Department of Aviation Science

Student Achievement Data

2018 – 2019

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

The program-level SLO’s assessed during the 2018-2019 academic year were:

**Fall 2018**
- G. Assess contemporary issues.
- H. Use the techniques, skills and modern technology necessary for professional practice.
- I. Assess the national and international aviation environment.

**Spring 2019**
- J. Apply pertinent knowledge in identifying and solving problems.
- K. Apply knowledge of business sustainability to aviation issues.
Results of the fall 2018 undergraduate Aviation Management program assessment of program-level SLO’s

The following program-level SLO’S assessed after the fall 2018 semester were:

- G. Assess contemporary issues.
- H. Use the techniques, skills and modern technology necessary for professional practice.
- I. Asses the national and international aviation environment.

<table>
<thead>
<tr>
<th>Program-level SLO</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Assess contemporary issues.</td>
<td>There were no prior recommendations from previous program level assessments of this SLO to assess during this cycle. The department determined to continue monitoring subsequent course offerings for methods to improve student performance in this program-level SLO.</td>
</tr>
<tr>
<td>H. Use the techniques, skills and modern technology necessary for professional practice.</td>
<td>There were no prior recommendations from previous program level assessments of this SLO to assess during this cycle. The department determined to continue monitoring subsequent course offerings for methods to improve student performance in this program-level SLO.</td>
</tr>
<tr>
<td>I. Asses the national and international aviation environment.</td>
<td>There were no prior recommendations from previous program level assessments of this SLO to assess during this cycle. The department determined to continue monitoring subsequent course offerings for methods to improve student performance in this program-level SLO.</td>
</tr>
</tbody>
</table>

NOTE: The performance indicator rubrics and evidence as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the academic program can be found in Appendix A: Fall 2018 Aviation Management Program and Course Assessment Data, of this report.

The department will work to ensure that all full-time and adjunct faculty submit evidence of student work in their respective courses to enable the department to perform a more thorough assessment of this program/concentration.
Results of the spring 2019 undergraduate Aviation Management program assessment of program-level SLO's

The following program-level SLO's assessed after the spring 2019 semester were:

J. Apply pertinent knowledge in identifying and solving problems.
K. Apply knowledge of business sustainability to aviation issues.

<table>
<thead>
<tr>
<th>Program-level SLO</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. Apply pertinent knowledge in identifying and solving problems.</td>
<td>There were no prior recommendations from previous program level assessments of this SLO to assess during this cycle. The department determined</td>
</tr>
<tr>
<td>K. Apply knowledge of business sustainability to aviation issues.</td>
<td>There were no prior recommendations from previous program level assessments of this SLO to assess during this cycle. The department determined</td>
</tr>
</tbody>
</table>

NOTE: The performance indicator rubrics and evidence as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the individual courses can be found in Appendix B: Spring 2019 Aviation Management Undergraduate Program Assessment Data, of this report.

The department will work to ensure that all full-time and adjunct faculty submit evidence of student work in their respective courses to enable the department to perform a more thorough assessment of this program/concentration.
## Results of the fall 2018 undergraduate program assessment of individual courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</th>
<th>Recommendation based on the Assessment Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCI 1010</td>
<td>Professional Orientation (On-site)</td>
<td>To improve the course outcome, the instructor suggests providing more class time on topics in which students need improvement so that more of the students will be capable of at minimum, meeting the expectations while reinforcing the abilities of those students currently meeting and exceeding expectations.</td>
</tr>
<tr>
<td>ASCI 1010</td>
<td>Professional Orientation (Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 1300</td>
<td>Aviation Weather (On-site)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 1300</td>
<td>Aviation Weather (Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 4050</td>
<td>Human Factors (On-site and Online)</td>
<td>Continuous improvement of this course suggest I should include additional learning opportunities surrounding how technology might be leveraged in the context of human factors. I intend to add a course project that will focus on identifying available technology and providing an extensive narrative on its application. I also plan to emphasize the area of technology in my course lectures.</td>
</tr>
<tr>
<td>ASCI 4250</td>
<td>Prof. Ethics &amp; Standards (On-site and Online)</td>
<td>While individual exam questions addressed ethical principles, few addressed action choices. Establish online discussion board (DB) ethical dilemmas that will address all three performance indicators.</td>
</tr>
<tr>
<td>ASCI 4450</td>
<td>Aviation Law (On-site and Online)</td>
<td>None.</td>
</tr>
</tbody>
</table>

**NOTE:** The performance indicator rubrics provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the academic program can be found in *Appendix A: Fall 2018 Aviation Management Undergraduate Program Assessment Data*, of this report.
### Results of the spring 2019 undergraduate program assessment of individual courses

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<thead>
<tr>
<th>Course Number</th>
<th>Course Name</th>
<th>Recommendation based on the Assessment Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCI 1510</td>
<td>The Air Transportation System</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 1850</td>
<td>Safety Management Sys. (Onsite and Online)</td>
<td>Regrettably, I utilized “answer sheets” with each test. Upon grading and following discussion in-class, answer sheets were returned to the students. Consequently, I was unable to uniquely assess each contributory performance indicator. Lesson learned for the semester is to retain copies of answer sheets in order to provide a more-detailed analysis. Overall, I am slightly disappointed with the relatively high percentage of “needs improvement” scores from Test #2. Test #2 focuses on detailed aspects of contemporary safety management system and the test itself was not a multiple-choice test. I would consider the test to be rigorous in comparison to other proficiency measures used in the course. I anticipate developing a study guide to complement course lectures in the coming terms. I also plan to record each lecture and make it available on the Blackboard LMS for review.</td>
</tr>
<tr>
<td>ASCI 3050</td>
<td>Operations and Business Environment of Aviation (Onsite and Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 3100</td>
<td>Air Carrier Operations (Onsite)</td>
<td>Revise the approach to teaching chapter 1, “what is an air carrier?” Consider addressing this AABI learning outcome in a different topic/context within this course.</td>
</tr>
<tr>
<td>ASCI 3100</td>
<td>Air Carrier Operations (Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 4350</td>
<td>Team Resource Management</td>
<td>None. Course instructor resigned and did not submit data.</td>
</tr>
<tr>
<td>ASCI 4650</td>
<td>Econ. of Air Transp. (Onsite)</td>
<td>Enhance the experience of comparative results by adding individual financial and operational metrics throughout the semester; rather than having all weighted measures at the beginning. Base this on instructor’s learning objectives / topics as the semester develops.</td>
</tr>
<tr>
<td>ASCI 4650</td>
<td>Econ. Of Air Transp. (Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 4800</td>
<td>International Aviation (Onsite)</td>
<td>To improve the course outcome, the instructor suggests providing more class time on topics which might aid the student in the delivery of an oral presentation.</td>
</tr>
<tr>
<td>ASCI 4800</td>
<td>International Aviation (Online)</td>
<td>To improve the course outcome, the instructor suggests providing more class time/information on topics which might aid the student in the delivery of a presentation.</td>
</tr>
</tbody>
</table>

**NOTE:** The performance indicator rubrics as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the individual courses can be found in *Appendix B: Spring 2019 Aviation Management Undergraduate Program and Course Assessment Data*, of this report.

Course evidence collected as part of this assessment process is contained in a large file and is not posted on this website. The information can be found in *Appendix C: 2018-2019 Aviation Management Undergraduate Program and Course Evidence*, of this report.
Saint Louis University

Parks College of Engineering, Aviation and Technology

Bachelor of Science in Aeronautics
Concentration in Aviation Management

November 7, 2019

Department of Aviation Science

Appendix A

Fall 2018 Aviation Management

Student Achievement Data
Direct Measures
Of
Assessment
### Results of the fall 2018 undergraduate program assessment of individual courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</th>
<th>Recommendation based on the Assessment Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCI 1010</td>
<td>Professional Orientation (On-site)</td>
<td>Provide better examples of oral presentation techniques/styles to improve the group presentations. Devote additional time to topics covered.</td>
</tr>
<tr>
<td>ASCI 1010</td>
<td>Professional Orientation (Online)</td>
<td>Provide better examples of oral presentation techniques/styles to improve the student presentations; consider requiring students to provide an audio/visual presentation to be able to determine oral communication skills.</td>
</tr>
<tr>
<td>ASCI 1300</td>
<td>Aviation Weather (On-site)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 1300</td>
<td>Aviation Weather (Online)</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 2200</td>
<td>Concepts in Aerodynamics</td>
<td>None.</td>
</tr>
<tr>
<td>ASCI 4050</td>
<td>Human Factors (On-site and online)</td>
<td>Continuous improvement of this course suggest I should include additional learning opportunities surrounding how technology might be leveraged in the context of human factors. I intend to add a course project that will focus on identifying available technology and providing an extensive narrative on its application. I also plan to emphasize the area of technology in my course lectures.</td>
</tr>
</tbody>
</table>
| ASCI 4250     | Prof. Ethics & Standards (On-site)         | As in any seminar setting, the students developed over the course of the semester to higher-level thinking skills. In the first four seminars students struggled with identifying the dilemmas and ethical principles or discussions lead to trivial or inappropriate solutions. Following mid-term break the final six sessions saw students meeting or exceeding expectations. Recommendations for fall 2018 course offering:  
(1) Revise/improve/update the seminar topics  
(2) consider addressing the issue of “moral hazard”  
(3) consider addressing the issue of “ethical relativism” |
| ASCI 4250     | Prof. Ethics & Standards (Online)          | Fall 2019 online: Address very specific issues and solutions using the discussion board (DB) platform. |
| ASCI 4450     | Aviation Law (On-site)                     | All students orally presented two case briefs in the course. However, no rubric was developed to measure these oral case briefs. This course did not fully address this learning outcome. For fall 2019 course offering:  
(1) Revise/improve/update the seminar topics to ensure oral and written communication skills are evidenced and measured  
(2) Assign and develop a rubric for “case briefs”  
(3) Assign and develop a rubric for a “research paper” |
| ASCI 4450     | Aviation Law (Online)                      | None.                                           |
NOTE: The performance indicator rubrics and evidence as provided by the instructor and indirect measures of student surveys of the courses listed above which were used by the department to assess the academic program can be found in Appendix A: Fall 2018 Aviation Management Undergraduate Program Assessment Data, of this report.
AABI Student Learning Outcome G: Assess Contemporary Issues

Course: ASCI 1010 Professional Orientation  
Semester Taught: Fall 2018  
Number of Students Scored: 43

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project): Quiz 3

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

<table>
<thead>
<tr>
<th>Rating Scale</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Indicator</td>
<td>Identify contemporary issues related to the aviation industry.</td>
<td>When identifying contemporary aviation issues, important facts and details are missing.</td>
<td>Prioritizes contemporary aviation issues; ignores some less significant, yet relevant issues.</td>
</tr>
<tr>
<td></td>
<td>Recognize potential solutions.</td>
<td>Shows some understanding of contemporary aviation issues; provides some explanations of potential solutions but important facts are missing.</td>
<td>Shows adequate understanding of contemporary aviation issues; provides adequate explanation of potential solutions; missing the explanation of minor facts.</td>
</tr>
</tbody>
</table>

Description of Assignment: Quiz #3 was based on select readings from “Aviation Daily” over a period of 3-4 weeks.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues</td>
<td>Question #2</td>
<td>16.3</td>
<td>83.7</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #5</td>
<td>20.9</td>
<td>79.1</td>
<td>N/A</td>
</tr>
<tr>
<td>Recognize potential solutions</td>
<td>Question #10</td>
<td>7.0</td>
<td>93.0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

To improve the course outcome, the instructor suggests providing more class time on topics in which students need improvement so that more of the students will be capable of at minimum, meeting the expectations while reinforcing the abilities of those students currently meeting and exceeding expectations.

Evidence of the tests and final Exam used in Fall 2018 ASCI 1010 Professional Orientation course are found in Appendix C of this document.
**Performance Indicator Rubric**

**AABI Student Learning Outcome G: Assess Contemporary Issues**

Course: ASCI 1010 Professional Orientation  
Semester Taught: Fall 2018  
Number of Students Scored: 43

Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project): Test 1

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

<table>
<thead>
<tr>
<th>Rating Scale</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identify contemporary issues related to the aviation industry.</strong></td>
<td>When identifying contemporary aviation issues, important facts and details are missing.</td>
<td>Prioritizes contemporary aviation issues; ignores some less significant, yet relevant issues.</td>
<td>Effectively prioritizes contemporary aviation issues, including subtle details; does not include unrelated contemporary issues.</td>
</tr>
<tr>
<td><strong>Recognize potential solutions.</strong></td>
<td>Shows some understanding of contemporary aviation issues; provides some explanations of potential solutions but important facts are missing.</td>
<td>Shows adequate understanding of contemporary aviation issues; provides adequate explanation of potential solutions; missing the explanation of minor facts.</td>
<td>Shows in-depth understanding of contemporary aviation issues; provides in-depth explanation of potential solutions.</td>
</tr>
</tbody>
</table>

**Description of Assignment:** Test 1 covered lecture material from the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues and/or Recognize potential solutions</td>
<td>Question #17</td>
<td>7.0</td>
<td>93.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #19</td>
<td>7.0</td>
<td>93.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #21</td>
<td>4.7</td>
<td>95.3</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #22</td>
<td>23.2</td>
<td>76.8</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #27</td>
<td>9.3</td>
<td>91.7</td>
<td>N/A</td>
</tr>
</tbody>
</table>

To improve the course outcome, the instructor suggests providing better examples and/or increased discussion of topics so that more of the students will be capable of meeting the expectations while reinforcing the abilities of those students meeting expectations.

Evidence of the tests and final Exam used in Fall 2018 ASCI 1010 Professional Orientation course are found in Appendix C of this document.
## Performance Indicator Rubric

### AABI Student Learning Outcome G: Assess Contemporary Issues

**Course:** ASCI 1010 Professional Orientation  
**Semester Taught:** Fall 2018  
**Number of students scored:** 43

**Type of Student Work Used for Assessment**  
*Attach description of assignment used for assessment and samples of student work.*

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues related to the aviation industry.</td>
<td>When identifying contemporary aviation issues, important facts and details are missing.</td>
<td>Prioritizes contemporary aviation issues; ignores some less significant, yet relevant issues.</td>
<td>Effectively prioritizes contemporary aviation issues, including subtle details; does not include unrelated contemporary issues.</td>
</tr>
<tr>
<td>Recognize potential solutions.</td>
<td>Shows some understanding of contemporary aviation issues; provides some explanations of potential solutions but important facts are missing.</td>
<td>Shows adequate understanding of contemporary aviation issues; provides adequate explanation of potential solutions; missing the explanation of minor facts.</td>
<td>Shows in-depth understanding of contemporary aviation issues; provides in-depth explanation of potential solutions.</td>
</tr>
</tbody>
</table>

**Description of Assignment:** Final Exam covered lecture material from the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues and/or Recognize potential solutions</td>
<td>Question #12</td>
<td>21.0</td>
<td>79.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #15</td>
<td>7.0</td>
<td>93.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #18</td>
<td>0.0</td>
<td>100.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #30</td>
<td>18.6</td>
<td>83.4</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Question #40</td>
<td>4.7</td>
<td>95.3</td>
<td>N/A</td>
</tr>
</tbody>
</table>

To improve the course outcome, the instructor suggests providing better examples and/or increased discussion of topics so that more of the students will be capable of meeting the expectations while reinforcing the abilities of those students meeting expectations.

Evidence of the tests and final Exam used in Fall 2018 ASCI 1010 Professional Orientation course are found in Appendix C of this document.
AABI Student Learning Outcome H: Use the techniques, skills, and modern technology necessary for professional practice

Course: ASCI 4050 (two sections) – Human Factors  Semester Taught: Fall 2018  Number of Students: 32 in section 01/ 12 in section 10

Type of Student Work Assessed:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will apply pertinent knowledge to issues/inquiries surrounding assorted human factors strategies in/for professional practice</td>
<td>Demonstrates a lack of familiarity and understanding with the theoretical underpinnings of human factors and does not effectively apply concepts and example applications.</td>
<td>Demonstrates a familiarity with theoretical underpinnings of assorted human factors issues and can generally apply concepts in practical applications.</td>
<td>Demonstrates a mastery of the theoretical underpinnings of assorted human factors issues and can apply concepts in practical applications.</td>
</tr>
<tr>
<td>Students will identify and assign skills associated with human factors that promote sound professional practice</td>
<td>Is unable to identify and assign many human factors skill sets that promote sound professional practice.</td>
<td>Is generally able to identify and assign human factors skill sets that promote sound professional practice.</td>
<td>Demonstrates mastery in the identification and assignment of human factors skill sets that promote sound professional practice.</td>
</tr>
<tr>
<td>Students will identify and assign technology used to leverage human factors for safety in professional aviation practice</td>
<td>Does not demonstrate much awareness or familiarity with the technologies available that support human factors related safety in professional aviation practice.</td>
<td>Demonstrates an awareness and familiarity with some of the technologies available that support human factors related safety in professional aviation practice.</td>
<td>Identifies and assigns technologies across an appreciable spectrum that support human factors related safety in professional aviation practice.</td>
</tr>
<tr>
<td>Students will demonstrate familiarity with several assorted human factors models</td>
<td>Is unable to demonstrate a basic understanding of human factors models used in the analysis of safety events.</td>
<td>Demonstrates a basic understanding of a few human factors’ models used in the analysis of safety events.</td>
<td>Effectively and appropriately utilizes human factors models in the analysis of safety events.</td>
</tr>
</tbody>
</table>
Description of Assignments: Evaluation based on test administered throughout the semester including the midterm and final examinations, a paper and homework assignments.

| Student Learning Outcome J - Apply Pertinent Knowledge in Identifying and Solving Problems |
|-----------------------------------------------|-------------------------------|----------------|----------------|----------------|----------------|
| Performance indicator | Work description/Test questions | % needs improvement | % Meets expectations | % Exceeds expectations |
|-----------------------|--------------------------------|----------------|----------------|----------------|----------------|
| Students will apply pertinent knowledge to issues/inquiries surrounding assorted human factors strategies in/for professional practice | **Section 01 (32 students)**<br>Midterm Examination – Questions 8, 9, 31, 32<br>Final Examination – Questions 4, 7, 35, 32, 88 | 12% | 88% | N/A |
| | **Section 10 (12 students)**<br>Midterm Examination – Questions 1, 4, 7, 26<br>Final Examination – Questions 1, 3, 5, 7 | 25% | 75% | N/A |
| Students will identify and assign skills associated with human factors that promote sound professional practice | **Section 01 (32 students)**<br>Midterm Examination – Questions 11, 48, 49, 50<br>Final Examination – Questions – 23, 30, 39, 94 | 19% | 81% | N/A |
| | **Section 10 (12 students)**<br>Midterm Examination – Questions 15, 35, 37, 34<br>Final Examination – Questions 19, 23 | 42% | 58% | N/A |
| Students will identify and assign technology used to leverage human factors for safety in professional aviation practice | **Section 01 (32 students)**<br>Midterm Examination – Questions 1, 4, 41, 43<br>Final Examination – Questions – 4, 9, 13, 62, 79 | 10% | 90% | N/A |
| | **Section 10 (12 students)**<br>Midterm Examination – Questions 4, 6, 11, 35<br>Final Examination – Questions 8, 21, 31, 57, 87, 88 | 8% | 92% | N/A |
| Students will demonstrate familiarity with several assorted human factors models | **Section 01 (32 students)**<br>Midterm Examination – Questions 10, 11, 44, 45<br>Final Examination – Questions – 29, 30, 86, 100 | 19% | 81% | N/A |
| | **Section 10 (12 students)**<br>Midterm Examination – Questions 8, 9, 31, 32<br>Final Examination – Questions 26, 28, 84, 95 | 25% | 75% | N/A |
**Summary**

The assessment data suggest most students have been successful in developing most of the attributes intended with this course(s) offering. The section 01 (on ground) group generally achieved better success on the student learning outcomes than their counterparts enrolled in the on-line section (section 10). Clearly, there is opportunity to improve both the on ground and on-line version of the course.

**Instructor Commentary**

It should be noted that the expectation scores/percentages illustrated in the table above are estimates based on incomplete data. The data suggest some students struggling with recognition of some of the technologies available to mitigate human factors adversities. It would appear as though I have focused more effort on the human contributions to human factors. Continuous improvement of this course suggest I should include additional learning opportunities surrounding how technology might be leveraged in the context of human factors. I intend to add a course project that will focus on identifying available technology and providing an extensive narrative on its application. I also plan to emphasize the area of technology in my course lectures.

One benefit of course assessment is to provide the instructor (me) with a better understanding of the need for improved organization in maintaining completed coursework. While I have been meticulous in preserving overall test/quiz/homework scores, I have been far less diligent in maintaining the evidence after completion of course milestones. Additionally, I have been less effective at evaluating the evidence at a granular level. One problem with the data illustrated above includes assigning the measures of each SLO at the end of the semester rather than strategically developing assignments and associated rubrics aimed at the granular level analysis mentioned in the previous sentence.

Moving forward, my strategy is to directly link assignments to the SLOs prior to the start of the semester. By pursuing a strategic approach, I will be better able to evaluate both the SLOs required by the accrider and the institution and other results that are part of the overall intent of the course. Additionally, I am in the process of developing a better strategy for maintaining and organizing course documentation.

