings and completed the Emergency Building Action Plan in conjunction with Michael Parkinson

Oversaw coordination of the emergency plan simulation for CAS (organized by student intern)

Collegiate Recovery Community Committee Member

Goal_3

Continue to explore and implement efficient operation of the dispatch department. Work with other CAS, AVSC, Parks College and SLU administrators to improve efficiency in operations at the CAS as the department moves towards an "aviation business" model.

Due Date: 12/31/2021

Status: Successfully Completed

Completion Date: 12/31/2021

Supports:

Manager Evaluation Rating: Exceeds Expectations

Employee Evaluation Rating: Exceeds Expectations

Comment: is the liaison between students/ parents and Student Financial Services as it pertains to student-incurred flight fees. These are areas not normally associated with the dispatch duties.

Comment: Main contact for parent/student questions regarding flight fee charges and student accounts.

Established procedures to insure flight overage fees and extra charges are invoiced on a regular basis in conjunction with student accounts, including internal billings with SGA for Flying Billikens, etc.

Review monthly financials

Continually review COVID protocol and institute procedures (clipboards/cleaning/ masks)

Ongoing review of policies and procedures to ensure CAS is running efficiently and productively

Work with the Department of Aviation Science and dispatch personnel at the CAS to ensure that AABI- required safety management goals are met.

Take an active role in the development and management of the safety goals set out by the department faculty and CAS administrators.

Due Date: 12/31/2022 Status:

Partially Completed Completion Date:

Supports:

Manager Evaluation Rating: Meets Expectations

Employee Evaluation Rating: Meets Expectations

Comment: worked with the department to identify dispatch-related safety goals.

Acting With Character

Approaches work with a sense of integrity and duty to produce high quality results in the Jesuit tradition, even when it's the harder thing to do.

Examples

• Uses good listening skills, gets to know others' needs and takes timely action to respond to those needs.

• Shows up to work regularly on time and stays on task during the workday.

• Applies knowledge, skills, and mastery of job tasks to achieve results.

• Demonstrates strong work ethic and sense of urgency to meet commitments.

Manager Evaluation Rating: Exceeds Expectations

Employee Evaluation Rating: Exceeds Expectations

Comment: leads by example in her role of working with other flight and maintenance staff, and the students in the flight program.

Comment: Strong work ethic

Places importance on the student and their experience at the CAS

Willingness to work early/late to meet the needs of the student and student groups (ie 6:00 am flights for Flying Billikens) Maintains high level of communications between main campus and internal staff to ensure tasks and goals are met efficiently and effectively

Strengthening Our Community

Forms inclusive and equitable relationships with others in the workplace.

Examples

• Treats others with respect, courtesy, honesty, and compassion.

• Uses appropriate self-control of emotions and behaviors, even in difficult situations.

• Respects, embraces, and celebrates all expressions of identity.

Manager Evaluation Rating: Meets Expectations

Employee Evaluation Rating: Meets Expectations

Comment: works well with the CAS staff and the flight students.

Driving Change & Innovation

Improves work processes with the goal of adding value, increasing quality and efficiency, or stopping unnecessary tasks.

Examples

• Puts team goals first. Stops tasks that don't help the team achieve its goals.

• Looks for ways to improve quality every day.

• Finds creative ways to solve problems.

• Recommends ways to improve work.

Manager Evaluation Rating: Exceeds Expectations

Employee Evaluation Rating: Exceeds Expectations

Comment: always puts the CAS operations at the forefront of her day-to-day activities and operations run efficiently because of her efforts.

Comment: Continues awareness for continuous improvement at the CAS,

Professional development

Additional Information: should take advantage of any SLU-sponsored (or outside sponsorship) that involve development to assist with her daily duties and/or personal life.

Status: Partially Completed

Start Date: Jan 1, 2022

Completion Date: Dec 31, 2022

Aviation Management – Data collected in support of Facilities, Equipment and Services Goals a d SLO 1

A copy of the report submitted to the Dean follows.

SAINT LOUIS UNIVERSITY
PARKS COLLEGE OF ENGINEERING, AVIATION AND TECHNOLOGY

3450 Lindell Blvd.
McDonnell Douglas Hall, Room 1017B
Saint Louis, MO 63103
T: 314-977-8251
F: 314-977-8384

Department of Aviation Science

June 1, 2022

Dean Duellman,

Following is a report of the condition of the facilities, equipment, and services utilized by the Department of Aviation Science. This report is required to be sent to you as part of the assessment process used by the department.

The department has the following goals for facilities equipment, and services.