Evidence of the tests and final Exam used in Fall 2018 ASCI 4050 Human Factors course are found in Appendix C of this document.
**Performance Indicator Rubric**

**AABI Student Learning Outcome G: Assess contemporary issues**

**Course:** ASCI 4250 Professional Ethics and Standards  
**Semester Taught:** Fall 2018  
**Number of Students Scored:** 18 enrolled on campus; 18 enrolled online

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Rating Scale</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues related to the aviation industry.</td>
<td>When identifying contemporary aviation issues, important facts and details are missing.</td>
<td>Prioritizes contemporary aviation issues; ignores some less significant, yet relevant issues.</td>
<td>Effectively prioritizes contemporary aviation issues, including subtle details; does not include unrelated contemporary issues.</td>
<td></td>
</tr>
<tr>
<td>Recognize potential solutions.</td>
<td>Shows some understanding of contemporary aviation issues; provides some explanations of potential solutions but important facts are missing.</td>
<td>Shows adequate understanding of contemporary aviation issues; provides adequate explanation of potential solutions; missing the explanation of minor facts.</td>
<td>Shows in-depth understanding of contemporary aviation issues; provides in-depth explanation of potential solutions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Student Work Description of Assignment</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues related to the aviation industry</td>
<td>Seminar on campus class</td>
<td>0</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Recognize potential solutions</td>
<td>Seminar on campus class</td>
<td>0</td>
<td>100%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Summary**

Thirteen seminar sessions and topics; one per week. All topics were relevant, contemporary issues.  
Students were able to identify and prioritize contemporary aviation issues and ignore some less significant, yet relevant, issues.  
Student demonstrated adequate understanding of contemporary aviation issues and provide adequate explanation of potential solutions.

**Instructor’s Recommendations**

**Department Recommendations**
<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Student Work Description of Assignment</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contemporary issues related to the aviation industry</td>
<td>Online class</td>
<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recognize potential solutions</td>
<td>Online class</td>
<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Summary**

No evidence gathered to support this performance indicator.

**Instructor’s Recommendations**

Fall 2019 online:

1. Address very specific issues and solutions using the discussion board (DB) platform

**Department Recommendations**

Evidence of the tests and final Exam used in Fall 2018 ASCI 4250 Professional Ethics and Standards course are found in Appendix C of this document.
Program Student Learning Outcomes

- B – Analyze and interpret data
- D - Make professional and ethical decisions
- E – Communicate effectively, using both written and oral communication skills
- F – Engage in and recognize the need for life-long learning
- G – Assess contemporary issues
- I - Assess the national and international aviation environment

Direct measures:
The student learning outcome will be assessed using data from:
The results of embedded questions in quizzes, exams, mid-term examinations, final examinations, and case briefs.

NOTES – FALL 2018
This course provides management and pilot majors the opportunity to experience court cases that apply federal and state statutes and regulations in multiple facets of aviation. Each on campus and online student is required to “brief” two legal cases: one from administrative law and another from areas of constitutional law, tort law, insurance, liability, property law, and international air law. The on-campus exams were open-source, collaborative and involved extensive research to frame the correct responses. Online exams, were open-source, but were representative of low-level rote learning with multiple-choice responses.

Subjects/Topics

- **Fundamentals of U.S. legal system**
  - Court system & structure
  - Classifications
  - Jurisdictions
  - Litigation process

- **U.S. Constitution impact on aviation operations**
• Preemption doctrine
• Fourth amendment privacy issues & UAS operations

**Aviation operations and criminal law**
• Subpoena
• FAA Order 2150.3C
• Criminalization of accidents
• U.S. criminal code and business and pilot violations
• Laser pointers
• State criminal codes in aviation
• Criminal acts on board aircraft
• Fraud

**Administrative agencies and administrative law**
• FAA enforcement
• Pilots’ Bill of Rights
• NTSB jurisdiction & hearings
• Airmen enforcement and certificate cases
• Civil penalties and consent orders

**Tort law, negligence, wrongful death, tort reform**
• Federal Tort Claims Act
• General Aviation Revitalization Act
• Trespass (drones & crop dusting)
• False imprisonment (tarmac delay)
• Defamation (airline employee)
• Assault and battery onboard aircraft
• Negligent operation of aircraft
• Manufacturer’s liability
• Flight instructor liability

**Aircraft purchase and ownership**
• Aircraft leasing, purchase, ownership
• Aviation insurance cases

**Property law and airport issues**
• Legal aspects of airport programs
• Noise and environmental issues
• Zoning
• Bailment
• Preemption
Privatization issues

**Labor and employment law in aviation settings**
- Railway Labor Act
- Employment statutes
- Age discrimination
- Defamation

**Security and aviation law**
- 

**International air law**
- Private and public international air law

**Methodology**
Lecture, in-class discussions, case briefs of actual aviation-related court cases (NTSB hearings, DOL hearings, state courts, federal courts).

**Legal Case Brief Rubric**
<table>
<thead>
<tr>
<th>Category</th>
<th>Evaluator’s Comments</th>
<th>1 – 5 Unacceptable or Poor</th>
<th>4 – 8 Marginal or Average</th>
<th>9 – 10 Good or Satisfactor y or Well Done</th>
<th>11 – 12 Exemplary or Outstanding</th>
<th>Total pts. per category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CITATION</strong></td>
<td></td>
<td>Does not cite the court case.</td>
<td>Cites the court case accurately and completely in most respects. Citation may be in an incorrect format, but will all information.</td>
<td>Cites the court case accurately and completely. Identifies the case name and citation in the correct format.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case name; court name; date of decision; page number; Reporter reference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FACTS / SUMMARY OF RELEVANT FACTS / STATEMENT OF FACTS</strong></td>
<td></td>
<td>Presents few, if any, facts of the case.</td>
<td>Presents some facts of the case.</td>
<td>Presents the facts of the case.</td>
<td>Presents and explains the facts of the case.</td>
<td></td>
</tr>
<tr>
<td>Briefly indicate the reasons for the lawsuit.</td>
<td></td>
<td>Does not include all key facts and reasoning is absent or incoherent or is not in accord with the opinion.</td>
<td>Does not include all key facts.</td>
<td>Includes all key facts and the reasoning may contain weaknesses, but is basically cogent and accords with the opinion.</td>
<td>Includes all relevant facts and the reasoning logically connects the facts to the rule in accord with the opinion.</td>
<td></td>
</tr>
<tr>
<td>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.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOPIC / ISSUE(S) / LEGAL QUESTION / LEGAL PRINCIPLE / RULE / RELEVANT LAW / RULE OF LAW</strong></td>
<td></td>
<td>Incorrect issue is identified.</td>
<td>Issue is not completely identified.</td>
<td>Issue correctly identified, but may contain extraneous information and is not stated in</td>
<td>Issue correctly identified and is stated in the form of a question.</td>
<td></td>
</tr>
</tbody>
</table>
The legal question(s).
Concisely phrase, in the form of a question, 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.)?

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.

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.

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.
**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?

<table>
<thead>
<tr>
<th>Total Points: Maximum possible 72</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Evidence of the tests and final Exam used in Fall 2018 ASCI 4450 Aviation Law course are found in Appendix C of this document.
Indirect Measures of Assessment

Student Surveys
Waiting for department-level report to include in this section.
Saint Louis University

Parks College of Engineering, Aviation and Technology
Bachelor of Science in Aeronautics
Concentration in Aviation Management

November 7, 2019

Department of Aviation Science

Appendix B

Spring 2019 Aviation Management

Student Achievement Data
Direct Measures Of Assessment
AABI Student Learning Outcome J: Apply pertinent knowledge in identifying and solving problems (Evaluated for Spring 2019)

Course: ASCI 1850 – Safety Management Systems  Semester Taught: Spring 2019  Number of Students: 46

Type of Student Work Assessed:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apply pertinent knowledge in identifying and solving problems associated with safety management systems</td>
<td>Does not demonstrate foundational knowledge of the theoretical underpinnings associated with SMS</td>
<td>Demonstrates a foundational knowledge of the theoretical underpinnings associated with SMS</td>
</tr>
<tr>
<td></td>
<td>Demonstrate competence in relating and applying concepts surrounding Safety Policy</td>
<td>Is not able to apply concepts surrounding safety policy and is unable to related to other aspects of SMS</td>
<td>Is generally able to apply concepts surrounding safety policy with familiarity of its relationship to other aspects of SMS</td>
</tr>
<tr>
<td></td>
<td>Demonstrate competence in relating and applying concepts surrounding Safety Risk Management</td>
<td>Is not able to apply concepts surrounding safety policy and is unable to related to other aspects of SMS</td>
<td>Is generally able to apply concepts surrounding safety risk management with familiarity of its relationship to other aspects of SMS</td>
</tr>
<tr>
<td></td>
<td>Demonstrate competence in relating and applying concepts surrounding Safety Assurance</td>
<td>Is not able to apply concepts surrounding safety policy and is unable to related to other aspects of SMS</td>
<td>Is generally able to apply concepts surrounding safety assurance with familiarity of its relationship to other aspects of SMS</td>
</tr>
<tr>
<td></td>
<td>Demonstrate competence in relating and applying concepts surrounding Safety Promotion</td>
<td>Is not able to apply concepts surrounding safety policy and is unable to related to other aspects of SMS</td>
<td>Is generally able to apply concepts surrounding safety promotion with familiarity of its relationship to other aspects of SMS</td>
</tr>
</tbody>
</table>

Description of Assignments: Evaluation based on test administered throughout the semester including the final examination

| Student Learning Outcome J - Apply Pertinent Knowledge in Identifying and Solving Problems |
|-----------------------------------------------|-------------------------------|----------------|----------------|----------------|----------------|
| Performance indicator | Work description/Test questions | % needs improvement | % Meets expectations | % Exceeds expectations |
|-----------------------|--------------------------------|----------------|----------------|----------------|----------------|
| Student’s will apply pertinent knowledge in identifying and solving problems associated with safety management systems | Test #1 – Questions 1, 3, 4, 15, 17, 19, 25 | 8% | 14% | 78% |
| | Test #2 – Questions 3, 7, 20, 21 | 29% | 35% | 34% |
| | Final Examination – 2, 3, 4, 9, 11, 16, 53, 59, 77 | 0% | 17% | 79% |
| Student’s will demonstrate competence in describing the concept of Safety Policy | Test #2 – Questions 1, 11, 13, 17 | 29% | 35% | 34% |
| Final Examination – 54, 58, 60, 62 | 0% | 17% | 79% |

| Student’s will demonstrate competence in describing the concept of Safety Risk Management | Test #2 – Questions 24, 28, 29, 32 | 29% | 35% | 34% |
| Final Examination – 6, 7, 63, 64, 70, 72 | 0% | 17% | 79% |

| Student’s will demonstrate competence in describing the concept of Safety Assurance | Test #2 – Questions 8, 16, 19, 28, 30 | 29% | 35% | 34% |
| Final Examination – 69, 71, 73, 74, 75 | 0% | 17% | 79% |

| Student’s will demonstrate competence in describing the concept of Safety Promotion | Final Examination – 43, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 91, 92, 93, 94, 95, 96, 97, 98, 99 | 29% | 17% | 79% |

| Summary | Overall, student performance was bimodal based on the totality of each assessment (tests). Assessing student learning outcomes using test scores is not sufficiently granular to provide more-detailed analysis and follow-up strategies for continuous improvement. |

| Instructor Commentary | Regrettably, I utilized “answer sheets” with each test. Upon grading and following discussion in-class, answer sheets were returned to the students. Consequently, I was unable to uniquely assess each contributory performance indicator. Lesson learned for the semester is to retain copies of answer sheets in order to provide a more-detailed analysis. Overall, I am slightly disappointed with the relatively high percentage of “needs improvement” scores from Test #2. Test #2 focuses on detailed aspects of contemporary safety management system and the test itself was not a multiple-choice test. I would consider the test to be rigorous in comparison to other proficiency measures used in the course. I anticipate developing a study guide to complement course lectures in the coming terms. I also plan to record each lecture and make it available on the Blackboard LMS for review. |
AABI Student Learning Outcome H: Use the techniques, skills, and modern technology necessary for professional practice  
(evaluated for fall 2018)

Course: ASCI 4050 (two sections) – Human Factors  Semester Taught: Fall 2018  Number of Students: 32 in section 01/ 12 in section 10

Type of Student Work Assessed:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Performance Indicator</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students will apply pertinent knowledge to issues/inquiries surrounding assorted human factors strategies in/for professional practice</td>
<td>Demonstrates a lack of familiarity and understanding with the theoretical underpinnings of human factors and does not effectively apply concepts and example applications</td>
<td>Demonstrates a familiarity with theoretical underpinnings of assorted human factors issues and can generally apply concepts in practical applications</td>
<td>Demonstrates a mastery of the theoretical underpinnings of assorted human factors issues and can apply concepts in practical applications</td>
</tr>
<tr>
<td></td>
<td>Students will identify and assign skills associated with human factors that promote sound professional practice</td>
<td>Is unable to identify and assign many human factors skill sets that promote sound professional practice</td>
<td>Is generally able to identify and assign human factors skill sets that promote sound professional practice</td>
<td>Demonstrates mastery in the identification and assignment of human factors skill sets that promote sound professional practice</td>
</tr>
<tr>
<td></td>
<td>Students will identify and assign technology used to leverage human factors for safety in professional aviation practice</td>
<td>Does not demonstrate much awareness or familiarity with the technologies available that support human factors related safety in professional aviation practice</td>
<td>Demonstrates an awareness and familiarity with some of the technologies available that support human factors related safety in professional aviation practice</td>
<td>Identifies and assigns technologies across an appreciable spectrum that support human factors related safety in professional aviation practice</td>
</tr>
<tr>
<td></td>
<td>Students will demonstrate familiarity with several assorted human factors models</td>
<td>Is unable to demonstrate a basic understanding of human factors models used in the analysis of safety events.</td>
<td>Demonstrates a basic understanding of a few human factors' models used in the analysis of safety events</td>
<td>Effectively and appropriately utilizes human factors models in the analysis of safety events.</td>
</tr>
</tbody>
</table>

Description of Assignments: Evaluation based on test administered throughout the semester including the midterm and final examinations, a paper and homework assignments.

| Student Learning Outcome J - Apply Pertinent Knowledge in Identifying and Solving Problems |
|-------------------------------------|-------------------------------------|----------------|----------------|----------------|
| **Performance indicator**            | **Work description/Test questions** | **% needs improvement** | **% Meets expectations** | **% Exceeds expectations** |
| Students will apply pertinent knowledge to issues/inquiries surrounding assorted human factors | **Section 01 (32 students)**  
Midterm Examination – Questions 8, 9, 31, 32  
Final Examination – Questions 4, 7, 35, 32, 88 | 12% | 88% | N/A |
|                                          | **Section 10 (12 students)**  
Midterm Examination – Questions 1, 4, 7, 26 | 25% | 75% | N/A |
<table>
<thead>
<tr>
<th>Strategies in/for professional practice</th>
<th>Final Examination – Questions 1, 3, 5, 7</th>
<th>17%</th>
<th>83%</th>
<th>N/A</th>
</tr>
</thead>
</table>
| Students will identify and assign skills associated with human factors that promote sound professional practice | **Section 01 (32 students)**  
Midterm Examination – Questions 11, 48, 49, 50  
Final Examination – Questions – 23, 30, 39, 94 | 19% | 81% | N/A |
| Section 10 (12 students)  
Midterm Examination – Questions 15, 35, 37, 34  
Final Examination – Questions 19, 23 | 42% | 58% | N/A |
| Students will identify and assign technology used to leverage human factors for safety in professional aviation practice | **Section 01 (32 students)**  
Midterm Examination – Questions 1, 4, 41, 43  
Final Examination – Questions – 4, 9, 13, 62, 79 | 10% | 90% | N/A |
| Section 10 (12 students)  
Midterm Examination – Questions 4, 6, 11, 35  
Final Examination – Questions 8, 21, 31, 57, 87, 88 | 8% | 92% | N/A |
| Students demonstrate familiarity with several assorted human factors models | **Section 01 (32 students)**  
Midterm Examination – Questions 10, 11, 44, 45  
Final Examination – Questions – 29, 30, 86, 100 | 19% | 81% | N/A |
| Section 10 (12 students)  
Midterm Examination – Questions 8, 9, 31, 32  
Final Examination – Questions 26, 28, 84, 95 | 25% | 75% | N/A |

**Summary**

The assessment data suggest most students have been successful in developing most of the attributes intended with this course(s) offering. The section 01 (on ground) group generally achieved better success on the student learning outcomes than their counterparts enrolled in the on-line section (section 10). Clearly, there is opportunity to improve both the on ground and on-line version of the course.

**Instructor Commentary**

It should be noted that the expectation scores/percentages illustrated in the table above are estimates based on incomplete data.

The data suggest some students struggling with recognition of some of the technologies available to mitigate human factors adversities. It would appear as though I have focused more effort on the human contributions to human factors. Continuous improvement of this course suggest I should include additional learning opportunities surrounding how technology might be leveraged in the context of human factors. I intend to add a course project that will focus on identifying available technology and providing an extensive narrative on its application. I also plan to emphasize the area of technology in my course lectures.

One benefit of course assessment is to provide the instructor (me) with a better understanding of the need for improved organization in maintaining completed coursework. While I have been meticulous in
preserving overall test/quiz/homework scores, I have been far less diligent in maintaining the evidence after completion of course milestones. Additionally, I have been less effective at evaluating the evidence at a granular level. One problem with the data illustrated above includes assigning the measures of each SLO at the end of the semester rather than strategically developing assignments and associated rubrics aimed at the granular level analysis mentioned in the previous sentence.

Moving forward, my strategy is to directly link assignments to the SLOs prior to the start of the semester. By pursuing a strategic approach, I will be better able to evaluate both the SLOs required by the accreditor and the institution and other results that are part of the overall intent of the course. Additionally, I am in the process of developing a better strategy for maintaining and organizing course documentation.
# Performance Indicator Rubric

## AABI Student Learning Outcome G: Assess Contemporary Issues

**Course:** ASCI 4650 Economics of Air Transportation  
**Semester Taught:** Spring 2018  
**Number of Students Scored:** 5 enrolled

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Student Work Description of Assignment</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gather and document data.</td>
<td>Airline simulation teams maintained a “decision log” during two fiscal years. Accomplished by all three teams.</td>
<td></td>
<td></td>
<td>100 %</td>
</tr>
<tr>
<td>Analyze and interpret data.</td>
<td>Data/Reports from each quarter required analysis for financial, operational decisions of following quarter. One of three teams did excellent</td>
<td>67%</td>
<td></td>
<td>33%</td>
</tr>
<tr>
<td>Report on findings and conclusions.</td>
<td>Teams’ management audit presentation at end of semester.</td>
<td></td>
<td></td>
<td>100 %</td>
</tr>
</tbody>
</table>

**Summary**

**Instructor’s Recommendations**

- Spring 2019:  
  1. Establish a set of specific guidelines for teams’ decision logs with details of data collection  
  2. Management audit will include a more comprehensive report of the findings/results for each airline team

**Department Recommendations**
### Performance Indicator Rubric

AABI Student Learning Outcome J: Apply Pertinent Knowledge in Identifying and Solving Problems

**Course:** ASCI 4800 International Aviation

**Semester Taught:** Spring 2019

**Number of Students Scored:** 8

**Type of Student Work Used for Assessment** (e.g. Homework #4; Exam #2 problem 3; final project): Group Presentation

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

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formulate the problem and identify key issues/variables.</strong></td>
<td>Weak problem formulation; some issues/variables identified, but many missing; many constraints missing; many assumptions missing.</td>
<td>Adequate problem formulation; most key issues/variables are identified; almost all criteria presented for ranking alternatives; Almost all constraints identified; almost all assumptions identified.</td>
<td>Complete and succinct problem formulation; key issues/variables identified; all relevant criteria presented for ranking alternatives; all relevant constraints identified; all relevant assumptions identified.</td>
</tr>
<tr>
<td><strong>Analyze and justify solutions to a problem.</strong></td>
<td>Limited analysis of alternatives; only some criteria evaluated; only some constraints considered; weak discussion of analysis results; missing significant steps in decision making process; weak justification for final solution.</td>
<td>Appropriate analysis approach; mostly correct analysis results; criteria evaluated with minor errors; constraints considered with minor errors; adequate discussion of analysis results; document decision making process.</td>
<td>Well thought out or clever analysis approach; complete and correct analysis results; complete consideration of constraints; detailed discussion of analysis results; detailed documentation of decision making process</td>
</tr>
</tbody>
</table>

(rev. 10/18/2017)
Description of Assignment: Group presentation of a current or contemporary issue in the international aviation industry. There were four groups of students completing the assignment.

Using the performance indicator rubric, the groups scored as follows:

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Section of Grading Rubric</th>
<th>% Needs Improvement (Scores of &lt; 14)</th>
<th>% Meets Expectations (Scores of 15-25)</th>
<th>% Exceeds Expectations (Scores of 26-30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Presentation Organization and Mechanics</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Evidence of Effort</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Content and Application of Knowledge</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Presentation Delivery</td>
<td>0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Analyze and justify solutions to a problem.</td>
<td>Presentation Organization and Mechanics</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Evidence of Effort</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Content and Application of Knowledge</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Presentation Delivery</td>
<td>0</td>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>

Instructor assessment: To improve the course outcome, the instructor suggests providing more class time on topics which might aid the student in the delivery of an oral presentation.
### Performance Indicator Rubric

**AABI Student Learning Outcome J: Apply Pertinent Knowledge in Identifying and Solving Problems**

**Course:** ASCI 4800 International Aviation  
**Semester Taught:** Spring 2019  
**Number of Students Scored:** 8

**Type of Student Work Used for Assessment* (e.g. Homework #4; Exam #2 problem 3; final project):** Tests 1-5 and Final Exam

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

---

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formulate the problem and identify key issues/variables.</strong></td>
<td>Weak problem formulation; some issues/variables identified, but many missing; many criteria missing; many constraints missing; many assumptions missing.</td>
<td>Adequate problem formulation; most key issues/variables are identified; almost all criteria presented for ranking alternatives; Almost all constraints identified; almost all assumptions identified.</td>
<td>Complete and succinct problem formulation; key issues/variables identified; all relevant criteria presented for ranking alternatives; all relevant constraints identified; all relevant assumptions identified.</td>
</tr>
<tr>
<td><strong>Analyze and justify solutions to a problem.</strong></td>
<td>Limited analysis of alternatives; only some criteria evaluated; only some constraints considered; weak discussion of analysis results; missing significant steps in decision making process; weak justification for final solution.</td>
<td>Appropriate analysis approach; mostly correct analysis results; criteria evaluated with minor errors; constraints considered with minor errors; adequate discussion of analysis results; document decision making process.</td>
<td>Well thought out or clever analysis approach; complete and correct analysis results; complete consideration of constraints; detailed discussion of analysis results; detailed documentation of decision making process.</td>
</tr>
</tbody>
</table>

(Rev. 10/18/2017)

---

\**Description of Assignment:** Test 1 was based on lecture material covered in the course.
<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #11</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #16</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #20</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #38</td>
<td>11%</td>
<td>89%</td>
<td>--</td>
</tr>
</tbody>
</table>

**Description of Assignment:** Test 2 was based on lecture material covered in the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #10</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #24</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #26</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #29</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
</tbody>
</table>

**Description of Assignment:** Test 3 was based on lecture material covered in the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #6</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #13</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #23</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #25</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
</tbody>
</table>
**Description of Assignment:** Test 4 was based on lecture material covered in the course.

<table>
<thead>
<tr>
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<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #4</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #10</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #25</td>
<td>11%</td>
<td>89%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #29</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
</tbody>
</table>

**Description of Assignment:** Test 5 was based on lecture material covered in the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #1</td>
<td>33%</td>
<td>67%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #6</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #16</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #18</td>
<td>11%</td>
<td>89%</td>
<td>--</td>
</tr>
</tbody>
</table>
Description of Assignment: Final Exam was based on lecture material covered in the course.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Questions, Problems, Etc.</th>
<th>% Needs Improvement</th>
<th>% Meets Expectations</th>
<th>% Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #5</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #20</td>
<td>--</td>
<td>100%</td>
<td>--</td>
</tr>
<tr>
<td>Formulate the problem and identify key issues/variables.</td>
<td>Question #28</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Question #46</td>
<td>22%</td>
<td>78%</td>
<td>--</td>
</tr>
</tbody>
</table>

Instructor Assessment of this Course:

**COURSE EVIDENCE**

Evidence of the presentations given in the Spring 2019 ASCI 4800 International Aviation course are found in Appendix C of this document.
Indirect Measures of Assessment

Student Surveys
Waiting for student surveys in this section
Indirect Measures of Assessment

Alumni Surveys
Department of Aviation Science
Aviation Management
Alumni surveys (8 Responses)

How well do you feel your education at Saint Louis University prepared you in fulfilling the following program objectives:

- To enhance your broad-based knowledge:
  - Strongly Agree
  - Agree
  - Strongly Agree
  - Strongly Agree
  - Strongly Agree
  - Agree
  - Strongly Agree

- To develop skills surrounding piloting, communication, research and critical thinking, decision making and team building:
  - Strongly Agree
  - Agree
  - Strongly Agree
  - Strongly Agree
  - Strongly Agree
  - Agree
  - Strongly Agree
  - Strongly Agree

- To develop abilities to succeed in life regardless of their chosen fields:
  - Strongly Agree
  - Agree
  - Strongly Agree
  - Strongly Agree
  - Strongly Agree
  - Neither Agree nor Disagree
  - Strongly Agree
  - Strongly Agree
How well do you feel your education at Saint Louis University prepared you in fulfilling the following program objectives: - To develop an attitude reflecting an education at a Jesuit University:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Strongly Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
<th>Neither Agree nor Disagree</th>
</tr>
</thead>
</table>

Of the undergraduate courses in Aviation Management, tell us which was your favorite and why:

Likely Airport Management, the project portion that we worked on was both really fun but also really informative and gave us real-life business and presentation skills

Aviation Ethics, most engaging and broadly applicable to all career fields

Aviation Law with Bruce Hoover. He was an outstanding professor and always pushed us to continuously keep up with current changes in the industry and did a great job showing how important close observance of regulations is in the aviation industry.

Aviation Law because I gained a strong knowledge of the nuances of aviation law and regulations, learned how to interpret and argue the law, and studied a variety of real world cases and their outcome.

Economics of Air Transportation: This course exposed me to the relationship between all sectors of aviation; how each work individually, together, and how the actions of one sector can affect the whole industry.

Aviation Law. I found it interesting and useful in terms of how I think about regulations.

I absolutely loved my air traffic control classes because it was great hands-on experience. I was able to learn from the "book" (7110.65) and then apply what I had learned, leading to better retention and understanding.

Econ of air transportation. Because we had a chance to simulate managing an airline
<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Analyze and interpret data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Function on multi-disciplinary and diverse teams</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Understand professional and ethical responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Communicate effectively, including both written and oral communication skills
Strongly Agree
Strongly Agree
Strongly Agree
Strongly Agree
Strongly Agree
Agree
Strongly Agree
Strongly Agree

When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Recognize the need for, and engage in, life-long learning
Strongly Agree
Agree
Strongly Agree
Strongly Agree
Strongly Agree
Agree
Strongly Agree
Strongly Agree

When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Have knowledge of contemporary issues
Strongly Agree
Agree
Strongly Agree
Strongly Agree
Strongly Agree
Strongly Agree
Strongly Agree
Strongly Agree
When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following:
- Use the techniques, skills, and modern technology necessary for professional practice
  Strongly Agree
  Agree
  Neither Agree nor Disagree

- Understand the national and international aviation environment
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree

- Apply pertinent knowledge in identifying and solving problems
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree
  Agree
  Strongly Agree
  Agree
When you graduated from Parks College with a degree in Aviation Management, you were prepared to do the following: - Apply knowledge of business sustainability to aviation issues

Strongly Agree
Agree
Agree
Agree
Agree
Strongly Agree
Strongly Agree
Saint Louis University

November 7, 2019

Parks College of Engineering, Aviation and Technology
Bachelor of Science in Aeronautics
Concentration in Aviation Management

Department of Aviation Science

Appendix C

Fall 2018 Aviation Management

Student Achievement Data – Assessment Evidence
Direct Measures Of Assessment
Unmanned Aerial Systems

Increase Availability of Drones
Recreational Uses

- Photography
- Real Estate
- Racing
- Backyard flying

Introduction

1. Increased Availability and usage
2. Commercial airline interference
3. Current policies and potential solutions
4. Law enforcement and the 4th amendment
Increase Availability of Drones
Recreational Drone Improvements

- Prices ranging from $20-$5,000
- Flight times ranging from 12 min-30 min
- Flight distances ranging from 300m-8 miles
- Camera qualities between 720p HD- 4k

Increase Availability of Drones
Drone Statistics

- 7 million drones in US by 2020
  - 3.5 million hobbyist drones by 2021
- Estimated 3 million drones shipped to US in 2017
- 770,000 drones registered by FAA

Commercial Airline Interference

- Have caused numerous delays and diverged flights
- Increased safety incident reports
- Drone strike could potentially lead to a crash
Wayward Drones Soar
Safety reports involving drones in the U.S., including near misses, reached record levels.

Drone incidents per month

Note: Data is through September 2017
Source: Federal Aviation Administration

Airspace systems with highest number of reported drone incidents in the United States from December 2015 to January 2016

New York/Manhattan
Los Angeles
Miami
Chicago
Boston
San Jose
Washington
All Airports
Austin
San Diego
Dallas
Phoenix
Portland
Salt Lake City
Denver

Gatwick Drone Chaos
Current FAA Regulations

- Part 107 - Rules For Small Unmanned Aircraft (UAS) Operations Other Than Model Aircraft:
  - Rules for commercial, non-recreational use of drones
- Avoid manned aircraft and never operate in a careless or reckless manner
- You must keep your drone within sight
- Operations in Class G airspace are allowed without air traffic control permission. Operations in Class B, C, D and E airspace need ATC approval
- If you are PIC:
  - You must make your drone available to the FAA for inspection on request
  - You must report any operation that results in serious injury, loss of consciousness, or property damage of at least $500 to the FAA within 10 days

Certification

- To operate a small UAS under Part 107, you need a remote pilot certificate with a small UAS rating, or be under the direct supervision of a person who holds such a certificate
- Must be 16 years old to obtain a remote pilot certificate
  - You may pass an aeronautical knowledge test at an FAA-approved knowledge testing center
  - If you already have a Part 61 pilot certificate, you must have completed a flight review in the previous 24 months and you must take a small UAS online training course provided by the FAA
- If you have a Part 61 certificate, you will immediately receive a temporary remote pilot certificate when you apply for a permanent certificate

Solution

Mandatory online drone course

- An online course should be required whether operating commercially or for private use
  - Airspace, flight restrictions, legal aspects
- The English DOT held a public meeting to inform a Drones bill that will be presented to Parliament in early 2019
- Measures within the bill include greater enforcement powers for police and mandating the use of a flight safety app and flight information app for all drone operators
- Source - Aviation Daily
Solution
FAA drone registration at time of purchase

➢ Retailers must register drone at time of purchase
➢ Collect purchasers info
➢ Collect drone info

Military Use of Drones

➢ Aerial Reconnaissance
➢ Ordinance Delivery

Law Enforcement Use

➢ Evidence collection
➢ Surveillance
➢ Monitoring prison facilities
➢ Tracking prison escapees
➢ Border protection
4th Amendment Controversy

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

4th Amendment Controversy

- It’s not the how it’s the where
  - Inside your own home?
  - Out on the street?
- Stricter usage policies

Summary

- Availability and usage
- Airline interference
- Current Policies and potential solutions
- Law enforcement and the 4th amendment
Works Cited


## ASCI 1010 Group Presentations
### Rubric for Audience Critique of Group

<table>
<thead>
<tr>
<th>Critique of Group #</th>
<th>Your Name</th>
<th>UNMANNED AERIAL SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score in %</td>
<td>YES</td>
</tr>
<tr>
<td>STRUCTURE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>Introduced self &amp; presentation topic</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Identified a specific problem to be solved or need to be met</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Formulated coherent, valid philosophical arguments</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Noted strength/weakness of the problem/project</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Compared competing philosophical ideas of the project</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Presented a position/standpoint on the problem/project</td>
<td>89</td>
</tr>
<tr>
<td>BODY</td>
<td>Problem/Need Identification</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>Presented ideas in logical sequence</td>
</tr>
<tr>
<td></td>
<td>Used words to jog memory instead of reading from text</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td>Evaluated adequacy of information (current, relevant, etc.)</td>
</tr>
<tr>
<td></td>
<td>Documented sources of information or data</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Visually Aids</td>
<td>Used appropriate visual aids (graphs, tables, charts, etc.)</td>
</tr>
<tr>
<td></td>
<td>Knows well how to operate presentation equipment &amp; tools</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Verbal Delivery</td>
<td>Used a safe &amp; inclusive language for audience diversity</td>
</tr>
<tr>
<td></td>
<td>Used effective transitions to bridge main points</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Nonverbal Delivery</td>
<td>Used appropriate vocal qualities (volume, rate, variety, etc.)</td>
</tr>
<tr>
<td></td>
<td>Maintained adequate eye contact with audience members</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Timeliness</td>
<td>Began the presentation on time</td>
</tr>
<tr>
<td></td>
<td>Delivered the presentation within allotted time</td>
<td>92</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>Summarized what the audience needs to know, believe, or do</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Invited questions from the audience at the end of the presentation</td>
<td>100</td>
</tr>
</tbody>
</table>

**Scoring:**
- Met learning outcome: **YES**
- Needs additional work to meet learning outcome: **NEEDS WORK**
- Did not meet learning outcome: **NO**
# ASCI 1010 Peer Review for Group Presentation

**Your name:** Cody Going  
**Your Group #:** 5

## Format for scoring group members

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8-10 pts</td>
<td>5-7 pts</td>
<td>3-4 pts.</td>
<td>0-2 pts.</td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td>Group member completed role in an impressive manner.</td>
<td>Group member completed role in a satisfactory manner.</td>
<td>Group member completed role with a great deal of difficulty.</td>
<td>Group member did not complete role within group.</td>
<td>4.67</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Group member was a major asset to the group.</td>
<td>Group member was relatively easy to work with most of the time.</td>
<td>Group member was difficult to work with at times.</td>
<td>Group member was consistently difficult to work with.</td>
<td>3.67</td>
</tr>
<tr>
<td>Time on Task</td>
<td>Group member lead group through most tasks.</td>
<td>Group member was on-task throughout the project.</td>
<td>Group member was off-task regularly.</td>
<td>Group member was regularly off-task and distracted others throughout the project.</td>
<td>4.0</td>
</tr>
<tr>
<td>Task Completion</td>
<td>Group member completed assignments in an above average manner.</td>
<td>Group member completed assignments in a satisfactory manner.</td>
<td>Group member participated in a less than fully satisfactory manner.</td>
<td>Group member did not participate in assignments.</td>
<td>4.33</td>
</tr>
</tbody>
</table>
A New Home

For many students, entering college is exciting and frightening at the same time. Venturing into the unknown and creating change in one's life is oftentimes a difficult experience. Many people proclaim that college will be some of the best years of your life; although that statement may be partly true, college also comes with countless responsibilities and challenges.

Over the past four weeks, I have learned much about myself, from managing my time wisely, to simply, doing my laundry. Upon my arrival to Saint Louis University, one of my biggest fears was living independently so far away from home. Adjusting to new surroundings presents multiple obstacles and I have learned that it takes dedication, optimism, a strong work ethic, and organization to overcome those obstacles. I believe that the acceptance of prioritizing my academic life is a thought that will keep me motivated. I am positive that I will strive to put forth my best effort even when I am faced with hardships because I am aware that my goal is something worth achieving. I believe that the biggest roadblock that I will face is homesickness. However, keeping myself occupied with the company of friends, clubs, and academics will aid me in combating the issue.

Ever since I was young, my dream has been to pursue a career in the aviation field. Saint Louis University is providing me with the opportunity to make that dream a

I deeply trust that Saint Louis University has the power to mold its students into successful and confident citizens. Through the school's rich traditions, history, diversity, and education, I am certain that I can create a small but positive impact on the world one day.
Cite the correct response. Each question is worth 1 point.

1. Which of the following European airlines voted unanimously in favor of a collective agreement?
   A. Lufthansa.
   B. Ryanair.
   C. Air France.

2. A major part of the proposed agreement noted in Question 1 covers which area?
   A. Base transfers and command upgrades and seniority principles.
   B. Base salary for persons at the level of captain.
   C. Medical and life insurance policy upgrades.

3. Industry experts expect that the funding for the FAA, assuming a reauthorization bill passed, will be extended until:
   A. The end of the year (December 31, 2018).
   B. September 30, 2018.
   C. June 30, 2018.

4. A process described in the FAA Extension article by which legislation passed forth between the U.S. Senate and House until an agreement is reached is referred to as:
   A. Give-and-take.
   B. Bipartisanship.
   C. Ping-pong.

5. Which of the following airlines plans to drop its only service to Southeast Asia in 2019?
   A. SWISS International.
   B. Finnair.
   C. Norwegian.

6. Tore Osby, the EVP of Strategy gave which of the following reasons for the airline noted in Question 5 not increasing Asian flights?
   A. The yields are not there.
   B. Passengers in Asia not flying west to Europe.
   C. Both answers A and B.

7. In addition to U.S. and Canada services, the airline noted in Question 5 is expected to expand routes to which region of the world?
   A. Antarctica.
   B. Latin America.
   C. Africa.

8. Which of the following airlines has recently completed a major biofuel trial and additional testing in the future?
   A. Qantas.
   B. Virgin Australia.
   C. Air New Zealand.

9. The biofuel supply used by the airline in Question 8 was delivered to the:
   A. Fuel trucks only to keep the biofuel out of the existing refueling infrastructure.
   B. Traditional aircraft refueling infrastructure.

10. The biofuel used by the airline in Question 8 was produced in which country?
    A. United States.
    B. United Arab Emirates.
    C. Brazil.

EXTRA CREDIT — worth up to two points

The agreement reached between the pilots and the airline noted in Question 5 with what is viewed as transparency and fairness. List at least two agreements that the pilots find desirable.

- Choose their base
- Know their seniority rank in other pilots at the area
7. If the ASDE-X system detects the dangerous condition noted in Question #6, the system will:
   A. Alert the flight crew to the condition.
   B. Alert the air traffic controllers with aural and visual alerts.
   C. Alert the airport’s Aircraft Rescue and Fire Fighting (ARFF) crew of the condition.

8. Regarding the post-Brexit era in Europe, the Director General of the International Air Transport Association (IATA) expressed which of the following desires for air travel in between the European Union (EU) and the United Kingdom (UK)?
   A. Not allowing EU-based airlines to fly into or out of the UK.
   B. Not allowing UK-based airlines to fly into or out of the EU.
   C. Allow EU-based airline to fly into or out of the UK and have EU countries reciprocate.

9. A European Commission (EC) guidance document states which of the following concerning the air transportation rules when the UK exits from the EU?
   A. All EU rules covering air transport cease to exist when the UK departs the EU.
   B. All EU rules covering air transport cease to exist when the UK departs the EU.
   C. Some EU rules become invalid in the remaining 27 EU nations.
   D. Continue to be valid in the remaining 27 EU nations.

EXTRA CREDIT – worth up to two points

The National Transportation Safety Board (NTSB) investigation into an incident at which airport is a reason for the FAA to install the ASDE-X system (as noted in Question #6) at major airports?

SFO (San Francisco)
1. IATA reports that passengers desire more real-time information on their personal devices in which of the following areas?
   A. Flight status
   B. Baggage location
   C. Wait times at security and immigration checkpoints
   D. All the above

2. Of the answers listed in Question 1, which of the following do passengers describe to IATA as a "must" item?
   A. Flight status
   B. Baggage location
   C. Wait times at security and immigration checkpoints

3. Which of the following airlines flew a Boeing 747 from Orlando, Florida to London Gatwick Airport on a blend of waste-gas biofuel?
   A. Virgin Atlantic
   B. United Airlines
   C. Air New Zealand

4. The biofuel used by the airline noted in Question 3 captured waste carbon dioxide from industrial steel production to create which of the following products that can be converted into jet fuel?
   A. Jetope
   B. Palm oil
   C. Ethanol

5. Software upgrades are being mandated for CFM International LEAP-1A engines due to which of the following operations being experienced by one operator?
   A. Hot weather operation
   B. Cold weather operation
   C. High altitude operations

6. Which of the following aircraft manufacturers experienced a rebound in aircraft deliveries as compared to deliveries from the past summer?
   A. Boeing
   B. Airbus
   C. Shanghai Aircraft Manufacturing

7. Which of the following airlines used its hub-flown strategy to increase its Q3 net income?
   A. United Airlines
   B. Southwest Airlines
   C. JetBlue Airways

8. The airline noted in Question 7 shifted East Coast hub flights by shifting regional flights and brings higher-margin New York area flights into which of the following airports?
   A. Newark Liberty
   B. LaGuardia Airport
   C. Ronald Reagan Washington National Airport

9. Which of the following airlines is modifying its existing fleet to provide for an increase in the noise reduction capacity of its fleet?
   A. Southwest Airlines
   B. Delta Airlines
   C. JetBlue Airways

10. Which of the following modifications is being used by the airline noted in Question 9 to achieve the noise reduction capacity of its fleet?
    A. Engine exhaust reduction
    B. Slow-tooth engine clusters on the rear edge of engine nacelles
    C. Urban generation

EXTRA CREDIT – worth up to two points
List one of the two biggest illustrations that passengers reported to IATA in its latest Global Passenger Survey.