- The facilities will remain adequate for the aviation department's academic and flight training activities.
- Saint Louis University will continue to support the services required by the aviation department.
- Saint Louis University will support the aviation department in its need for aircraft and FTDs to operate the aviation academic and flight training activities.

The following describes the condition of the Facilities, Equipment and Services utilized by the department.

Facilities
- The McDonnell Douglas Hall facility remains adequate for the current level of staff and faculty.
- The Center for Aviation Science facility continues to leak in different areas when it rains and needs continual roof repairs. Please note that this facility is due for the resumption of the phased renovations in July 2022.

Equipment
- Equipment used in McDonnell Douglas Hall are generally in adequate condition except for the CRJ 700 flight simulator used by the department.
- Equipment at the Center for Aviation Science is becoming aged. The aircraft continue to be maintained in an airworthy condition, but it is becoming increasingly expensive to maintain them in such a condition, with the Diamond DA20 and Piper Seminole aircraft needing to be replaced. The aircraft simulators are operating adequately. The ground support truck used by the department is older and in need of replacement.

Services
- The services at McDonnell Douglas Hall are adequate.
- The services at the Center for Aviation Science are barely adequate.

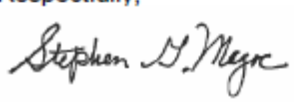
Changes recommended at the last assessment of the Facilities, Equipment and Services criteria included the replacement of the Diamond DA20 and Piper Seminoles. The Provost declined to consider the recommendations of the department.

Currently, the department recommends replacement of the following items of equipment:

- The nine Diamond DA20 aircraft with 10-12 Piper Pilot 100i aircraft.
- The two Piper Seminoles with two or three new Piper Seminoles.
- The CRJ 700 simulator.
- The ground support vehicle used at the Center for Aviation Science.

Further, the department recommends the hiring of a full-time custodian at the Center for Aviation Science.

Respectfully,



Stephen G. Magoc
Chairperson

Aviation Management – Data collected in support of SLO 1 and Aviation Safety Culture and Program Goals

Following is a report of the Safety Culture Survey conducted by the department.

Safety Culture Survey AY F2021 -S2022
Accreditation Report

One articulated goal surrounding safety in the Department of Aviation Science is to conduct a survey surrounding safety and safety culture at the Center for Aviation Science (CAS). The current iteration of the survey measures participants attitudes and opinions on topics related to safety using a 5-point Likert scale with the opportunity to provide summary narrative feedback. Although the goal for a safety survey was a single annual survey, two surveys were administered over the past academic year.

Four overarching themes are measured in the survey including:

1. Safety Training
2. Safety Culture
3. Safety Reporting System (Hazard Reporting)
4. Safety Promotion (Safety Communication)

The survey was developed and administered by the Safety Committee whose membership includes faculty, staff (primarily flight instructors and mechanics), and students. Both the Fall 2021 and Spring 2022 surveys were administered using Qualtrics, a web-based survey tool. The survey is marketed by the Safety Committee through its Safety Advisories and direct email notification by the Department Chair.

<u>Fall 2021 Survey</u>

The Fall 2021 Safety Culture Survey was conducted during November and December 2021 and totaled forty-nine responses representing approximately 31% of CAS stakeholders. The results of the Fall 2021 survey were objectively positive with respondents indicating mean scores on the four themes as follows:

Theme	Mean Score (on a 5-point scale)
Safety Training	3.87
Safety Culture	4.31
Safety Reporting System	4.53
Safety Promotion	4.56

One disappointing aspect of the Fall 2021 survey was the lack of participation by CAS stakeholders.

<u>Spring 2022 Survey</u>

The Spring 2022 Safety Culture Survey was conducted during the month of May 2022 and totaled thirty-four responses representing approximately 22% of CAS stakeholders. Although the final coding of responses have not yet been completed, below please find preliminary calculations.

Theme	Mean Score (on a 5-point scale)
Safety Training	4.05
Safety Culture	4.34
Safety Reporting System	4.33
Safety Promotion	3.64

The number of individuals who responded to the Spring 2022 survey was considerably less than those who responded to the midyear survey. This may be due in-part to the proximity of the survey to the end of the academic year. Average scores for the survey across both semesters was similar except for Safety Promotion. This may be due in-part to fatigue based on the frequency of weekly Safety Advisories delivered to each stakeholder via email.

Continuous Improvement

The use of a survey to measure attitudes and opinions of CAS safety and related safety culture was successful and the goal for AY2021-2022 was achieved. However, the survey was not prepared with statistical reliability and validity as a requirement. Consequently, the results of the survey are not necessarily robust. In the coming year, the Safety Committee will discuss and consider an existing instrument used by a number of collegiate aviation programs as a better way to assess safety across our flight operations.