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Full page with the question and answers.
<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>COMPETENCIES (LEARNING OUTCOMES)</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>Introduced self &amp; presentation topic</td>
<td>97 3 a</td>
</tr>
<tr>
<td>Problem/Need identification</td>
<td>Identified a specific problem to be solved or need to be met</td>
<td>97 5 a</td>
</tr>
<tr>
<td></td>
<td>Formulated coherent, valid philosophical arguments</td>
<td>97 3 a</td>
</tr>
<tr>
<td></td>
<td>Noted strength/weakness of the problem/project</td>
<td>97 10 a</td>
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<tr>
<td></td>
<td>Compared competing philosophical ideas of the project</td>
<td>81 14 a</td>
</tr>
<tr>
<td></td>
<td>Presented a position/standpoint on the problem/project</td>
<td>81 14 a</td>
</tr>
<tr>
<td>Organization</td>
<td>Presented ideas in logical sequence</td>
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<td></td>
<td>Used words to jog memory instead of reading from text</td>
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<td>Evaluation</td>
<td>Evaluated adequacy of information (current, relevant, etc.)</td>
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<td>Documented sources of information or data</td>
<td>78 19 b</td>
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<tr>
<td>Visuals/Aids</td>
<td>Used appropriate visual aids (graphs, tables, charts, etc.)</td>
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</tr>
<tr>
<td></td>
<td>Knows well how to operate presentation equipment &amp; tools</td>
<td>95 5 a</td>
</tr>
<tr>
<td>Verbal Delivery</td>
<td>Used a safe &amp; inclusive language for audience diversity</td>
<td>86 14 a</td>
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<tr>
<td></td>
<td>Used effective transitions to bridge main points</td>
<td>89 11 a</td>
</tr>
<tr>
<td>Nonverbal Delivery</td>
<td>Used appropriate vocal qualities (volume, pace, variety, etc.)</td>
<td>78 22 a</td>
</tr>
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<td></td>
<td>Maintained adequate eye contact with audience members</td>
<td>47 5 a</td>
</tr>
<tr>
<td>Timeliness</td>
<td>Began the presentation on time</td>
<td>100 0 a</td>
</tr>
<tr>
<td></td>
<td>Delivered the presentation within allotted time</td>
<td>92 5 b</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>Summarized what the audience needs to know, believe, or do</td>
<td>81 19 a</td>
</tr>
<tr>
<td></td>
<td>Invited questions from the audience at the end of the presentation</td>
<td>100 0 a</td>
</tr>
</tbody>
</table>

**Scoring:**
- Met learning outcome: YES
- Needs additional work to meet learning outcome: NEEDS WORK
- Did not meet learning outcome: NO
ASCI 1010 Test 1

The multiple-choice questions are worth 3 points each. The extra credit question is worth up to 10 additional points.

Please place the letter of your response on the line next to the question number.

1. Who made the first successful, powered flight?
   A. Orville Wright.
   B. Wilbur Wright.
   C. Charles Taylor.

2. On what date was the first successful, powered flight accomplished?
   A. December 17, 1903.
   B. December 17, 1906.
   C. December 17, 1908.

3. Where was the first successful, powered flight accomplished?
   A. Dayton, Ohio.
   B. Kitty Hawk, North Carolina.
   C. Wichita, Kansas.

4. Who accomplished what was the first successful international flight?
   A. Louis Bleriot.
   B. Calbraith Rodgers.
   C. Charles Lindbergh.

5. Who accomplished the first transcontinental flight across the U.S.?
   A. Charles Lindbergh.
   B. Calbraith Rodgers.
   C. Charles Lindbergh.

6. Who successfully completed the first successful solo non-stop trans-Atlantic flight?
   A. Charles Lindbergh.
   B. Calbraith Rodgers.
   C. Charles Lindbergh.

7. In what year was the first successful solo non-stop trans-Atlantic flight accomplished?
   A. 1925.
   B. 1926.
   C. 1927.

8. What is normally regarded as the airplane's first practical use?
   A. Airmail.
   B. Public transportation.
   C. Air mail.

9. Who is the "Father of Airmail" in the United States?
   A. Charles Lindbergh.
   B. Otto Pilgriner.
   C. Earhart Onington.

10. Which government legislation was passed that set airmail rates and the level of cash subsidies to be paid to companies that carried the mail? In response to objections by the railroad industry, federal legislation was passed to assist the new industry.
   A. Air Mail Act of 1925.
   B. Air Mail Act of 1926.
   C. Civil Aeronautics Act of 1926.

11. The Civil Aeronautics Act of 1938 transferred the federal civil aviation responsibilities from the Commerce Department to which new independent agency?
   A. Federal Aviation Administration.
   B. Civil Aeronautics Authority.
   C. Department of Transportation.

12. The Civil Aeronautics Act of 1938 made which of the following responsible for the investigation of aircraft accidents?
   A. The Civil Aeronautics Authority.
   B. The Administrator of Aviation.
   C. The Safety Board.

13. The 1940 Amendment to the Civil Aeronautics Act created which of the following and charged it with exercising legislative and judicial authority over civil aviation, maintaining control of the economics of the air carrier industry, and with investigating aircraft accidents?
   A. The Civil Aeronautics Board.
   B. The Federal Aviation Administration.
   C. The Department of Transportation.

14. The Federal Aviation Act of 1958 created which independent agency and gave it the responsibility of developing and maintaining a common civil-military system of air navigation and air traffic control?
   A. Federal Aviation Agency.
   B. Civil Aeronautics Authority.
   C. Department of Transportation.

15. Which government legislation created what we know today as the Federal Aviation Administration?
   A. Federal Airport Act of 1946.
   B. Airport and Airway Act of 1970.
   C. Department of Transportation Act of 1966.

16. Which government legislation created the National Transportation Safety Board?
   A. Federal Airway Act of 1946.
   B. Airport and Airway Act of 1970.
   C. Department of Transportation Act of 1966.
17. Which U.S. government legislation removed most government controls from the U.S. commercial aviation industry?
   - Department of Transportation Act of 1966.
   - Airport and Airway Act of 1970.

18. Which government organization is charged with protecting all transportation modes from terrorism and other criminal threats?
   - Federal Bureau of Investigation.
   - Transportation Security Administration.
   - Department of Transportation.

19. The Federal Aviation Administration (FAA) is an agency of which department of the U.S. government?
   - Department of Homeland Security.
   - Department of Transportation.
   - National Transportation Safety Board.

20. What is the name of the Federal Aviation Administration's policy that is designed to better meet future traffic loads, reduce ground congestion, and maintain safety in the U.S. National Airspace System?
   - NextGen.
   - Open Skies.

21. Which of the following pieces of U.S. legislation was mandated with the intent of placing greater emphasis on long-range research planning and on study of such issues as aging aircraft structures and human factors affecting safety?
   - The Department of Transportation Act of 1966.

22. Which of the following Federal Aviation Administration's initiatives uses aircraft transponders and the Global Positioning System (GPS) satellite signals to provide air traffic controllers and pilots with the aircraft's precise position in the sky to help keep aircraft safely separated in the sky and on runways?
   - System Wide Information Management (SWIM).
   - Automatic Dependent Surveillance-Broadcast (ADS-B).
   - NAS Voice Switch (NVS).

23. Which of the following types of aircraft dominate the U.S. civil aircraft fleet?
   - Large jet airliner aircraft.
   - Military aircraft.
   - General aviation aircraft.

24. Aviation is found in which "Title" of the Code of Federal Regulations?
   - Title 19.
   - Title 14.
   - Title 18.

25. What is the name of the document published daily by the U.S. federal government that is used to inform the public about new federal regulations and revisions, corrections, or deletions of existing federal regulations?
   - The Federal Register.
   - The Washington Post.
   - The U.S. Daily Federal Regulation Update.

26. In accordance with 14 CFR Part 21, Certification Procedures for Products and Parts, which of the following certificates is given to an aircraft manufacturer whose aircraft design has proven to meet all of the requirements of this regulation?
   - Supplemental Type Certificate (STC).
   - Type Certificate (TC).
   - Production Certificate (PC).
32. 14 CFR Part 135 governs the operating requirements for which type of flight operations?
A. Commuter and on-demand flight operations.
B. Flight school operations.
C. Domestic and flag air carrier operations.

33. Which of the following codes of federal regulations governs the flight training activities of students at Saint Louis University?
A. 20 CFR Part 147.
C. 14 CFR Part 141.

Extra Credit
1. The invention and development of the aircraft led to a variety of ways in which mankind has changed economically, socially and politically. Choose one of these aspects of change in mankind and briefly describe how changes in that aspect have affected mankind in the 100+ years of aviation.

[Handwritten notes:]
- Political: Air force size and power has put countries such as the US into positions of global leadership.
- Airplanes have decided the outcome of major wars such as WWI, WWII, Vietnam, Korea, etc. For example, the US dropped atomic bombs on Japan during WWII which had an impact on the outcome of the war.]
ASC 1010 Professional Orientation Final Exam

Please place your name and answers on the answer sheet and do not mark on this exam. Multiple choice questions are worth 2.5 points each. The extra credit question is worth up to 5 additional points. Return the exam and answer sheet to the instructor when finished.

1. The fuselage design that relies on the strength of the skin or covering to carry the loads applied to the fuselage is referred to as which type of design technique?
   A. Monocoque design.
   B. Truss design.
   C. Bullhead design.

2. The fuselage design technique that includes longons and stringers to help reinforce the fuselage’s skin against the applied loads is referred to as which type of design technique?
   A. Monocoque design.
   B. Truss design.
   C. Semi-monocoque design.

3. An aircraft’s wing that requires no external struts or bracing is referred to as which type of wing?
   A. Cantilever wing.
   B. Semi-cantilever wing.
   C. Fully cambered wing.

4. Which internal wing component is considered to be the principal structural assembly of the wing?
   A. The rib.
   B. The stringer.
   C. The spar.

5. Which internal rib component is used to give the wing its cambered shape and assist in transmitting loads to the principal structural member of the wing?
   A. The rib.
   B. The stringer.
   C. The spar.

6. The name of the component used to house the aircraft’s powerplant and reduce aerodynamic drag is referred to as the:
   A. Cowling.
   B. Engine nacelle.
   C. Both A and B.

7. The ailerons, elevators and rudder are considered to be which type of flight control system?
   A. Auxiliary flight controls.
   B. Primary flight controls.
   C. Secondary flight controls.

8. What is another name for an aircraft landing gear configuration that incorporates a nose wheel assembly instead of a tail wheel assembly?
   A. Conventional configuration.
   B. Tricycle configuration.

9. The purpose of designing an aircraft with retractable landing gear is to:
   A. Allow the aircraft to be landed on its belly in the event of a failure of the landing gear system.
   B. Eliminate drag which is detrimental to performance and efficiency.
   C. To make the appearance of the aircraft more visually appealing.

10. A typical aircraft battery is one which can be discharged and recharged and is referred to as:
    A. Primary cell.
    B. Secondary cell.
11. The type of battery used in most small aircraft is which type of battery?
   A. Lead acid battery.
   B. Nickel-cadmium battery.
   C. Sodium hydride battery.

12. An electrical generating device that is found in the tail section of most modern jet transport category aircraft is the:
   A. Ground power unit.
   B. Auxiliary power unit.
   C. Ram air turbine.

13. Aircraft hydraulic systems belong to which of the following types of systems?
   A. Fluid power systems.
   B. reluctant systems.
   C. Pneumatic power systems.

14. Which of the following aircraft braking systems is used to brake modern-day transport category (large) aircraft to deionize the aircraft after landing?
   A. The multi-disc brake system.
   B. The single-disc brake system.
   C. The parachute braking system.

15. Which of the following devices is used on a typical small aircraft to warn the pilot of an impending loss of lift due to a high angle of attack of the wing?
   A. The stall warning system.
   B. The position system.
   C. The gyroscopic instrument system.

16. What is the purpose of a fuel quantity indicating system?
   A. To provide the pilot with information about the quantity of fuel on board the aircraft.
   B. To allow the pilot to directionally control the aircraft.
   C. To reduce the clutter of several instruments built into one instrument.

17. Which system is used to by the pilot to automatically fly the aircraft by adjusting the aircraft's flight control surfaces so to maintain a commanded altitude and heading?
   A. The gyro signal input system.
   B. The control surface feedback signal system.
   C. The autopilot system.

18. Which of the following anti-icing systems utilizes hot compressed air to prevent ice from forming on the leading edge surfaces of wings?
   A. Elastic anti-icing system.
   B. Thermal anti-icing system.
   C. Chemical anti-icing system.

19. Which of the following approaches is utilized in today's modern jet transport category (large) aircraft to provide oxygen for the flight crew and passengers?
   A. Provide pure oxygen to supplement the decreased supply to the atmosphere to the passengers in the form of a easy-on oxygen cylinder.
   B. Provide pressurization for the aircraft that fly at high altitudes and provide supplemental oxygen in the event of emergencies.

20. Which type of fire extinguishing system is used in today's modern jet transport category aircraft to suppress fires in areas such as the engines nacelles, auxiliary power unit installations and cargo compartments?
   A. A hand-held portable fire extinguisher cylinder.
   B. A fixed high rate of discharge (HRD) fire extinguishing system.

21. The basic operating principle of a heat engine creating power to be used as thrust in a typical aircraft engine is:
   A. Fuel is converted into heat energy which is converted into mechanical energy.
   B. Fuel is converted into mechanical energy.
   C. Fuel is converted into mechanical energy which is converted into heat energy.

22. An aircraft reciprocating engine operates on which of the following operating cycles?
   A. Otto Cycle.
   B. Brayton Cycle.
23. An aircraft gas turbine engine operates on which of the following operating cycles?
   A. Otto Cycle
   B. Brayton Cycle.

24. Reciprocating engine power is rated in units of:
   A. Brake horsepower
   B. Pounds of thrust.

25. Gas turbine engine power is rated in units of:
   A. Brake horsepower.
   B. Pounds of thrust.

26. The specific fuel consumption of an aircraft engine is rated as:
   A. Fuel flow in pounds (or kilograms) per hour.
   B. Fuel flow in gallons (or liters) per hour.

27. Refer to Figure 1. Which classification of reciprocating engine cylinder arrangement is depicted?
   A. Radial
   B. V-type
   C. Horizontally opposed.

28. Refer to Figure 2. To aid in identifying the avgas in an aircraft as AVGAS 100LL, the fuel is dyed which color?
   A. Red
   B. Blue
   C. Green.

29. Refer to Figure 3. A turbine fuel dispenser for JET A-1 fuel would be identified with:
   A. A single black band and the words “JET A-1.”
   B. Two gray bands and the words “JET A-1.”
   C. A single yellow band and the words “JET A-1.”

30. Which type of electrical system is used in many small, general aviation aircraft?
    A. Alternating current (AC) electrical system.
    B. Direct current (DC) electrical system.

31. Which type of electrical system is used as the primary electrical power source on large transport category aircraft?
    A. Alternating current (AC) electrical system.
    B. Direct current (DC) electrical system.

32. A typical reciprocating engine typically employs which type of starter motor?
    A. Direct-cranking electric starter motor.
    B. Ground power unit (GPU).

33. Large gas turbine engines typically employ which type of starter motor?
    C. Direct-cranking electric starter motor.
    D. Air turbine or pneumatic starter motor.

34. The type of ignition system used on most small aircraft with reciprocating engines is referred to as:
    A. Dual magneto ignition system.
    B. Dual, igniter unit ignition system.
35. The type of ignition system used in a turbojet or turboprop engine installed in large, transport category aircraft only during the starting procedure is referred to as:
   A. A continuous ignition system.
   B. A normal ignition system.

36. The typical turboprop engine in a modern large, transport category aircraft uses which type of oil in its lubrication system?
   A. Mineral-based oil.
   B. Synthetic oil.

37. Refer to Figure 4. What is the purpose of the engine cooling system depicted?
   A. Remove the heat of combustion from the engine/cylinders.
   B. Prevent the cold ram air from allowing the engine to get too cold.

38. What is the name of a modern transport category (large) aircraft that is a compact, self-contained unit that provides electrical power and compressed bleed air during periods of aircraft ground activity or in flight if needed in an emergency?
   A. Turbocharger (TC)
   B. Ram air turbine (RAT)
   C. Auxiliary power unit (APU)

39. A propeller mounted to the engine which is installed on the front of the aircraft is referred to as:
   A. Pusher propeller.
   B. Tractor propeller.

40. The type of propeller used on many turboprop aircraft to act as an aerodynamic brake during the landing phase of operation is referred to as:
   A. Fixed pitch propeller.
   B. Ground adjustable propeller.
   C. Reversible pitch propeller.

**EXTRA CREDIT QUESTION:**

PLEASE USE THE REVERSE SIDE OF YOUR ANSWER SHEET TO ANSWER THE FOLLOWING EXTRA CREDIT QUESTION IF YOU CHOOSE TO DO SO. YOUR ANSWER CAN BE WORTH UP TO AN ADDITIONAL FIVE (5) POINTS ON YOUR FINAL EXAM SCORE.

1. Refer to Figure 5. Describe what is meant by the following terms: geometric pitch, effective pitch, and slip.
| 1. | A | 20. | B |
| 3. | A | 22. | A |
| 4. | C | 23. | B |
| 5. | A | 24. | A |
| 8. | B | 27. | C |
| 11. | A | 30. | B |
| 12. | B | 31. | A |
| 13. | A | 32. | A |
| 14. | A | 33. | D |
| 15. | A | 34. | A |
| 16. | A | 35. | B |
| 17. | C | 36. | B |
| 18. | B | 37. | A |

Please put your extra credit answer on reverse side of this sheet if you choose to answer it.

**Please put your answer for the extra credit question below.**

Geometric pitch is how far the propeller moves with each rotation without drag.

Slip is how far the plane is pushed back by drag.

Effective pitch is how far the propeller actually moves with one full rotation.
QUESTION 1
1. Achieving greater individual comfort is not a goal of human factors.
   - True
   - False

QUESTION 2
1. Data suggests that over 95% of aviation accidents are attributable to adverse human factors events
   - True
   - False

QUESTION 3
1. Ergonomics is a synonym for human factors used in the military.
   - True
   - False

QUESTION 4
1. One focus of human factors is on the interaction of the human, as opposed to the fundamental engineering principles, surrounding a system.
   - True
   - False

QUESTION 5
1. Individual differences simply suggest that people are different.
   - True
   - False

QUESTION 6
   - True
   - False

QUESTION 7
1. Human factors affect system performance.
   - True
   - False
QUESTION 8
1. What component lies at the center of the "SHELL" model?
   - Hardware
   - Software
   - Liveware
   - Environment

QUESTION 9
1. What variable in the "SHELL" model serves to contextualize the relationships of the other variables?
   - Hardware
   - Software
   - Liveware
   - Environment

QUESTION 10
1. With respect to the Tenerife accident, both captains commented on the weather and its implications on flight operations.
   - True
   - False

QUESTION 11
1. With respect to the Tenerife accident, the European-based jet required fuel prior to proceeding to its home-base of operations.
   - True
   - False

QUESTION 12
1. With respect to the Tenerife accident, which aircraft started its engines first?
   - The European
   - The American

QUESTION 13
1. With respect to the Tenerife accident, which captain requested engine-start clearance prior to completion of the pre-start checklist?
   - The European
   - The American

QUESTION 14
1. With respect to the Tenerife accident, which jet was instructed to back-taxi down the runway?
Both aircraft were instructed to back-taxi

**QUESTION 15**
1. With respect to the Tenerife accident, language was cited in the formal accident report as one contributing factor to the accident.

- True
- False

**QUESTION 16**
1. With respect to the Tenerife accident, the fact the American airplane was still on the runway was indicated in the European cockpit.

- True
- False

**QUESTION 17**
1. With respect to the Tenerife accident, of the following, which provides allows for the take-off to begin?