The Safety Committee will also discuss moving to a single annual survey during the spring semester. Fall and the spring surveys were administered toward the end of each semester and student workload may be one cause of the low response rate. Scheduling the survey once per year, during the month of April may result in a better response rate.

Following is a report of the Safety Standdowns conducted by the department.

Safety Standdown Effectiveness Report

The Department of Aviation Science created a safety goal of hosting a Safety Standdown each semester; to include at least one external safety expert.

Fall 2021 Safety Standdown

The fall 2021 Safety Standdown was held on September 14, 2021. The Standdown was well-attended although no formal attendance was taken. The Department of Aviation Science sponsored the Standdown and provided food and drink for all attendees.

Speakers for the Fall 2021 Standdown included:

Ijahman Morgan – Ijah is a Parks College student enrolled in the Flight Science program. Additionally, Ijah is a member of the Safety Committee and works on the Flight Data Monitoring subcommittee. Ijah's presentation focused on Safety Committee efforts to begin using data captured from the university aircraft fleet in trend analysis of hazardous situations.

John Cosgrove – John is a captain at GoJet airlines and spoke to the transition from collegiate aviation and flight instruction to regional carriers. In addition to discussing his own path to an air carrier, John spoke to some of the hazards associated higher speed, higher energy aircraft.

Randy Ottinger – Randy works for the Federal Aviation Administration and is the FAASTeam Program Manager – Operations at the St. Louis Flight Standards District Office. Randy spoke about the activities of the FAASTeam and how students might participate. Randy gave an interesting presentation on some of the incidents and accidents he has investigated throughout his career with the FAA.

Spring 2022 Safety Standdown

The spring 2022 Safety Standdown was held on Monday, March 28th, 2022. The standdown was not as well-attended as the fall Standdown with approximately 40 attendees. The Standdown was not mandatory although attendance was encouraged. Like the fall meeting, the Department of Aviation Science sponsored the Standdown and provided food and drink for all attendees.

Speakers for the spring 2022 Standdown included:

Riley Tovornik – Riley is a student in the Flight Science program and was the Chair of the Safety Committee. As a graduating senior, Riley spoke to some of the hazards student pilots face flying at the Downtown St. Louis airport.

Eric Heightman – Eric is the Director of Maintenance at the Parks College Center for Aviation Science. Eric spoke to a wide variety of topics surrounding what student pilots can do to ensure maintenance related safety of flight. In addition to a comprehensive discussion of the squawk process, Eric extended an invitation to all students to stop in his office if they ever had a question about aircraft maintenance.

John Denando – John is a captain at SkyWest Airlines where he also serves as the co-chair of the HIMS program, HIMS is an occupational substance abuse treatment program, specific to commercial pilots, which coordinates the identification, treatment, and return to work process for affected aviators. HIMS

is an industry-wide effort in which managers, pilots, healthcare professionals, and the FAA work together to preserve careers and enhance aviation safety.

Clearly the goal of hosting a Safety Standdown in both the fall and spring semester was achieved. Additionally, external speakers presented and provided valuable information to attendees.

While the fall Safety Standdown was very well attended, the spring meeting had fewer attendees. A number of reasons may have contributed to the drop in attendance. The spring Safety Standdown was held in a university building some distance from McDonnell Douglas Hall. The spring Safety Standdown was not made mandatory, and some students may have had conflicts with day and time (evening) of the meeting.

In terms of continuous improvement, the Safety Committee along with faculty and staff will discuss the scheduling and locations for subsequent meetings. Additionally, a discussion will occur on whether attendance should be mandatory

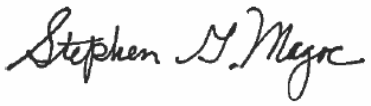
Following is a report of the inspection of the Emergency Response Manual and the safety inspection of the Center for Aviation Science.

05/31/2022

Report of the Review of the Emergency Response Manual and the safety inspection of the Center for Aviation Science facility.

The Emergency Response Manual (located in Appendix F) was reviewed by the Center for Aviation Science administrators and the Chairperson. It was found to be current and in order.

The Center for Aviation Science facility located at 4300 Vector Dr., Cahokia Heights, IL had a safety inspection conducted by the University's Department of Public Safety. Additionally, an unannounced safety drill was conducted at the facility. Copies of the results of the safety inspection and safety drill follow.