- ATC clearance
- Take-off clearance

**QUESTION 18**
1. With respect to the Tenerife accident, standard phraseology would have likely prevented the accident.

- True
- False

**QUESTION 19**
1. With respect to the Tenerife accident, the American jet never became airborne.

- True
- False

**QUESTION 20**
1. The Troposphere extends to an altitude of

- 10km
- 20km
- 30km
- 40km
QUESTION 21
1. The combined process of inhaling and exhaling is referred to as
   - Internal respiration
   - External respiration

1.89 points

QUESTION 22
1. The average rate of respiration for a healthy human is approximately
   - 12 breaths per minute
   - 16 breaths per minute
   - 20 breaths per minute
   - 24 breaths per minute

1.89 points

QUESTION 23
1. What is the acronym for the time a pilot can effectively or adequately fly her/his aircraft when experiencing hypoxia?
   - TUC
   - EPT
   - EFT
   - TSC

1.89 points

QUESTION 24
1. The time an individual can remain unconscious from hypoxia without the onset of brain damage?
   - TUC
   - EPT
   - EFT
   - TSC

1.89 points

QUESTION 25
1. Of the following, which is the worse?
   - Compensatory stage
   - Critical stage
   - Indifference stage
   - Disturbance stage

1.89 points

QUESTION 26
1. What gas makes up a majority of the atmosphere on earth?
   - Nitrogen
   - Oxygen

1.89 points
1. Carbon dioxide
   - False

**QUESTION 27**
1. The total mass of oxygen in a given mass of air will vary with altitude.
   - False

**QUESTION 28**
1. The total percentage of oxygen in a given mass of air will vary with altitude.
   - False

**QUESTION 29**
1. One function of the nose and mouth is to dehumidify (dry) air before it passes into the lungs.
   - True

**QUESTION 30**
1. The location in which oxygen is diffused into the blood is called the?
   - Alveoli

**QUESTION 31**
1. The location in which carbon dioxide is diffused into the blood is called the?
   - Alveoli

**QUESTION 32**
1. The third most volumes gas in the atmosphere is?
   - Xenon
Carbon Dioxide

**QUESTION 33**
1. What is the pressure on a standard day at sea level?
- 6.7 lbs/in²
- 11.6 lbs/in²
- 14.7 lbs/in²
- 16.8 lbs/in²

**QUESTION 34**
1. The relationship between pressure and altitude is linear (inverse)
- True
- False

**QUESTION 35**
1. Generally, what is the maximum "safe" altitude for continued flight without supplemental oxygen?
- 10,000 ft
- 15,000 ft
- 20,000 ft
- 25,000 ft

**QUESTION 36**
1. One method for avoiding hypoxia is to maintain cabin altitude at a lower value than ambient altitude.
- True
- False

**QUESTION 37**
1. Generally, what is the maximum pressure differential allowable in most modern transport category aircraft structures?
- 4-6 lbs/in²
- 8-10 lbs/in²
- 12-16 lbs/in²
- 18-20 lbs/in²

**QUESTION 38**
1. Decompression sickness is more likely to occur when the individual experiences larger pressure differentials.
- True
QUESTION 39
1. Decompression sickness is unlikely to occur below?
   - 14,000 feet
   - 18,000 feet
   - 22,000 feet
   - 26,000 feet

QUESTION 40
1. Individuals should not fly within ________ hours of using pressurized air (>30 ft.) while scuba diving.
   - 12 hours
   - 18 hours
   - 24 hours
   - 36 hours

QUESTION 41
1. Anoxia is the term used to describe the initial stages of hypoxia
   - True
   - False

QUESTION 42
1. _____________ vents the Middle Ear to the mouth and nose.
   - The Tympanum
   - The Eustachian Tubes
   - The Auditory Meatus
   - The Ossicles

QUESTION 43
1. The Ossicles is physically connected to each of the following except for?
   - The Tympanic Membrane
   - The Oval Window
   - The Round Window

QUESTION 44
1. The liquid Inside of the Cochlea is relatively incompressible
   - True
QUESTION 45
1. The Cochlea is considered part of the?
   - Outer Ear
   - Middle Ear
   - Inner Ear

QUESTION 46
1. The Organ of Corti effectively converts vibrations into neural signals.
   - True
   - False

QUESTION 47
1. The "output" of the Organ of Corti is directed to?
   - The Eustachian Tubes
   - The Vestibule
   - The Auditory Nerve
   - The flambé

QUESTION 48
1. Of the following, which sense generally contributes most to spatial orientation?
   - Vision
   - Vestibular Senses
   - Proprioceptive Senses
   - Auditory System

QUESTION 49
1. Generally, changes in linear, angular or gravitational accelerations are most-dramatically sensed by the __________ and then processed with visual information in the brain?
   - Vestibular Senses
   - Proprioceptive Senses
   - Auditory System

QUESTION 50
1. Each of the semicircular canals are located 45° relative to each other semicircular canal.
   - True
QUESTION 51
1. __________ are crystalline "stone-like" masses embedded in the Otolithic Membrane.
   - Otoliths
   - Macula
   - Stereocilia
   - Utricle

QUESTION 52
1. The proprioceptive nerves acting throughout the body due to gravity are thought to contribute to Somatogravic illusion.
   - True
   - False

QUESTION 53
1. Blocked Eustachian Tubes May tend to exacerbate Somato affects?
   - True
   - False
d. Auditory

2. The vestibular system is in?
   a. The outer ear
   b. The middle ear
   *c. The inner ear

3. Spatial orientation includes the ability to perceive motion and position in?
   a. One dimension
   b. Two dimensions
   *c. Three dimensions

4. Spatial disorientation generally refers to the loss or miss-interpretation of position relative to?
   a. The seat in the aircraft
   b. True position in free-space
   *c. The earth

5. All pilots are vulnerable to spatial disorientation
   *a. True
   b. False

6. _____________ of fatal aircraft accidents are a direct result of spatial disorientation.
   a. 20%
   b. 40%
   c. 60%
   *d. 80%

7. Spatial disorientation is more-likely in?
   *a. General aviation accidents
   b. Commercial aviation accidents

8. Generally, when vision is compromised, pilots should generally fallback to instruments to ascertain position and balance.
   *a. True
   b. False

9. True positional orientation and relative motion may not be consistent with the way our bodies feel.
   *a. True
   b. False

10. Somatogravic illusion is classified as a “false sensation illusion.”
    *a. True
    b. False

11. Somatogyral illusion is classified as a “false sensation illusion.”
    *a. True
    b. False

12. Somatogravic illusion is generally considered to be the result of a dysfunctional vestibular system.
    *a. True
    b. False

13. Somatogravic illusions generally manifest themselves during a turn (roll).
    *a. True
    b. False

14. Somatogravic illusion does not manifest itself during a deacceleration.
    *a. True
    b. False

15. Somatogyral illusion is generally associated with the?
16. Neural signals from the semi-circular canals are transmitted to the brain through the auditory nerve.
   a. True
   *b. False

17. Each semi-circular canal is located at roughly ________ to each other canal?
   a. 30 degrees
   b. 45 degrees
   *c. 90 degrees
   d. 120 degrees

18. How many semi-circular canals contribute to spatial orientation?
   a. 1
   b. 2
   *c. 3
   d. 4

19. The Crista Ampullaris is fixed and does not move.
   a. True
   *b. False

20. ________________ are essentially calcium carbonate stones
   a. Stereocilia
   b. Otoliths
   *c. Saccule

21. The otoliths work independently from the semicircular canals in providing spatial orientation.
   a. True
   *b. False

22. Low rates of acceleration may result in the vestibular system not sensing movement.
   *a. True
   b. False

23. When is Somatogravic illusion most likely to occur?
   *a. Rapid increase in power settings
   b. Rapid increase in pitch
   c. Rapid increase in Yaw
   d. Rapid increase in roll

24. During a Somatogravic illusion event, instruments are not able to provide reliable pitch information.
   *a. True
   b. False

25. With respect to the Gulf Air accident discussed in class, there was aural warning the aircraft was approaching the water.
   *a. True
   b. False

26. Regardless of effort, the individual always communicates.
   *a. True
   b. False

27. Communication always conveys a message.
   *a. True
   b. False

28. Communication is always purposeful.
29. In the communications model discussed in class, “noise” will tend to insert itself within?
   a. The encoding processes
   b. The decoding processes
   *c. The channel
   d. The recipient
   e. The sender

30. According to Berlo, messages may take the form of behavior.
   *a. True
   b. False

31. Of the following, what is not generally used in the encoding process?
   a. Words
   b. Mouth
   c. Posture
   *d. Ears

32. Interruptions generally improve communication.
   a. True
   *b. False

33. With respect to pilot communication, what is the leading cause of loss of situational awareness?
   *a. Omitted message confirmations
   b. Interruptions
   c. Terminology
   d. Cultures

34. Longer phrases are generally used when the transmitter believes the receiver is?
   a. Competent
   *b. Incompetent

35. Stress may be demonstrated in our speech.
   *a. True
   b. False

36. The message decoded by the receiver is the sum of both verbal and non-verbal elements of the message.
   *a. True
   b. False

37. Common context between sender and receiver is necessary for effective communication.
   *a. True
   b. False

38. One role of the Captain in a Part 121 aircraft is that of negotiator.
   *a. True
   b. False

39. Power-Distance may affect the quality and quantity of communication.
   *a. True
   b. False

40. Between the Pupil and the Iris, the amount of light allowed into the eye can change at a ratio of
   a. 3 to 1
   *b. 5 to 1
   c. 7 to 1
   d. 9 to 1
41. The ____________ acts like an electronic image sensor of a digital camera, converting optical images into electronic signals.
   a. Crystalline lens  
   b. Cornea  
   c. Iris  
   *d. Retina  

42. The fovea surrounds the macula.
   a. True  
   *b. False  

43. The optic disk is sensitive to both colors and shades of grey.
   a. True  
   *b. False  

44. The ____________ protects the eye from dust, debris and infection-causing microorganisms.
   a. The Sclera  
   b. The Choroid  
   *c. The Conjunctiva  
   d. The Macula  

45. ____________ provides approximately 65 to 75 percent of the focusing power of the eye.
   *a. The Cornea  
   b. The Pupil  
   c. The Lens  
   d. The Retina  

46. What part of the eye provides an individual’s so-called color?
   a. The Lens  
   *b. The Iris  
   c. The Pupil  
   d. The Retina  

47. Tears have a slightly antiseptic property.
   *a. True  
   b. False  

48. What part of the eye acts as an “aperture?”
   a. The Iris  
   *b. The Pupil  
   c. The Cornea  
   d. The Sclera  

49. The human eye has approximately __________ neurons proving input to the visual cortex.
   a. 50,000  
   b. 250,000  
   *c. 1,000,000  
   d. 5,000,000  

50. Both rods and cones are sensitive to light.
   *a. True  
   b. False  

51. The center of the retina primarily contains?
   a. Rods  
   *b. Cones  

52. The fovea primarily contains
   a. Rods  
   *b. Cones
53. Of the following, Rods generally have more?
   *a. Rhodopsin
   b. Photopsin

54. Of the following, which have the faster recovery time when transitioning?
   a. Rods
   *b. Cones

55. The human eye is capable of distinguishing approximately _______________ different shades of color.
   *a. 1,000
   b. 5,000
   c. 50,000
   d. 1,000,000

56. Each ____________ has its own neuron.
   a. Rod
   *b. Cone

57. ____________ are responsible for our peripheral vision.
   *a. Rods
   b. Cones

58. As light level decreases, the sensing task is passed over from the _______ to the _______.
   a. Rods to the cones
   *b. Cones to the rods

59. The Scotoma is caused by the?
   a. Fovea
   b. Macula
   *c. Optic nerve
   d. Iris

60. Factors influencing night vision include?
   *a. Vitamin A deficiency
   b. Vitamin B deficiency
   c. Vitamin C deficiency
   d. Vitamin D deficiency

61. Which of the following carriers were not involved in the 1956 midair collision over the Grand Canyon?
   *a. United
   b. American
   c. Trans World

62. How much time is generally required to see, detect and make the first evasive maneuver when attempting to practice see and avoid?
   a. 4.5 seconds
   *b. 10.5 seconds
   c. 15.5 seconds
   d. 17.5 seconds

63. Stressors may be described as the body’s responses to the demands placed upon it.
   *a. True
   b. False

64. Which part of the eye has the best visual acuity?
   a. The retina
   *b. The fovea
   c. The lens
d. The cornea

65. Where is the "Blind Spot"?
   a. On the iris
   b. On the fovea
   c. On the edge of the lens
   *d. At the entrance to the optic nerve

66. Peripheral vision is generally accomplished by?
   *a. Rods
   b. Cones

67. Colorblindness effects acuity.
   a. True
   *b. False

68. Colorblindness is far more prominent in?
   *a. Men
   b. Women

69. Images projected on the retina are inverted and reversed.
   *a. True
   b. False

70. The _____________ is the light sensitive screen lining the inside of the eyeball.
   a. Sclera
   b. Choroid
   *c. Retina

71. Generally, Rods require higher intensity light than cones to provide effective acuity.
   a. True
   *b. False

72. Groups of cones are connected to a single neuron.
   a. True
   *b. False

73. The outer, middle and inner ear are filled with
   *a. Air, Air, Liquid
   b. Air, Liquid, Liquid
   c. Liquid, Air, Air
   d. Liquid, Liquid, Air

74. What is the purpose of the Eustachian tube?
   a. To pass sound waves across the middle ear to the Auditory nerve
   b. To allow ambient pressure to equalize on both sides of the ear drum
   *c. To allow ambient pressure to equalize on the middle ear of the ear drum
   d. To allow ambient pressure to equalize on both sides of the Vestibular Apparatus

75. Accommodation is controlled by the
   *a. Ciliary muscles
   b. Iris
   c. Lens
   d. Cornea

76. Generally, Cones are better able to resolve detail than Rods
   *a. True
b. False

77. Proprioceptive receptors are concentrated?
a. In the eye
b. In the years
*c. In the skin

78. Somatogravic effect (illusion) is possible in straight and level flight.
*a. True
b. False

79. Champion golfer Payne Stewart most-likely perished as a result of?
a. Hypoxia
*b. Anoxia
c. Traumatic brain injury

80. Both flight-crew members on the Pinnacle Airlines accident, discussed in class, held the ATP rating.
a. True
*b. False

81. The circumstances leading to core-lock are generally beyond the control of the crew.
a. True
*b. False

82. Ultimately, avoiding midair collisions is the responsibility of Air Traffic Controllers.
a. True
*b. False

83. Generally, at what altitude does impairment of the vision fall to 50%.
a. 5,000 ft
b. 7,500 ft
c. 12,500 ft
*d. 15,000 ft.
Flight Instructors have many duties and decisions to make in training their students. Perhaps the most important and compelling decision they have is the decision of when a primary student has matured to the level of being able to operate and aircraft safely in solo flight. Despite the critical nature of the decision, there has been little to no guidance developed on how to make it safely and effectively (Thomas & Richards, 2015). At Charles Sturt University in Bathurst, Australia, research has been conducted among senior level flight instructors to develop a framework on assessing readiness for solo flight. Semi-structured interviews were conducted among 30 Australian senior flight instructors who shared their opinions and expertise on making the decision to solo a student. The authors’ overall claim is that a flight instructor must have “attained a level of experience and expertise” to make a reliable judgment to send a student solo, and their students should exhibit competency and “relevant behavioral markers” (Thomas & Richards, 2015). The article then lays out a proposed path as to how this can be accomplished.

After discussing the topic, the authors begin a discussion on flight training accidents. They focus on research claiming that 93% of all student pilot accidents are pilot-error related (Thomas & Richards, 2015). This helps to underscore the severity of the decision that a flight instructor must make. In order to mitigate these risks, there is a clearly established checklist already in use by the aviation community—the PAVE (Pilot, Aircraft, Environment, External Pressures) checklist. The authors discuss this as a developmental framework for students/instructors to assess hazard categories for a solo flight (Thomas & Richards, 2015). Together, these pieces establish the validity of the argument for a thorough procedure for instructors to use to ensure students are competent enough to engage in this risky activity.

The authors used the PAVE checklist to assess responses given by the instructors. In reviewing the responses given by the interviewed flight instructors, the authors noted a key response of “confidence and independence in decision making” as a student behavior competency as a pilot in command (Thomas & Richards, 2015). This independence must be carried over to the aircraft in the traffic pattern, in terms of how it is flown and managed on the student’s part. This includes both dealing with normal and emergency procedures.

The flight environment begins a shared responsibility. Instructors must select a day with appropriate weather conditions. Students must be able to handle those conditions as well as the traffic situation and radio calls (Thomas & Richards, 2015). The authors finished the research with external pressures. They focused on the instructor’s responsibility
to manage external pressures on solo flights, and to not allow solo flight when students are under too much pressure (Thomas & Richards, 2015).

The end result of the study asserted that flight instructors should use the PAVE model, with emphasis on specific areas relative to solo flight, to assess competencies that have caused accidents in the past (Thomas & Richards, 2015). These student-solo competencies are what the thesis called “relevant behavioral markers.” Assessing and responding to hazards on the part of the student is what leads to increased safety of the flight operation (Thomas & Richards, 2015). The insightful piece of the article that helped to make this claim was the many varied direct-quote responses from interviewed instructors structured around the PAVE model. The PAVE model helps instructors by placing specific names to the risks involved and decisions made during a solo flight, rather than just a random discussion. This increased the overall strength of the argument. Another piece of compelling evidence was the summary table of PAVE requirements. This helped to further establish what an instructor’s additional responsibilities are to a solo student. The article as a whole provides a foundational “checklist” for a flight instructor to use, and further research could expand and broaden an instructor’s responsibilities.

References

There seems to be a moral obligation of a firm to give a fair wage to employees for their meaningful work, but what is the definition of meaningful work? A firm cannot be put in a position of defining it, so Norman E. Bowie puts the ethics of Immanuel Kant to define it for universal, objective use. This coming from Kant’s explicit writings on the categorical imperative, stating one should treat people as an end in themselves rather than a means to an end.

Bowie argues that Kant would accept six traits of meaningful work. That it is:

- Work that is freely entered into
- Allowing of the worker to exercise her autonomy and independence
- Enabling of the worker to develop her rational capacities
- Providing of a wage sufficient for physical welfare
- Supporting of the moral development of employees
- Not paternalistic in the sense of interfering with the worker’s conception of how she wishes to obtain happiness

Bowie defends his position with the many works of Kant. In one literature, Kant highlights how self-respect is a vessel to achieve treating people as an end in themselves. Sufficient wealth allows one to have a freedom to satisfy the desires one might have. With this logic, employers should pay their workers a sufficient wage to treat them as ends in themselves.

Independence is an expression of freedom. Bowie pulls on how one aspect of freedom according to Thomas E. Hill is the ability to expand rational capacities. This allows for a mindset to see how decisions play out, create long-term goals, and resist the temptations of evil. This is seen as a good thing and can be placed as treating people as an end. This further strengthens the definition of a meaningful wage to promote rational capacities. Bowie warns that people must respect the capacities of others (as well as their concepts of happiness), because not doing so would put others as being indifferent and not as ends in themselves.

Kant argues in another one of his works about the duty we have to strive for perfection and promote happiness in others. Concern oneself with the wellbeing of others, both morally and physically. When in this state, humans are comfortable to learn and better their moral development, which circles back around to independence as well.

This ends the argument supporting a definition of meaningful work, but Bowie continues to question whether this definition is possible in the world’s current state. There are also many factors in everyday work environments that can be avoided with a good wage that supports autonomy and independence. Studies show that quality goes up when a meaningful work is implemented, which helps when competing on the global market. A wage in accordance with meaningful work has arguments in its favor in both ethical and economical varieties the the corporate workforce.

FINAL EXAM

Student’s Name: ___________________________  Points possible: up to 75

Unless otherwise noted, each question has a value of one point.
1. In this course, you have examined whistleblowing and dissent. What can we say about whistleblowing? Is whistleblowing an ethical practice? What have you learned?

   a. Let’s assume that employees do not have a moral obligation to be loyal to the company for which they work.
   b. I have a moral obligation to blow the whistle purely out of self-interest.
   c. There is a moral obligation to help right the situation. The main question with Utilitarian theory is to which option for action will help produce the greatest amount of happiness and least harm?
   d. It is best to blow the whistle external as soon as practical; even before exhausting all internal avenues.

2. Tough choices are faced by all individuals. Consider the following: It is right to protect the species inhabiting the Arctic National Wildlife Refuge (ANWR)—and right to ease the ever-escalating global energy crisis by drilling for oil in their habitat. Under Wadsworth Kidder’s decision-making model, this is considered

   a. a right versus wrong position.
   b. a level three / stage four point of moral development.
   c. a right versus right ethical dilemma.
   d. a moral temptation.

3. Cost-benefit analysis exhibits

   a. greater strength within the realm of virtue ethics.
   b. a strong manifestation of the principle of respect.
   c. A significant buy-in to the principle of nonmalevolence.
   d. an element of a well-developed form of applied consequentialism.

4. Technology is pervasive in our day-to-day activities. It’s presence and use within our private lives is ever-increasing. Below, select the one best and truthful response in this so-called information age in which we live.

   a. Although technology has a major impact on the gathering, storage, retrieval and dissemination of information, its main ethical impact relates to accessibility/inaccessibility and the manipulation of information.
   b. Unfortunately, the legal right to privacy is not constitutionally protected in democratic societies.
   c. Pilots in the U.S. undergo screening through the Pilot Records Information Act (Congress) requirements. However, the pilot applicant does not have the right to verify the information provided to the airline by his/her previous employers or training schools is correct.

5. It impacts those individuals affected by the act (or action). There must be a moral basis or justification for the claim. Some say they are entitlements or assertions. Here, we speak of

   a. A right
   b. An obligation
   c. A duty
   d. A promise
6. We have witnessed culture failures in corporate settings. Consider the most recent Wells Fargo debacle. Corporations expect “them” to be followed absolutely, and tend to enforce “them” selectively, often causing ethics conflicts, corruption, fraud, and dysfunction within the company.

   a. Reasoning flaws in the corporation
   b. Unsound ethics policies may lead to unethical behavior in the organization.
   c. This is just a case of “a few bad apples.”
   d. People are just less ethical than they used to be.

7. It is the fuel for the intent. It is the reason why someone is going to do something. It induces the action. We identify it as (a/the) ______________________________. Motive

8. In your studies of aviation safety, you have learned that trustworthiness in safety culture is where all actions in the air transport system increase it (the level of trustworthiness, that is). Trustworthiness is connected to the principle of __________, which refers to the responsibility and a clear and transparent process of evaluating errors and separating culpable deeds from blameless acts (a just culture).

   a. virtue
   b. obligation
   c. justice
   d. benevolence

9. Whistleblowing protection extends to very specific employees and with strict requirements in air carrier operations. The U.S. Congress has provided some limited relief through legislation. Two federal laws may impact employees in the aviation industry. The federal laws that apply are:

   a. Whistleblower Protection Act of 1989 (WPA)
   b. Sarbanes-Oxley Act
   c. Wendell Ford Aviation Investment and Reform Act
   d. Occupational Safety and Health Act (OSHA)
   e. Both B and C are correct.

10. Consequentialism
    Chap 1 & Hoppe p. 8,9

    a. The good is defined independently of the right.
    b. The right action is the one that produces the most intrinsic good.
    c. What sort of people should we be?
    d. “The good life”

11. “Maintain personal standards of conduct befitting a professional; respect yourself in all of your decisions so as to be worthy of living a fulfilling professional life.” This best describes the p. 53
a. Principle of Benevolence  
b. Principle of Integrity  
c. Principle of Justice  
d. Principle of Respect

12. According to Beabout and Wennemann, it should contribute to resolving contemporary moral dilemmas by providing a coherent structure of moral principles and a common moral vocabulary.

Quiz 1
a. applied ethics  
b. meta-ethics  
c. normative ethics  
d. rights-based ethics

13. As a soon-to-be aviation professional, with your specialized knowledge and skills, you incur many professional obligations . . .