Stephen G. Magoc

Fire drill deficiencies

From: Darren Gaertner <darren.gaertner@slu.edu>
Sent: Monday, December 6, 2021 3:29 PM
To: Michelle Scheipeter <michelle.scheipeter@slu.edu>
Cc: Michael Parkinson <michael.parkinson@slu.edu>
Subject: Hanger 8 fire drill

Hi Michelle,
Per our conversation this morning the fire drill went as planned but there were a couple of fire alarm devices that should be on the system that aren't.
There are no strobes in any of the restrooms and these are required.
There are also no horns or strobes in the actual hanger area and it is very hard to hear the alarm coming from inside the offices into this area.
The Northeast exit door was locked from the inside and should be unlocked and remain unlocked at all times for egress.
Any questions please let us know.

Thanks

Darren Gaertner
Fire and Security Protection Manager -Technology
Saint Louis University

Department of Public Safety and Emergency Preparedness.

Off: 314-977-3512
darren.gaertner@slu.edu

Saint Louis University
Center for Aviation Science

On December 6, 2021, a test of our Emergency Procedures was conducted at the airport hangar. This test was conducted in conjunction with Darren Gaertner, Fire and Security Protection Manager, and Michael Parkinson, Department of Public Safety.

The alarm was conducted without prior knowledge to other employees or students which were in the facility at that time.

Alarms were sounded, the facility was properly evacuated and all safety equipment was inspected. The final report from Darren Gaertner is attached, along with additional signage to be posted at the Center.

A service request was submitted to Facilities for the recommended upgrades. These upgrades are to be included in upcoming hangar renovations, scheduled for 2022.

Regards,

Michelle Scheipeter
Dispatch Coordinator

SAINT LOUIS UNIVERSITY

Emergency Procedure Guide

Medical Emergency

Report patient condition, locate AED if needed and provide care

CALL **977-3000** OR **911**

Gas Leak or Chemical Spill

Evacuate and wait for safety guidance from first responders

CALL **977-3000**

Biological or Radioactive Materials

Do not leave the immediate area

CALL **977-3000**

Fire

Activate fire pull stations, utilize a fire extinguisher if trained and evacuate the building

CALL **977-3000**

Violent Intruder

RUN and evacuate or BARRICADE and HIDE or prepare to FIGHT

CALL **977-3000** OR **911**

Severe Storms

Seek shelter in an interior room or hallway away from windows and report damage

CALL **977-3000**

Earthquake

DROP to the ground and take COVER under a sturdy table or other piece of furniture and HOLD ON until the shaking stops, then EVACUATE the building

CALL **977-3000**

Campus Safety

Report Crime, suspicious persons, or safety concerns

CALL **977-3000**

Specific building emergency procedures are available.

Contact your Building Emergency Response Coordinator for more information.

Department of Public Safety non-emergency line **977-2376**

Office of Environmental Health & Safety **977-8608**

Facilities Services **977-2955**

Information Technology Service Desk **977-4000**

Following is a report of the safety seminars to be conducted by Flight Maintenance for the flight students and staff.

05/31/2022

Report on Safety Seminars

The Safety Seminars to be conducted by Flight Maintenance for the flight students and staff will begin during the fall 2022 semester.

Stephen G. Magoc
Chairperson

Following is a report on Flight Maintenance activities.

Report date 05/31/2022

Report time frame Jan 01, 2021 – May 31, 2022

The Flight Maintenance Department has not received any FAA violations or significant findings during the routine FAA surveillance of the Certified Repair Station (CRS) during this time frame.

FAA surveillance dates

- 05/26/2021 email inspection
- 09/16/2021 email inspection
- 03/28/2022 on site visit
- 05/25/2022 on site visit

There have been no maintenance related accidents or incidents during this time frame.

Eric Heightman

Flight Maintenance Manager

Parks College of Saint Louis University

CRS NI1R349K

Following is a report on Flight operations.

SAINT LOUIS UNIVERSITY
EST. 1818

CENTER FOR AVIATION SCIENCE

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William Baumheuter
Chief Instructor

Stephen G. Magoc
Chairperson and Professor
Saint Louis University
Parks College of Engineering, Aviation and Technology
Department of Aviation Science
3450 Lindell Blvd.
Room 1017B
Saint Louis, MO 63103
T: 314-977-8333

May 27, 2022

For the period covering January 1, 2021 until today, there were no aircraft accidents or flight operations violations of Federal Aviation Regulations.

The was one incident on November 2, 2021 where one of our four Piper Archers, N477PC, experienced an engine failure and was forced to land off airport. Luckily there were no injuries or damage to the aircraft.