Quiz 6
a. . . . because of the natural rights which society has given  
b. . . . you know of what you are due. (right)  
c. . . . because of the unequal relationship between you and lay persons  
d. . . . because you know the rights of the individual person, no matter what his or her station in life, cannot be violated or overridden simply to promote the happiness of others more effectively. (contractarian rights p. 21)

14. Some thinkers focus upon adherence to certain forms of law. Does the action conform to the law that one should only do what one would be willing for everyone to do? Still other thinkers look to moral rights. Would a certain action promote or violate someone’s moral rights? And some thinkers regard virtue or good character as the proper focus of moral evaluation. Still other people think that what ought to be measured are the ________________________________ of an action. For example, would the action produce happiness, or would it cause pain or suffering? Quiz 1 consequences (Hoppe. P.7)

15. Your study of the danger of regulatory capture exposed you to the fact that it should be considered an ethical issue. In essence, regulatory capture is

a. about issues of privacy.  
b. about rules.  
c. blowing the whistle.  
d. about relationship between parties.

16. It is the belief—the mental attitude—that explains the act. What the act is depends on the pilot’s p. 66

a. motivation.  
b. intention.  
c. circumstances.
17. It is a collection of decision-aiding techniques that have in common the numerical weighing of advantages against disadvantages. Two or more options in a public decision are compared to each other by careful calculation of their respective consequences. It is a pretty standard way of determining how much harm is justified, and for when it is morally called. It is . . . .

   Cost benefit analysis

18. This ethical theory emphasizes respect for rights of others to reason and choose for themselves.

   Reasoned choices; deontology; respect for human choices p.11 & Hoppe p. 12+

   a. virtue ethics
   b. duty ethics
   c. utilitarianism
   d. egoism

19. They are assumed to be binding, but may be set aside under certain conditions or “trumped” by more important rights and obligations.

   We know them as __________________________presumptive rights and obligations

   Inalienable rights; Declaration of Independence; it cannot be taken away by others; others are not justified by taking away that right; right to liberty; right to life


   p. 13; virtues are habits that bring about self-actualization; Hoppe p. 23+

   a. conventional morality
   b. utilitarianism
   c. duty ethics
   d. virtue ethics

21. The problem is that it focuses on consequences; disregards intention and motive of actions. It wrongly assumes that the consequences of each act can be accurately predicted. It may lead to rule worshipping.

   p. 15

   a. duty ethics
   b. utilitarianism
   c. conventional morality
   d. egoism
22. A CBA is an overview of all the pros (benefits) and cons (costs) of a project or policy options, as much as possible quantified and expressed in monetary terms. Monetary valuation of most pros and cons is based on

   a. The value of life being infinite.
   b. The willingness to pay of consumers.
   c. The benefit side of the equation.
   d. Fairness.

23. Considering the multiple dimensions of diversity, by filling-in the six blanks, identify the core components. (up to 6 points)

   It is a family, tribe, people, or nation belonging to the same stock.

   ________________ RACE

   It is a psychological and cultural term. We use it to refer to an individual’s subjective feelings of maleness or femaleness. The behavioral, cultural, or psychological traits typically associated with one sex.

   ________________ GENDER

   Some would say it is identity with or membership in a particular racial, national, or cultural group, and observance of that group’s customs, beliefs, and language. Many minority groups in U.S. maintain strong ethnic identity; especially in cities, immigrants are often attracted to ethnic communities established by people from their own country, communities in which many traditional cultural features are maintained.

   ________________ ETHNICITY

   It is the quality or state of being sexual; the condition of having sex; sexual activity; expression of sexual receptivity or interest especially when excessive.

   ________________ SEXUALITY

   We define it as competence in doing; skill; natural aptitude or acquired proficiency; physical, mental, or legal power to perform.

   ________________ ABILITY

   And finally,

   ________________ AGE
24. The new U.S. President-Elect is facing serious issues surrounding his business assets and the potential conflict of holding public office. There is the need to ensure no conflict of interest exists or the possibility of bribery and corruption entering into decision making. Wadsworth Kidder would suggest any decision, in this case, can be assessed by testing the idea against

a. The Mom Test.
   b. The Stench Test.
   c. The Front Page Test.
   d. The Caring Model.

25. Often managers and executives fail to notice the gradual erosion of others’ ethical standards. If they find minor infractions acceptable, they are likely to accept increasingly major infractions as long as each violation is only incrementally more serious than the preceding one.

a. This is commonly referred to as a cognitive bias “the slippery slope.”
   b. This cognitive bias may be called an “ill-conceived goal.”
   c. This is a good example of “indirect blindness.”
   d. None of the above are appropriate responses to the example.

26. The flight instructor who acts for the sake of duty, does so not because of self-interest or because it is socially expected, but because it is one’s moral duty. This is most closely aligned with

a. virtue ethics.
   b. egoism.
   c. rights-based ethics.
   d. deontology. (B&W p. 11 & 12) Quiz 1

27. As a professional, you will face many difficult decisions. Beabout and Wennemann (1994) indicate you will run into situations that may appear to be in conflict. There will be conflicts between your role as an employee and that of a professional. There will also be conflicts between the standards of your society and those of another. Additionally,

   p. 21-31; conflicts

a. you must decide if “the good life” is more important to pursue.
   b. there will be issues relative to conformity to social roles.
   c. there will be issues of self-interest.
   d. there will be issues rising out of fear of punishment.

28. The ethical dimension of age discrimination discussions focused on fairness, empathy, and the Golden Rule. Here, typically, we are addressing the

a. Principle of respect
   b. Principle of nonmalevolence
   c. Principle of consistency
   d. Principle of double-effect
29. Kohlberg’s theory of moral development . . .
   p. 22
   a. We can see how people make moral decisions.
   b. We are able to distinguish between egoism and duty ethics.
   c. Models the levels of culpability of a given act or action.
   d. Illustrates with clarity intent, motive and circumstance.

30. Your study of whistleblowing has informed you that it does not extend to certain acts (Hoppe). In a brief statement, identify one.

   (1) acts motivated by bad faith (e.g., a disgruntled employee attempts to damage an organization’s image), (2) prematurely uncovering matters that should primarily be handled internally and are not matters of public concerns to begin with, (3) involving structures of authority that are not recognized in law, and (4) engaging in whistleblowing on mere suspicion instead of demonstrable evidence.

31. There is a moral obligation to do the things we agree to do, especially if others are counting on us to do so. We are expected to keep our promises; to keep commitments. These statements address
   a. a social obligation
   b. a legal obligation
   c. an ethical obligation

32. Regulatory capture is not an uncommon activity in some government and private sector settings. This ethical theory stands out above all others when one examines issues surrounding regulatory capture.

   a. Justice
   b. Benevolence
   c. Virtue ethics
   d. The ethics of consequentialism

33. Deontology

   a. “greed is good”
   b. The theory or study of moral obligations; duty ethics.
   c. Developing virtues such as wisdom, justice, and prudence
   d. One should follow the rule that produces the greatest amount of good for the greatest number of people.

34. The goal of safety in aviation can be justified by the principle of ________, when the target is passengers . . . to achieve the greatest benefit for the largest number of people. “You do not have the right, as a singular individual, to operate your Galaxy smartphone on this flight.”

   a. utilitarianism
   b. retributive justice
   c. distributive justice
35. According to Kohlberg’s theory . . . .
   p. 26
   a. The levels are not developmental; one cannot move through all three levels. One is relegated to one stage within life.
   b. Level Three does not eliminate the significance of Levels One and Two. Rather, it subordinates them to the principle of respect.
   c. Level Three is weak as it lends itself to abuse of power (particularly true for professionals).
   d. Conformity to social norms (to maintain the approval of others) is of the highest order.

36. An action is right if it promotes one’s own self-interest.
   p. 10
   a. egoism
   b. conventional morality
   c. duty ethics
   d. virtue ethics

37. If we examine airline management roles and responsibilities, from the Kantian perspective . . .
   a. An airline has an obligation to provide a living wage to all its pilots.
   b. An airline is expected to maximize happiness or fulfillment for all its pilots.

38. A prescribed guide for conduct or action; an accepted procedure, custom, or habit criterion; a standard for decision-making; social convention or agreement.
   Chap 3
   a. a rule
   b. a relationship
   c. a principle
   d. a value

39. Cognitive biases distort ethical decision making. Unfortunately, we find ethical breakdowns in many government and private sector settings. Of the following, which one is “the slippery slope?”
   a. Rewarding results rather than rewarding high-quality decisions. An individual may make a poor decision that turns out well (okay) and be rewarded for it or a good decision that turns out poorly and be punished. Rewarding unethical decisions because they have good outcomes is a recipe for disaster.
   b. Southwest Airlines outsources a great deal of its maintenance to an El Salvador company, Aeroman. It is outsourcing the “dirty work.” Using an intermediary to hide something is possible. It is using other people/organizations to do work for you. We are instinctively more lenient in our judgment of a person or an organization when an unethical action has been delegated to a third party.
   c. People see what they want to see. They may be building a “house of cards” that will eventually come crashing down. Barry Bonds of the SF Giants...steroid use...those with a stake in Bonds' performance had a powerful motivation to look the other way: they all stood to benefit financially. Watch for conflicts of interest that may exist.
d. Failure to notice the gradual erosion of others’ ethical standards. If we find minor infractions acceptable, we are likely to accept increasingly major infractions as long as each violation is only incrementally more serious than the preceding one. Address even trivial-seeming infractions immediately.

40. One can examine the nature of rules and ethical decision making. Which one of the following best defines a characteristic?

Quiz 4
a. Rules are of little help to us as we conduct our affairs in the face of uncertainties and ambiguities.
b. Loopholes are indicative of a rule’s over-inclusive nature (opposite: under-inclusive; rule does not go far enough)
c. Rules control our tendency to act only in our self-interest. (lecture & posting)
d. Rule do little for us when they cause us to behave differently than we would have behaved in the absence of the rule. (opposite)

41. Whatever your view of “the responsible aviation professional,” there often are serious obstacles to attaining a professional level of responsibility. When we allow our own judgment to be biased by our wanting something for ourselves, this can be identified as

a. Self-deception.
b. Egocentricity
c. Microscopic vision
d. Self-interest

42. Applying Kohlberg’s theory of moral development

a. Level Three comes after Level Two developmentally. Therefore we can assume it is always better.
b. Provides a hierarchical and rigid structure . . . of the moral life.
c. Moral development moves through multiple levels; never static.
d. Level Three focuses more on the “good-boy” morality of maintaining good relations. It is more oriented to approval and helping others.

43. Willfully ignoring the moral obligations of your aviation profession is not good. As an aviation professional, you know the moral ramifications of your craft. You may not ignore your moral obligations. This kind of ignorance can cause harm; it may be a form of negligence. This illustrates

Quiz 5
a. Principle of justice
b. Principle of respect
c. Principle of double-effect
d. The principle of non-malevolence

44. Rules. Relationships. Accountability. “A duty that binds to the course of action.”

Slides on rules, relationships responsibility accountability

a. Answerability
b. Liability
c. Responsibility
d. Trustworthiness
45. The ethical life is not simply a matter of rule-following for its own sake. “The ethical life is more than mere rule-following. Living ethically means living according to the spirit of the law, not just the letter of the law.” In the aviation industry, all too frequently, the response to scandals, aviation accidents or issues of safety is a rush to address problems by adding more rules and regulations. Of the following, which one is an accurate statement? Slides RULES rules, relationships, responsibility, accountability 4-13
   a. Rules cause people to behave at Kohlberg’s Level Three standard of moral development.
   b. Rules rarely, if ever, help us to conduct our affairs in the face of uncertainties and ambiguities. We see this played out often in the cockpit.
   c. Rules do not have loopholes and they never go too far. Rules are often perfect.
   d. Rules often make ad hoc decisions (decisions being made for us).

46. One of the difficulties with Kantian moral philosophy  
Hoppe p. 16
   a. It places too much emphasis on forming good habits of character.
   b. Applying the Categorical Imperative allows little or no room for exceptions.
   c. By focusing on consequences, there is an avoidance to address intention and motive.
   d. Following rules and practices of society may lead you to living in a morally corrupt one.

47. It is often recognized as a permission to perform certain acts provided specified conditions are fulfilled.
   a. a right
   b. a privilege
   c. a duty
   d. a responsibility

48. As a consumer of aviation as transportation, you are complicit in harming the atmosphere. Intentional harm is morally impermissible. Unintentional harm is negligence, generally by the act of ignoring obligations of your chosen aviation profession. You must know there are moral ramifications of flying.
Here, we are addressing Slides & text “in all your actions, avoid harming people” chapter 4
   a. the principle of non-malevolence.
   b. the principle of utility.
   c. the ethics of character traits.
   d. the principle of benevolence.

49. It involves punishment for wrong-doing. It concerns what punishment is appropriate for what offense and how to maintain a correct balance between severity and leniency.
   p. 56
   a. substantive justice
   b. retributive justice
   c. remedial justice
   d. distributive justice
50. Under AIR-21, the air carrier management team can appeal the preliminary order of OSHA favorable to the plaintiff, in this case the whistleblower, by requesting a hearing
   p. 92
   a. before a Department of Labor administrative law judge.
   b. in a civil court within the state.
   c. before the U.S. Court of Appeals for Washington, DC.
   d. before a grand jury of 12 persons.

51. When considering the amount of greenhouse gases produced by aircraft as compared to other transportation modes, one should consider ____________ into the calculation.
   Chapter 25 p. 243-244
   a. time and passenger demand
   b. (passenger) demand and distance
   c. the make and model of the aircraft and duration only
   d. distance and duration

52. We make moral decisions based on our level of development. Consider a pilot, as a decision-maker, responds in one of the following two ways: (a) she is likely to silently verbalize that flying into a cloud formation without an IFR clearance is a federal violation (offense) and she will not do it or (b) she is likely to deviate around the clouds to avoid the implied punishment that may come from ‘getting caught’ by ATC. In either solution, the action is Kohlberg
   a. motivated by rights and character.
   b. motivated by the principle of benevolence.
   c. motivated by self-interest.
   d. motivated by conforming to society’s expectations.

53. International commercial air carriers and corporate jets that fly globally and emit harmful CO₂ could be said to be in violation of the principle of benevolence; especially against those who are unable to help themselves such as poor and developing countries.
   a. This is a truthful statement.
   b. This is a false statement.

54. Actions that accord with a universal rule or law of morality are ones that a human agent ought to do, regardless of what the actual consequences might be. It’s not about making people happy. It may be the ultimate standard of morality. Which one of the ethical theories is most closely identified with this statement?
   p. 13 Duty ethics or Deontology

55. This moral principle is often prominent in many professional activities like aviation businesses, aerospace engineering, and medicine. Efficiency and “getting the job done” are viewed as important.
   p. 56
   a. The principle of justice
   b. The principle of integrity
   c. The principle of utility
   d. The principle of respect
56. Of Kohlberg’s levels/stages of moral development, which one is most conventional? That is, it addresses moral development which conforms to the expectations of others or society.
   - Level One
   - Level Two
   - Level Three
   - Level Four

57. In addressing professional responsibility, I am more driven to prevent harm than to assign blame. I take due care and practice a standard reflected of a normal, prudent nonprofessional to prevent harm. The general public should have a say over what risks they may be viewed as logical for them to be subjected to.
   - This is the reasonable care model.
   - This is the good works model.
   - This is the malpractice model.
   - This is the self-deception model.

58. It includes intimidating, threatening, blacklisting or discharge of an employee. The U.S. Department of Labor authority construing similar whistleblower protection statutes indicates that it also includes demotion, reduction in salary or transfer to a less desirable position. Under the laws, here we speak of
   - Accusations
   - Dissention
   - Adverse Actions
   - Disloyalty

59. You are a human resource manager within a corporate flight department. You are tasked by senior management to develop an ethically valid code of ethics.
   - From Constructing a Code of Ethics paper posted & handout
   - What are other aviation codes addressing? Most likely I will research for similar business codes to form a basis for my aviation department’s code. For example, I would examine the suggested code on the National Business Aviation Association (NBAA) site.
   - As an initial step, I would have the office staff, pilots, and mechanics write a list of “dilemmas” they have encountered. These would be scenarios with an ethical dimension. Core values for each can then be determined.
   - While I would keep my senior management informed, most likely I would not wish to involve them in the development process considering their very busy schedules.
   - Pilots are accustomed to rules and regulations. They are, by nature, compliance based in their orientation. My first draft would be a rule-based code for the aviation department. A rule-oriented code is more effective in aviation than a values-oriented code of ethics.

60. With the two recent grand jury “no bill” (no indictments in St Louis County and NYC) rulings, I feel compelled to be pre-disposed to doing good. I will actively respond to the needs of others. I will take action. I will not continue to “mind my own business.” At times, it may be appropriate to “butt in.” I will practice the principle of
   - The principle of respect
   - The principle of benevolence
c. The principle of commutative justice

d. The principle of integrity

61. This examines the “rightness” of rules and procedures. It focuses on the end result. It seeks to protect
ownership of property, privacy, bodily safety, citizenship, or copyright.  

61. p. 54

a. procedural justice
b. substantive justice

c. retributive justice

d. remedial justice

e. distributive justice

62. Ethical relativism may come into the conversation and be most pronounced

a. When we discuss issues relative to ethics and the environment.

b. When we discuss issues in the United States education and training environments.


c. When we address issues surrounding the differences in cultures of other countries.

d. When discussing issues such as low entry-level pilot wages in the U.S.

63. Of the following, identify those considered to be actual greenhouse gases (GHG). There may be more than one
correct response. Some responses are only contributors to GHG.  

A – B – E Slides & readings

a. Methane (CH4) fossil fuels, waste dumps

b. Nitrus oxide (N2O) fertilizers, combustion; industrial processes

c. Soot (GHG contributor)


d. Contrails from jet aircraft (GHG contributor)

e. Carbon dioxide (CO2) fossil fuel combustion

f. Ozone (GHG contributor)

g. Cirrus clouds (GHG contributor)

h. H2O

64. Confidentiality is not an absolute obligation. When can confidentiality be breached? If one were to examine
this as a utilitarian, you might say the following:

“. . . when situations arise where the ____________ in maintaining confidentiality is greater than the
__________ brought about by disclosing confidential information.” (hint: the same word is valid for both
blanks)

a. harm; harm (injury; hurt; pain)

65. We recognize them as fixed norms or morally binding customs found within society. They are manners or habits
and the violation of which may have consequences.

a. Values

b. Mores (slides)


c. Decision-making procedures

d. Ideals which are desirable (this is values)
66. Most likely you have examined the tragic 1977 Tenerife accident (two Boeing 747s; KLM & PanAm) in accident investigation or safety-oriented courses. Post-accident evidenced looked at the KLM Captain showed him to be an impatient, overconfident individual who did not tolerate questioning his authority in the cockpit. One could examine his character traits and moral actions

   a. as a study in conventional morality.
   b. through the lens of a virtue theorist (virtue ethics). Hoppe p. 24 chap. 2
   c. through rights-based reasoning -- as in company policy (fairness).
   d. through Kant’s Categorical Imperative (Kantian Deontology).

67. The ethical aspects of aviation safety management are rarely discussed. If an individual examines the operational culture of a company, she or he may find the underlying values and principles of safety. The safety management system (SMS) approach may be the best approach in terms of achieving an ethical safety culture.

   a. Under SMS, as a management safety professional, the organization must implement your ethical vision.
   b. There is a mechanism of hope since continual improvement is its key attribute.
   c. Under SMS the strongest ethical motive may be the promotion of the value of justice.
   d. SMS defines and identifies individual violators.
18. Finally, let's examine a very serious issue in aviation. It is the criminalization of accidents. There looms the threat of criminal liability. You have examined *United States v. SabreTech, Inc.*, 271 F.3d (11th Cir. 2001). While this case was studied in this course, it is not the only prosecutorial investigation in aviation. Prosecuting authorities have alarmingly increased their focus on aviation employees and companies.

This question is worth up to 10 points (17% of exam grade).

What does this trend accomplish? What is the impact of criminal prosecutions on aviation? Are we safer with criminal investigations? Are there unintended consequences to the overreach of the prosecutorial arms of criminal investigative agencies?

Safety investigations are primarily undertaken to find the cause and to help prevent future accidents. It does help to accomplish a secondary instinct to do things right. However, leave us open to the idea of a blame culture, there will be conflicting interests that arise through concurrent investigations that may lead to negative side effects. We are safer in terms of putting away or convicting a guilty party, but we may provide an incentive for those to cover up their bad deeds, leaving us more open than ever before. It could allow history to repeat itself in the most negative of ways. Confidentially can become a key part of investigations if it could potentially be destroyed, if a strict Chinese wall is not kept.
<table>
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<tr>
<th>TOPIC</th>
<th>REFERENCE</th>
<th>DISCUSSION CASES (see footnote)</th>
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<tr>
<td>Legal System Fundamentals</td>
<td>Chapter 1</td>
<td>Newberger v. Pokrass 33 Wis. 2d 569 (1967)</td>
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<td>The Constitution and Aviation</td>
<td>Chapter 2</td>
<td>United States v. Causby et ux. 328 U.S. 256 (1946)</td>
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<td>City of Burbank et al. v. Lockheed Air Terminal, Inc. et al. 411 U.S. 624 (1973)</td>
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<td>United States v. Long 674 F.2d 848 (1982)</td>
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<td>Electronic Privacy Information Center v. FAA 892 F.3d 1249 (2018)</td>
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<td>United States v. Evinger 919 F.2d 381 (1990)</td>
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<td>USA v. Sasso 695 F.3d 25 (2012). First Circuit</td>
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<td>USA v. Smith 756 F.3d 1070 (2014). Eighth Circuit</td>
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<td>U.S. A. v. Aaron Jason Cope (Colorado; Shuttle America, Inc)</td>
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<td>U.S.A. v. David Hans Arnston (California; Alaska Airlines)</td>
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<td>Ward v. State 374 A.2d 1118 (Md. 1977). Court of Appeals, Maryland</td>
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<td>FAA Order 2150.3B and FAR part 13</td>
<td>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:</td>
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<td>Challenges to government rulemaking</td>
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<td>Civil penalties (fines)</td>
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<td>Drug &amp; alcohol testing</td>
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<td>DOL ALJ</td>
<td>DUI/Motor vehicle actions</td>
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<td>FAA enforcement &amp; sanctions</td>
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<td>Medical certificate actions (FAA)</td>
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<td>Air carrier sanctions</td>
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<td>Air ambulance issues</td>
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<td>Flying and the sharing economy (e.g. Uber)</td>
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| Certificate action and civil penalties | Administrative & Legal Enforcement Actions  |
|                                      |                                       |
|                                      | Certificate action and civil penalties  |
|                                      | Airline Deregulation Act (ADA)  |
|                                      | Equal Access to Justice Act (E AJA)  |
|                                      | Federal Tort Claims Act (FTCA)  |
|                                      | Pilot’s Bill of Rights  |

| Administrative & Legal Enforcement Actions | DUI/Motor vehicle actions  |
| Administrative & Legal Enforcement Actions | FAA enforcement & sanctions |
| Certificate action and civil penalties | DOT enforcement  |
| Airline Deregulation Act (ADA) | Flight instruction  |
| Equal Access to Justice Act (E AJA) | Mechanics  |
| Federal Tort Claims Act (FTCA) | Medical certificate actions (FAA)  |
| Pilot’s Bill of Rights | Pilot certificate actions (FAA)  |
| Airline Deregulation Act (ADA) | Passengers with disabilities (DOT rules)  |
| Equal Access to Justice Act (E AJA) | Air carrier sanctions  |
| Federal Tort Claims Act (FTCA) | Air ambulance issues  |
| Pilot’s Bill of Rights | Flying and the sharing economy (e.g. Uber)  |

| Tort Law; Negligence; Wrongful Death; Liability Theories; Strict Liability; Damages; Tort Reform; FTCA | Chapter 4 |
| Wrongful death | Cleveland v. Piper 890 F.2d 1540 (1989) |
| | Brock v. United States 18,246 (E.D. Va. 1977) |
| | Cross et ux v. Harris 230 Ore. 398 (1962) |

<p>| Property Law &amp; Insurance | Chapter 8 |
| Aircraft and ownership | Koppie v. US of America and Ligon “Air”, 1 F.3d 651 (1993) |
| Easements | U.S. v. Causby |
| Zoning laws | Griggs v. Allegheny County |
| Noise | City of Burbank v. Lockheed Air Terminal |
| Insurance | National Aviation v. City of Hayward |</p>
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<th>Business Entities</th>
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<td>Labor Issues</td>
<td>Chapter 9</td>
<td>EEOC v. Exxon Mobil Corporation</td>
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<td>Sheena Jones v. United Air Lines DOL (2014)</td>
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<td>Don Douglas v. Skywest Airlines, Inc. DOL (2009)</td>
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<td>Security Issues</td>
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<td>United States of America v. Abdulmutallab, U.S. District Court, E.D. Michigan, Southern Division, 16 September 2011</td>
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<td>Air Wisconsin Airlines Corp. v. Hoeper 571 U.S. ___ (2014)</td>
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<td>El-Al Israel Airlines Ltd. v. Tseng</td>
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<td>In re Korean Air Lines Disaster of September 1, 1983</td>
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<td>Brazilian federal court trial and US general aviation pilots: mid-air 2006</td>
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**Footnote:** Not all cases listed within the chapter topics will be examined. Time will be a constraint. Some students with specializations may wish to examine cases relevant to their job or interests. Other cases deemed important or precedent-setting will be selected by the instructor.
<table>
<thead>
<tr>
<th>Chapter 5 -related Case</th>
<th>Student</th>
<th>Date</th>
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<tr>
<td>ATA v. DOT and FAA 900 F.2d 369 (1990)</td>
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<td>Paralyzed Veterans of America v. DOT (2017)</td>
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<td>Thomas v. FAA 74 F.3d 888 (1996)</td>
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<td>Hart v. FAA and NTSB 535 F.2d 516 (1976)</td>
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<td>Dickson v. NTSB and FAA U.S. Cir. Ct. App. DC (2011)</td>
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<td>FAA v. NTSB and Merrell 190 F.3d 571 (1999)</td>
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<td>FAA v. NTSB 57 F.3d 1144, 313, DC Cir (1995)</td>
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<td>Singer v. FAA 208 F.3d 555 (2000)</td>
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<td>Lindsay v. NTSB 47 F.3d 1209 (1995)</td>
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<td>Borregard v. NTSB 46 F.3d 944 (1995)</td>
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<td>Manin v. NTSB and FAA US Cir Ct App DC (2011)</td>
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<td>FAA v. Andrew Dustman NTSB Order No. EA-5657 (2013)</td>
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<td>Mendenhall v. NTSB and FAA 93 F.3d 871 (1996)</td>
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FAA v. Austin and McCall NTSB Order No. EA-5583 (2011)


Trans States Airlines v. FAA No. 05-1963 US Ct App 8th Cir (2006)


Competitive Enterprise Institute v. DOT (2017)
1. **Citation:** United States v. Brassington; United States District Court for the District of New Jersey; August 1, 2011

2. **Facts:** Michael and Paul Brassington are brothers (respondents) who were business partners for an on-demand aviation company called Platinum Jet Management headquartered in Florida. Michael was the president and CEO while Paul was the treasurer of the organization. On February 2nd, 2005, a Bombardier Challenger CL-600 overran the runway at Teterboro Airport in Teterboro, NJ. Darby Aviation headquartered in Alabama was the part 135 certificate holder of the aircraft that was being operated by PJM. The Brassington brothers were not citizens of the United States and did not have economic authority to operate charter flights. PJM paid for the 135-certification fees to Darby Aviation, and began to market their own on-demand charter business. The brothers were charged with conspiracy for evading FAA regulations and misleading customers, brokers, and the government about the airworthiness of their operation. The brothers had different reasonings for filing a motion for acquittal, which were both denied by a District Judge for the New Jersey Federal Circuit.

3. **Legal Issues:** Was there mens rea behind the falsification of documents? Did the government violate the exclusionary rule by using evidence from an NTSB investigator and an NTSB report? Did Paul Brassington receive a fair trial being tried with his brother?

4. **Decision:** Yes, there was evidence of intentional falsification of documents pertaining to the airworthiness and operation of the CL-600. No, the government did not violate the exclusionary rule by using an NTSB investigator and report as evidence. Yes, Paul Brassington did receive a fair trial and was not forced to adopt the advice of his counsel.

5. **Reasoning/Rationale/Analysis:** The District Judge decided that there was evidence that Michael Brassington intentionally falsified flight logs of PJM, reporting that the flights were part 91 rather than part 135. Further, the judge claimed that the false flight logs were "reasonably foreseeable" to Michael Brassington, citing a witness who claimed that Michael Brassington assigned him to fly a part 135 operation when he knew he was only part 91 qualified. In addition, the District Judge determined that there was enough evidence to claim that Paul Brassington intentionally signed off falsified documents relating to flight logs. Further, the judge cited evidence that Paul Brassington regularly instructed flight crew to violate their duty rest requirements.
Saint Louis University

Parks College of Engineering, Aviation and Technology
Bachelor of Science in Aeronautics
Concentration in Aviation Management

November 7, 2019

Department of Aviation Science

Appendix C

Spring 2019 Aviation Management

Student Achievement Data – Course Assessment Evidence
Direct Measures Of Assessment
Direct Evidence

Sample Test #1

ASCI 1850 Safety Management Systems

Select the best answer and indicate on the answer sheet.

1. Is it possible to be perfectly safe?
   a. Yes
   b. No
2. According to the Supreme Court of the United States, being safe is the equivalent of being risk free.
   a. True
   b. False
3. Generally, organizational complexity increases the number of hazards to which individuals are exposed.
   a. True
   b. False
4. Closely coupled systems generally are less risky than loosely coupled systems.
   a. True
   b. False
5. The terms “hazards” and “risk” have the same meaning.
   a. True
   b. False
6. A hazard may be defined as a perceived condition.
   a. True
   b. False
7. According to the Federal Aviation Administration, hazards may lead to unplanned events.
   a. True
   b. False
8. Hazards are generally considered to be antecedents to accidents.
   a. True
   b. False
9. While hazards may lead to injury, they do not lead to illness.
   a. True
   b. False
10. It is possible to manage unrecognized hazards.
    a. True
    b. False
11. Hazard recognition is a subjective skill.
    a. True
    b. False
12. An individual’s ability to recognize hazards may change over time.
    a. True
    b. False
13. The use of perfectly airworthy but unapproved part would be considered a hazard.
    a. True
    b. False
14. Risk is the future impact of an unmitigated hazard.
    a. True
b. False

15. Risks associated with a given hazard are not always immediate.
   a. True
   b. False

16. Risk assessment is based on the sum of hazard severity and?
   a. Magnitude
   b. Extent
   c. Scope
   d. Chance

17. The “damage” associated with a given risk considers only tangible losses.
   a. True
   b. False

18. When considering hazard severity in a risk calculation, the SME must consider the impact on the organization.
   a. True
   b. False

19. When determining the “probability” associated with a hazard, the SME is considering?
   a. Whether a hazard will operationalize
   b. How often a hazard will operationalize
   c. Both above

20. The notion of risk will always include a level of uncertainty.
    a. True
    b. False

21. Hazards may present different levels of risk to different individuals.
    a. True
    b. False

22. The outcome of a risk assessment will generally include one of the following with the eexcept for?
    a. Acceptable
    b. Acceptable with mitigation
    c. Rejected
    d. Rejected with mitigation

23. Unacceptable risk may be mitigated.
    a. True
    b. False

24. Ideally, all risks are identified risk.
    a. True
    b. False

25. In complex systems, some risks are never identified.
    a. True
    b. False

26. Acceptable risks include unidentified risk.
    a. True
    b. False

27. Residual risk is the sum of?
    a. Unacceptable and acceptable risk
    b. Acceptable and unidentified risk
    c. Identified and acceptable risk
28. According to MIL-STD-882, critical risk is “worse” than catastrophic risk.
   a. True
   b. False

29. According to MIL-STD-882, a Category 1 risk is “worse” than a Category 2 risk.
   a. True
   b. False
   c. 

30. An unlikely hazard probability assumes an event is so unlikely, the SME assumes it will not occur in an individual’s career
   a. True
   b. False

31. According to MIL-STD-882, a “frequent” hazard probability suggests an event will occur?
   a. One failure in 100,000 events
   b. One failure in 50,000 events
   c. One failure in 25,000 events
   d. One failure in 10,000 events

32. The importance of Heinrich’s Triangle (1931) is in identifying?
   a. The precise ratio(s) of smaller occurrences to more significant occurrences
   b. The one major event emerging from smaller events
   c. Learning from smaller events to avoid larger events
1. How would/could absolute safety be achieved?

2. Who holds the final responsibility for safety in high consequence organizations using a Safety Management System?

3. Describe the term “unquestioned assumption” and why it is so influential in an SMS.

4. Differentiate between the terms “accountability” and “responsibility.”

5. What is the step immediately following a decision to accept a hazard within the SRM-SA process?

6. How does the SMS “ensure” (to the best of its ability) that a mitigation strategy does not introduce new hazards into the system?

7. Describe the notion of residual risk.

8. Policies drive procedures. Describe the logic behind this statement in an SMS.

9. Describe two situations within the SRM process in which a risk control would not be necessary.
10. What must occur for a System Assessment default to the Hazard Identification process?

11. Within SRM, which process most fully utilizes SMEs?

12. Define the term “vision statement.”

13. What is LOSA (define the acronym and a short description)?

14. What is FOQA (define the acronym and a short description)?

15. Generally, there are five options for dealing with risk. These options include? (list five)

16. Why is it important to develop and publicize an organization’s “safety values?”

17. What is ASAP (define the acronym and a short description)?

18. During the SA process, when is a corrective action necessary?

19. In order, list the “safety order of precedence.” (list four)

20. In the SRM-SA process, what occurs when System Assessment determines the system is operating as intended?

21. Describe why zero-risk is generally unachievable in high-consequence endeavors.
22. Describe the purpose of a “risk matrix.”

23. Describe why SRM is considered a “design process.”

24. Describe why SA is considered a “performance process.”

ace the correct letter (a – j) in the appropriate position in the SRM-SA diagram on the right. (20 pts.)

a. Corrective Action
b. Risk Analysis
c. System Description Analysis
d. System Assessment
e. Risk Assessment
f. Hazard Identification
g. Data Acquisition
h. Risk Control
i. Analysis
j. System Operation

Draw connecting lines with arrows indicating direction for all relationships in the SRM-SA diagram (10 pts.)
25. Briefly describe what occurs during “Corrective Action” in the SRM-SA process.


27. Briefly describe what occurs during “System Description Analysis” in the SRM-SA process.


31. Briefly describe what occurs during “Data Acquisition” in the SRM-SA process.

32. Briefly describe what occurs during “Risk Control” in the SRM-SA process.

33. Briefly describe what occurs during “Analysis” in the SRM-SA process.

34. Briefly describe what occurs during “System Operation” in the SRM-SA process.
1. Risk assessment generally involves a determination of both the __________________________ of a hazard manifestation.
   a. Severity and magnitude
   b. Frequency and likelihood
   c. Likelihood and severity
   d. None of the above

2. Of the following, which is the least desirable type of risk?
   a. Identified risks
   b. Unidentified risks
   c. Residual risks
   d. Unacceptable risks

3. The lack of exposure to risks is a legitimate definition of safety.
   a. True
   b. False

4. In complex systems, it is possible to identify all risks.
   a. True
   b. False

5. The Supreme Court of the United States recognizes (from case law) that being safe is the equivalent of being risk free.
   a. True
   b. False

6. Generally, the notion of being safe equates to an exercise in risk management.
   a. True
   b. False

7. Generally, risk management efforts/activities can lower the level of risk to zero.
   a. True
   b. False

8. Generally, the more complex a system, the more difficult it is to identify hazards.
   a. True
   b. False

9. Aviation will never be free from hazards and their associated risks.
   a. True
   b. False

10. Aviation is considered a complex system.
    a. True
    b. False

11. Aviation is generally considered a closely coupled system
    a. True
    b. False

12. Hazards may be real or perceived.
    a. True
    b. False

13. A dormant hazard is a hazard with a temporal constraint.
    a. True
    b. False

14. Generally, a hazard is a necessary antecedent to an incident or an accident.
    a. True
    b. False
15. A situation in which equipment is in danger of damage would not be considered a hazard and lasts there was a human injury potential.
   a. True
   b. False

16. In aviation, it is essential to look past the immediate conditions and project into the future.
   a. True
   b. False

17. Without the ability to recognize hazards, risks are unmanaged.
   a. True
   b. False

18. The ability to recognize a hazard in a complex system is an objective skill set.
   a. True
   b. False

19. The ability to recognize hazards may be increased with?
   a. Education
   b. Experience
   c. Individual state of mind
   d. Luck
   e. All the above

20. Latent hazards have the potential of being operationalized by known hazards.
   a. True
   b. False

21. The risk associated with a given hazard may be distant in both time and space.
   a. True
   b. False

22. Regulatory violations are generally considered to be risky
   a. True
   b. False

23. Risk are determined by evaluating __________ of a hazards probability and severity if operationalized.
   a. Product
   b. Sum
   c. Quotient
   d. Differences

24. The determination of risk associated with commercial flight should include aspects that pertain to the environment.
   a. True
   b. False

25. The determination of risk associated with commercial flight should include aspects that are intangible.
   a. True
   b. False

26. An event that has a very low probability may occur “frequently.”
   a. True
   b. False

27. An event that has a very high severity may result in very little damage.
   a. True
   b. False

28. _______________ should conduct risk assessments.
   a. Everyone
   b. SMEs
   c. Management
29. Decisions regarding the final acceptability of a given risk should be made by?
   a. Everyone
   b. SMEs
   c. Management

30. Ideally, all of risk within a complex system are identified.
   a. True
   b. False

31. Generally, some risks within complex systems will never be identified/discovered.
   a. True
   b. False

32. Of the following, which type of risk is generally considered the worst?
   a. Identified risk
   b. Mitigated risk
   c. Unknown risk
   d. Acceptable risk

33. Reactive risk identification is generally preferred over active risk identification.
   a. True
   b. False

34. The totality of risk after mitigation techniques have been employed describes?
   a. Total risk
   b. Unknown risk
   c. Acceptable risk
   d. Residual risk

35. According to MIL-STD 882 “negligible severity” occurs when losses exceed $100,000.
   a. True
   b. False

36. According to MIL-STD 882 a single death describes a ____________ severity
   a. Catastrophic
   b. Critical
   c. Marginal
   d. Negligible

37. Generally, it is best to describe hazard probabilities using?
   a. Descriptive/Qualitative terms
   b. Quantitative terms
   c. Both

38. Generally, determining hazard probability should be accomplished using ____________ information.
   a. Experimental
   b. Anecdotal
   c. Both

39. Generally, a hazard that is described as unlikely may be expected to occur in the lifecycle of the system.
   a. True
   b. False

40. A hazard that occurs occasionally is described by the US government with which the following probabilities.
   a. One failure and 1 billion exposures
   b. One failure in 500 million exposures
   c. One failure in 1 million exposures
   d. One failure in 500,000 exposures
   e. One failure in 100,000 exposures

41. Heinrichs Triangle/Pyramid uses ratios of approximately 1 – 3- 300.
   a. True
   b. False
42. Of the following, which describes a proactive means of hazard identification.
   a. Internal evaluation programs
   b. Official state investigation results of accidents and incidents
   c. LOSA programs
43. The compatibility of production and safety goals, the allocation of resources, operating pressures and the organizational
   safety culture describes?
   a. Organizational factors
   b. Work environment factors
   c. Regulatory oversight factors
   d. Defenses
44. Include the applicability and enforceability of regulations; the certification of equipment, personnel and procedures; and
   the adequacy of surveillance audits describes?
   a. Organizational factors
   b. Work environment factors
   c. Regulatory oversight factors
   d. Defenses
45. Including ambient noise and vibration, temperature, lighting and the availability of protective equipment and clothing
   describes?
   a. Organizational factors
   b. Work environment factors
   c. Regulatory oversight factors
   d. Defenses
46. Saint Louis University’s PEDALS program is most like?
   a. LOSA
   b. FOQA
   c. NOSS
   d. ASAP
47. Of the following operational issues, which describes the “historic” approach to hazard identification strategies.
   a. The Boeing 787 battery issues
   b. The Bell/Boeing Osprey early operational issues
   c. The De Havilland Comet - in-flight hull losses
   d. The UPS 747 lithium battery accident
48. of the following operational issues, which describes the “diagnostic” approach to hazard identification?
   a. The Boeing 787 battery issues
   b. The Bell/Boeing Osprey early operational issues
   c. The De Havilland Comet - in-flight hull losses
   d. The UPS 747 lithium battery accident
49. Of the following, which is the preferred method for eliminating/mitigating risk?
   a. Safety devices
   b. Warning devices
   c. Change in design
   d. Operator training
50. Of the following, which is the least-preferred method for eliminating/mitigating risk?
   a. Safety devices
   b. Warning devices
   c. Change in design
   d. Operator training
51. Risk assessment is generally accomplished by?
   a. Management
   b. SMEs
52. Risk analysis is generally accomplished by?
53. The point where limited decreases in risk can only be gained through major and unacceptable increases in investment describes?
   a. ALARP
   b. ASAP
   c. ATOS
   d. AMMT

54. Safety ___________ is the first step in developing and/or implementing a Safety Management System.
   a. Assurance
   b. Policy
   c. Promotion
   d. Risk management

55. A formal safety management system is a requirement for CFR 145 Repair Stations.
   a. True
   b. False

56. Organizational mission statements are generally aspirational.
   a. True
   b. False

   a. True
   b. False

58. Generally, an emergency response plan is documented within safety policy.
   a. True
   b. False

59. A Safety Management System is/are a management function.
   a. True
   b. False

60. When developing a safety management system, procedures drive the development of policy.
   a. True
   b. False

61. ICAO guidance suggest that safety policies may be standalone safety documents, or they may be integrated into existing guidance.
   a. True
   b. False

62. In a positive Safety Management System, safety policy should articulate behavioral expectations of all members of the organization.
   a. True
   b. False

63. Safety Risk Management is most closely associated with?
   a. A quality management system
   b. A system safety approach to risk
   c. Safety culture
   d. Just culture

64. Ideally, the safety risk management process is embedded in the processes used to provide a given product or service.
   a. True
   b. False

65. A program whereby operations personnel may submit reports that identify hazards is most closely associated with?
   a. FOQA
b. LOSA  
c. ASAP  
d. IEP  

66. A program whereby operations personnel are monitored by other qualified operations personnel while carrying out their assigned duties is most closely associated with?
   a. FOQA  
b. LOSA  
c. ASAP  
d. IEP  

67. A program whereby digital operational data is collected and analyzed is most closely associated with?
   a. FOQA  
b. LOSA  
c. ASAP  
d. IEP  

68. Risk analysis is generally conducted through a quantitative process.
   a. True  
b. False  

69. __________ monitors and measures risk controls
   a. Safety policy  
b. Safety risk management  
c. Safety assurance  
d. Safety promotion  