The summary of the incident and the aftermath is as follows:

- Discussions took place between the Department Chair, Chief Instructor, Chief of Maintenance, and staff mechanics regarding the best way to move forward with a plan to get the aircraft returned to service with safety as the main goal. The Dean of Parks College was included in the decision making process.
- The flight maintenance crew inspected the aircraft's fuel system and could not find any obvious cause for a loss of engine power.
- The flight maintenance crew downloaded airframe and engine diagnostic data from the aircraft's Garmin G1000 system. There was no obvious degradation of fuel flow, fuel pressure, cylinder head operating temperatures, etc. that might have revealed the cause for the loss of power.
- Two experienced St. Louis FSDO maintenance inspectors looked at the aircraft and engine, logbooks and other related maintenance data, discussed the incident with the flight instructor and student, requested a refueling report for the aircraft, and requested that the Eric Heightman prepare an FAA "Malfunction or Defect" report (MorD) for the incident. The FAA inspectors did not report finding any

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obvious defects or improper maintenance/record keeping as part of their inspection of the aircraft.

- The flight maintenance crew removed the fuel servo and flow divider (these are the two key fuel injection system components) from the engine, we sent those items to an AVStar Fuel Systems (manufacturer) approved repair facility – Central Cylinder Service – for testing of the components to determine a cause for the interruption of fuel and to perform any necessary repairs.
- A detailed inspection of these major components did not reveal any anomalies.
- Since an exact cause couldn't be found - and out of an abundance of caution for all flight personnel, it was decided to direct the repair facility to completely overhaul these components before the maintenance personnel would re-install them on the aircraft.
- While those components were being inspected and overhauled, the aircraft was defueled and subsequently refueled with fresh fuel from our fuel distributor, Jet Aviation.
- Before the aircraft was allowed to return to flight training operations, it was flown in the vicinity of the airport for approximately one hour.
- Finally, the aircraft has been operated for more than 50 hours in routine service with no reported issues.

If there is any additional information needed, please feel free to ask.

William Baumheuter

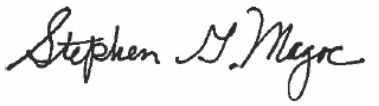
Digitally signed by William Baumheuter
Date: 2022.05.27 12:56:43 -05'00'

Following is a report on Dispatch orientation sessions to be held for new and transfer students.

05/31/2022

Report on Dispatch Orientation sessions

The orientation sessions to be conducted by Dispatch operations for the new and transfer flight students will begin during the fall 2022 semester.



Stephen G. Magoc
Chairperson

Following is a report of the avionics upgrades, services, inspections conducted during the assessment period.

Date May 31,2022

Report time frame Jan 01, 2021 - May 31, 2022

Avionics servicing, repairs, inspections, and upgrades performed at the Certified Repair Station (CRS.)

The 91.411 Altimeter and 91.413 Transponder Checks required on the aircraft and the Emergency Locator Transmitter (ELT) battery replacements for the period are listed.

DA20-C1	91.411, 413 Inspections	ELT batt replaced
N324PC	12/17/21	8/23/2021
N325PC	4/22/22	9/20/2021
N327PC	4/22/22	NOT DUE
N329PC	5/24/22	NOT DUE
N423PC	Due in June	8/20/2021
N426PC	5/24/22	NOT DUE
N620PC	2/21/22	8/17/2021
N621PC	Due in June	9/9/2021
N628PC	5/24/22	NOT DUE
PA28-181		
N475PC	4/26/21	NOT DUE
N476PC	4/26/21	NOT DUE
N477PC	4/26/21	NOT DUE
N478PC	4/26/21	NOT DUE
PA44-180		
N552PC	2/8/21	11/11/2021
N553PC	2/8/21	Not Due

Eric Heightman

Flight Maintenance Manager

Parks College of Saint Louis University

CRS NI1R349K

Aviation Management – Data collected in support of Relations with Industry and SLO 1

The following internships were conducted by Aviation Management students during the assessment period.

Name of Company	Academic Term	# of Students
St. Louis Lambert International Airport	Summer 2021	3
Michelin (Fenler Dunlop)	Summer 2021	1
Collins Aerospace	Fall 2021	1
St. Louis Lambert International Airport	Fall 2021	1
American Airlines	Fall 2021	1
Saint Louis University	Fall 2021	1
St. Louis Lambert International Airport	Spring 2022	1
American Airlines	Spring 2022	1
U.S. Air Force	Spring 2022	1
Swissport	Spring 2022	1