70. When risks require mitigation, that mitigation takes place as an aspect of
   a. Safety promotion  
b. Safety risk management  
c. Safety policy  
d. Safety assurance  

71. If the risk associated with a hazard is determined by management to be acceptable, it transitions to?
   a. Safety assurance  
b. Safety risk management  
c. Safety policy  
d. Safety promotion  

72. Risk controls are funneled through safety risk management to?
   a. Ensure risk controls remain effective  
b. Ensure risk controls have not introduced additional hazards to the system  

73. Safety assurance should be intrusive.
   a. True  
b. False  

74. When assessment reveals risk mitigation techniques remain effective, they are normally funneled through?
   a. Safety policy  
b. Safety risk management  
c. Safety assurance  
d. Safety promotion  

75. When assessment reveals unexpected consequences emerging from risk controls, they are generally funneled through?
   a. Safety policy  
b. Safety risk management  
c. Safety assurance  
d. Safety promotion  

76. When conformity with risk controls has been found to be deficient after initially being effective, they are generally funneled through?
   a. Safety policy
b. Safety risk management
c. Safety assurance
d. Safety promotion

77. The four components (pillars) of the SMS are not interdependent and function independently.
   a. True
   b. False

78. The extent to which the less powerful members of groups accept and expect that power is distributed unequally is generally defined as?
   a. Group Hierarchy
   b. Power Distance
   c. Uncertainty Avoidance
   d. Masculinity vs. femininity

79. Uncertainty Avoidance was one of four cultural traits identified by?
   a. Schein
   b. Hofstede
   c. Sabin
   d. Patankar

80. Of the following, which is not a component of organizational culture.
   a. Language systems
   b. Individual perceptions
   c. Beliefs
   d. Habits
   e. All the above contribute to organizational level culture

81. According to the FAA, mutual trust is an integral component of positive safety culture.
   a. True
   b. False

82. Which of the following researchers described safety culture as “the way we do things around here.”
   a. Hofstede
   b. Schein
   c. Pronovost
   d. Pigeon

83. Which of the following researchers described safety culture as a “dynamically-balanced adaptable state?”
   a. Schein and Hofstede
   b. Patankar and Sabin
   c. Hofstede and Sabin
   d. Patankar and Schein

84. Who made the statement “culture is one of the most precious things a company has so you must work harder on it than anything else.”
   a. Gerard Arpey, American Airlines
   b. Herb Kelleher, Southwest Airlines
   c. Bob Crandall, American Airlines
   d. David Barger, JetBlue

85. The foundation of the Safety Culture Pyramid is identified as?
   a. Values
   b. Strategies
   c. Safety climate
   d. Safety performance

86. Which layer of the Safety Culture Pyramid is influenced by the temporal conditions influencing an organization?
   a. Safety Values
   b. Safety Strategies
   c. Safety Climate
   d. Safety Performance
87. In terms of the dominant states of safety culture, which is generally considered the least desirable?
   a. Blame Culture
   b. Just Culture
   c. Reporting Culture
   d. Secretive Culture

88. In terms of the dominant states of safety culture, which is generally considered the most desirable?
   a. Blame Culture
   b. Just Culture
   c. Reporting Culture
   d. Secretive Culture

89. In a positive safety culture, safety strategies operationalize safety values.
   a. True
   b. False

90. Programs such as ASAP, FOQA, LOSA, etc. are examples of?
   a. Safety values
   b. Safety strategies
   c. Safety climate
   d. Safety performance

91. Organizations which question some of its assumptions are generally a characteristic of?
   a. Secretive cultures
   b. Blame cultures
   c. Reporting cultures
   d. Just cultures

92. A safety climate replete with defensive and adversarial individuals is described by a?
   a. Secretive culture
   b. Blame culture
   c. Reporting culture
   d. Just culture

93. A safety culture committed to fairness is generally described as a?
   a. Secretive culture
   b. Blame culture
   c. Reporting culture
   d. Just culture

94. Command and control safety strategies are most often found in?
   a. Secretive cultures
   b. Blame Cultures
   c. Reporting Cultures
   d. Just Cultures

95. “Culture is one of the most precious things a company has, so you must work harder on it than anything else” was a statement made by?
   a. Gene Aubrey
   b. Herb Kelleher
   c. Fred Harms
   d. Edward Sabin

96. Unquestioned assumptions may support a positive safety culture or may deter from a positive safety culture.
   a. True
   b. False

97. Attitudes and opinions surrounding organizational safety will generally align with the Safety __________ layer of the Safety Culture Pyramid.
   a. Values
b. Strategies

c. Climate

d. Performance

98. Unilateral self-protection is a key characteristic located in the values layer of a Safety Culture Pyramid in a ____________ Culture

a. Secretive

b. Blame

c. Reporting

d. Just

99. Mutual trust as an aspect of the attitudes and opinions found in a Safety Culture will generally exist in a ____________ Culture

a. Secretive

b. Blame

c. Reporting
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## FINAL RESULTS

### Airline Simulation Final Results

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<table>
<thead>
<tr>
<th>Aircraft Utilization</th>
<th>Passenger Load per SeatMile</th>
<th>Yield</th>
<th>Cumulative Dividends</th>
<th>Cumulative Advertising</th>
<th>Cumulative Promotion</th>
<th>Cumulative Social Perform</th>
<th>Cumulative Training</th>
<th>Cumulative Fare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncharted</td>
<td>99.0%</td>
<td>60.0%</td>
<td>$0.210</td>
<td>$2,000</td>
<td>$54,000</td>
<td>$24,000</td>
<td>$144,000</td>
<td>$36</td>
</tr>
<tr>
<td>EconAir</td>
<td>102.0%</td>
<td>69.0%</td>
<td>$0.325</td>
<td>$2,000</td>
<td>$45,500</td>
<td>$43,500</td>
<td>$58,500</td>
<td>$37</td>
</tr>
<tr>
<td>Patriot</td>
<td>100.0%</td>
<td>61.0%</td>
<td>$0.222</td>
<td>$2,000</td>
<td>$74,500</td>
<td>$94,500</td>
<td>$100,000</td>
<td>$37</td>
</tr>
<tr>
<td>Computer</td>
<td>99.0%</td>
<td>49.0%</td>
<td>$0.171</td>
<td>$2,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$0</td>
<td>$12,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discounted Fare</th>
<th>Max Daily Miles</th>
<th>Flown Daily Miles</th>
<th>Total Aircraft</th>
<th>Total Flights</th>
<th>Total Routes</th>
<th>Total Seats</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncharted</td>
<td>$35.10</td>
<td>10,200</td>
<td>10,140</td>
<td>5</td>
<td>25</td>
<td>8</td>
<td>144</td>
</tr>
<tr>
<td>EconAir</td>
<td>$34.10</td>
<td>9,200</td>
<td>9,400</td>
<td>5</td>
<td>22</td>
<td>6</td>
<td>106</td>
</tr>
<tr>
<td>Patriot</td>
<td>$36.10</td>
<td>10,200</td>
<td>10,200</td>
<td>5</td>
<td>24</td>
<td>10</td>
<td>144</td>
</tr>
<tr>
<td>Computer</td>
<td>$35.00</td>
<td>5,400</td>
<td>5,360</td>
<td>3</td>
<td>13</td>
<td>5</td>
<td>57</td>
</tr>
<tr>
<td>Aircraft Utilization</td>
<td></td>
<td>Decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERJ-135 100.00 %</td>
<td>1</td>
<td>Fares</td>
<td>Increased fares to $0.39 in an effort to increase CASM therefore increasing LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beechcraft 1900 98.89%</td>
<td>2</td>
<td>Marketing</td>
<td>Remained the same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Compensation</td>
<td>Increased Quality and Training Budget to $2000 in an effort to improve quality, wage remained the same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Fleet</td>
<td>Remained the same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Routes</td>
<td>See Above</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Corporate</td>
<td>Remained the same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Financing</td>
<td>$5000 stock sold, no new loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Special</td>
<td>Selected to tell the whole account of the incident</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**EVIDENCE EXAMPLE**

<table>
<thead>
<tr>
<th>Aircraft Utilization</th>
<th>Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERJ-135</td>
<td>Fares</td>
</tr>
<tr>
<td>100.0%</td>
<td>Increased fares to $0.39 in an effort to increase CASM therefore increasing LF</td>
</tr>
<tr>
<td>Beechcraft 1900</td>
<td>Marketing</td>
</tr>
<tr>
<td>98.89%</td>
<td>Remained the same</td>
</tr>
<tr>
<td></td>
<td>Compensation</td>
</tr>
<tr>
<td></td>
<td>Increased Quality and Training Budget to $2000 in an effort to improve quality, wage remained the same</td>
</tr>
<tr>
<td></td>
<td>Fleet</td>
</tr>
<tr>
<td></td>
<td>Remained the same</td>
</tr>
<tr>
<td></td>
<td>Routes</td>
</tr>
<tr>
<td></td>
<td>See Above</td>
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<tr>
<td></td>
<td>Corporate</td>
</tr>
<tr>
<td></td>
<td>Remained the same</td>
</tr>
<tr>
<td></td>
<td>Financing</td>
</tr>
<tr>
<td></td>
<td>$5000 stock sold, no new loans</td>
</tr>
<tr>
<td></td>
<td>Special</td>
</tr>
<tr>
<td></td>
<td>Selected to tell the whole account of the incident</td>
</tr>
</tbody>
</table>

9. To what extent did the simulation help sharpen your ability to analyze problems and recommend solutions?

   *i.e., data analysis, statistical, and decision-making skills ... to analyze and interpret various air transportation datasets as well as work well with aviation industry metrics, numbers and trends ... analytical thinking capabilities with the ability to analyze data and develop recommendations for action based on data analysis*

   It forced us to think critically and analyze problems, overall I would say my skills stayed the same but my perspective changed.

9. To what extent did the simulation help sharpen your ability to analyze problems and recommend solutions?

   *i.e., data analysis, statistical, and decision-making skills ... to analyze and interpret various air transportation datasets as well as work well with aviation industry metrics, numbers and trends ... analytical thinking capabilities with the ability to analyze data and develop recommendations for action based on data analysis*

   It helped my skills immensely.

9. To what extent did the simulation help sharpen your ability to analyze problems and recommend solutions?

   *i.e., data analysis, statistical, and decision-making skills ... to analyze and interpret various air transportation datasets as well as work well with aviation industry metrics, numbers and trends ... analytical thinking capabilities with the ability to analyze data and develop recommendations for action based on data analysis*

   I think it helped me realize that my problem has a solution and we just have to look for it. I know it is crazy but it is true.
**EVIDENCE SURVEY EXAMPLES**

**FSCI 4650 Economics of Air Transportation**

Student Survey  
Airline Simulation  
Spring 2018

This is the second time a pedagogical technique of this nature has been used in FSCI 465 Economics of Air Transportation. Your input helps to create a better experience for future participants.

My Airline:  
- Uncharted/Popooint  
- EconAir  
- Parfor Air  

1. The $40 fee:  
   a. ____ It's too high.  
   b. X It's about right.

**Payment method:**  
   c. X I'm okay with the payment method used this semester (online; direct; credit card)  
   d. ____ I would prefer to pay through the university as part of my books/registration/fee structure

2. The eleven quarters (decision periods):  
   a. ____ Just the right number of decision periods (2.75 years of operations)  
   b. X Would like to have more decision periods (up to 14 are possible)

3. The 9 special decisions (incidents):  
   a. ____ A waste of time  
   b. X Enjoyed doing them  
   c. ____ Too many  
   d. ____ Too few

**COMMENTS:**
4. The instructor's advisement:

☐ Our team did not utilize the instructor's "consulting services"
☐ Our team did utilize the instructor's "consulting services"

Comments relevant to Mr. Hoover's teaching and advisement:
Very helpful but would have been more helpful if the consultant personally walked us through his notes.

5. Teamwork/your team members:
Provide COMMENTS or statements to the following:

• My team members' ability to work independently (e.g., outside research) and in the group
  we had some miscommunication from quarters 4-6 but overall we worked well together.

• All my team members were team players committed to our company goals
  Yes, my partner was committed.

• All my team members demonstrated a strong work ethic with a positive attitude toward teamwork
  Yes, my partner had a positive attitude and put in the work necessary.

• All my team members demonstrated leadership capabilities with the ability to
  build strong consensus and achieve results through other team members
  there was only 2 of us so it was less leadership
  and more partnership between us.

• My team members: Excellent interpersonal skills and ability to work with teams
  Yes, we worked well together.
Overview

- Market Strategy
- Fleet & Routes Served
- Fuel & Maintenance
- Impact of Competition
- SWOT Analysis & Consulting
- Timeline
- Financial Analysis & End Results
- Future of Company
Hoover Consulting

Hoover LLC advised:
- Route restructuring specifically with ERJ 135 and CRJ 100
- Placing a sale on resort market to stimulate demand
- Reducing maintenance cost to help bottom line
- Hiring more sales staff to stimulate demand
- Increasing quality for better experience for passengers
Results/Metrics

- Other Interesting Statistics
  - Donated nearly $10,000 to a mechanics program at a local college.
  - Increased quarterly passenger traffic from 20,000 to over 60,000.
  - Flew over 500,000 total passengers in just under 3 years.
  - Average employee turnover was 6.1%.
  - Aircraft utilization was consistently 95% or higher.

End Results

- Highest stock price.
- 2nd in cash balance.
- Highest debt/equity ratio.
- Sole operator in 3/4 of the available international markets.
Pinpoint/Uncharted Airlines Management Audit Notes

1. Overview
   a. General – Uncharted airlines, formerly PinPoint, was created as a regular fare airline to provide air carrier services to a wide range of locations across the United States.

   b. Industry and Competition: The industry and market PinPoint/Uncharted targets is that of a regional fully combined with a regular carrier. Unfortunately the simulation did not allow for such specifics. Therefore we had two larger jets, an ERJ-135 and CRJ-100, operate from the larger destinations and used smaller Beechcraft to fly to smaller destinations. The competition faced were three other airlines, all having their own objectives and market targets.

2. Operations Highlights
   a. Product Enhancement – The first big product enhancement was the purchasing of the jets and their new and capacity and range which had to be accounted for in route structure. On the negative side, we overflew an overhaul of an engine. This cost us $5000 fine from the FAA. Although Quality and Training Budget was extremely low, $1000, for the first three quarters

   b. Fleet – The fleet Uncharted used was comprised of three Beechcraft 1900, one ERJ-135 (Q1), and one CRJ-100 (Q6). The fleet was used because it illustrated the type of air carrier that Uncharted wanted to be. With jets working the larger routes and hub routes, and the turboprops working the smaller routes in larger mass.

   c. Network and Routes – The network working out of what the simulation gave meant operating out of a single hub and evaluating the length of routes. A and R were the longest routes and used the jets for those. We also used the jets for F routes which covered foreign flights and needed a large capacity.

   d. Customer Service – The airline quality started out relatively low, at 71, but increased when the quality and training budget was increased up to $20,000, final rating was 99.

3. Product & Culture
   a. Mission Statement - “PinPoint Airlines’ goal is to provide great, affordable service to both large and small destinations while ensuring the highest possible rate of customer satisfaction. Our primary concern is with the people of the airline (employees and customers).”

      i. Our philosophy is that if you take care of your people, they will take care of the customers

   b. Our product was a relatively inexpensive, high-quality passenger airliner. We set out to be a good airline that valued its employees and customers over profits.

   c. Our Reliability was 96.73% on average, and our Quality was at 90.08% on average.

   d. We were commended for our employee compensation program (5% above prevailing wage and stock bonus)

   e. We accept nothing less than the highest level of maintenance for our fleet, ensuring that the aircraft were airworthy and worthy of our customers. (Level 3 Maintenance)

   f. Employee resignations - 63 total in 11 quarters

4. Operations and Cost Structure
   a. Routes – The route designation was made primarily based on how long the route was and what airframe would be best suited to fly that length with the most passengers possible. Measure of route success was the Load Factor for each route, with the average load factor being 55.5%

   b. Fleet Maintenance – Maintenance was highly valued throughout the simulation. Uncharted always used Level 3 maintenance, that being the best and most expensive maintenance possible.

   c. Aircraft Fuel – Aircraft fuel was given in three options, pay at the pump, on contract, or a mixture of both. These decisions were made mostly on what the results of the previous results. This is not the most accurate measurement, yet each quarter, the fuel costs only comprised about 15% of our total costs.
5. **Community Programs**
   a. Q3 - $2500 to Mechanics at local colleges
   b. Q4 - $2500 to Environmental Causes
   c. Q8 - $3000 to Environmental Causes
      i. We understand that our airline is a large polluter of the atmosphere, and we want to help offset damage caused by emissions

6. **Risk Factors Encountered**
   a. A risk was when we decided to accept the offer to merge with the major carrier, they may not have selected us to fly with them. We also have additional costs due to paint schemes and rebranding.
   b. Another small risk was when we acquired the auto-rental agency.
   c. We took a small risk when acquiring both our ERJ-135 and CRJ-100. We had to add routes, costs, and ensure that prices were such that the seats would be filled on these new aircraft.
      i. To fill these seats, we held sales in an attempt to “flood the market” and ensure our foothold in that market.

7. **Stock Performance**
   a. Stocks rose and fell with our decisions (mostly due to the “special”)
   b. Lowest stock price was $20.00 and that was at the beginning
   c. Q4, Q6, Q8, Q10 - losing stock quarter
   d. Stock Peak was $38.38 (Q11) and lowest was $20.00 (Q1)

8. **Selected Financial Data**
   a. Revenue - Most total revenue ($45,432,058.00)
   b. Stock and Stock Dividend - distributed stock dividends each quarter, as well as stock to our employees
   c. Profit - We only took a loss on one quarter (Q6). Our total Net Profit was $1,638,851.00
   d. Current Ratio -
   e. Loans - We payed off our loans in a timely manner in order to free up revenue for other purposes in the airline
   f. Yield - On average the yield was $0.35 per mile

9. **Analysis of Final Results**
   a. Our airline accomplished what we set out to do.
   b. Lessons Learned
      i. We proved that a “Good Guy” airline can survive and prosper in this industry
      ii. We should have gone to Hoover Consulting LLC. earlier and more often this semester
      iii. Promote from within the company before hiring from outside
      iv. Quality and Reliability are undervalued
      v. Sometimes choosing the not best option financially can turn out to be the best choice overall by far
Aviation Safety Programs and Data Collection

What is Safety?
- Reduce the risk of accidents and minimize the risk of damaging persons or property.
- Cornerstone of any company to ensure the safety of its goods or services.
- Maslow’s second most important need in the hierarchy.

Aviation Safety and why we care about it?
- Accidents in aviation are rare, but when they occur, the consequences are great.
- Aviation has a series of steps to prevent accidents as best as possible.
- Range from training, audits, and self reporting systems.

Impacts on Aviation Safety
- Regulations
- Programs
- Training

Regulations
- Annex 19 covers ICAO’s overarching view of safety.
  o Assist states in managing aviation risks, with their service providers.
- ICAO Integrated Safety Management Section (ISM)
  o “Dedicated to the development and implementation of safety management principles, policies and related activities.”
  o Safety Management Standards and Recommended Procedures (SARPs).
Programs

- Aviation Safety Reporting System
  - Voluntarily submitted incident report
- Line Operation Safety Audits
  - Highly trained observers fly along with a crew to evaluate procedures
- Flight Operational Quality Assurance
  - Collection and analysis of digital flight information

Training

- Safety Management Systems (SMS)
  - Training on how to integrate modern safety risk management and safety assurance concepts
  - Training on how to spot red flags and become part of the culture of safety in the organization

Future of Aviation Safety

- Joint Aviation Authorities, Europe and Federal Aviation Administration have backed several research programs
  - "Forensic" or "Prescriptive" approach is based on accident and incident investigation and analysis
  - "Diagnostic" approach is targeted at identifying accident pre-cursors within the larger collections of data
  - "Prognostic" or "Predictive" approach is aimed at discovering future hazards that could result as a consequence of future changes

Data Collection (outline)

- What is Data Collection?
- Collecting data to prevent accidents (proactive)
- Collecting data from accidents to improve safety (reactive)
- Difficulties in collecting data.
- Different ways of collecting data.

What is Data Collection:

- Establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies.
- Establish and maintain an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies obtained, including that from its incident reporting systems, and to determine any preventive actions required.

Collecting data from accidents to improve safety

- Air safety investigation agencies (fundamentally information processing organizations)
- Safety information comes through two main mechanisms. Firstly, through the in-depth investigation of individual accidents and serious incidents; and secondly, through the reporting of less serious incidents that do not warrant investigation. While these will always be a need for the thorough and detailed investigation of accidents and serious incidents, in a mature aviation safety system with a good reporting culture, the information received from the routine reporting of less serious events will be equally important. By collecting and analyzing incident data a State can shift the balance from reactive accident investigation to a more proactive approach.
Collecting data to prevent accidents (human factors)

- 1. Assess whether specific fatigue and sleepiness challenges existed in the operation of interest.
- 2. Learn whether the magnitude of any observed problems is significantly more pronounced than what would be expected.
- 3. Evaluate the degree to which flight duration and departure time interact to affect crew’s abilities to perform; and
- 4. Ascertain whether the scheduling of flights (i.e., daytime versus nighttime departures) would be expected to exert substantial effects on crew alertness and behavior.

Difficulties in collecting data

- It is challenging to collect data during aviation operations because there is little flexibility in terms of experimental control and measurement strategies. Due to the cost and complexity of collecting data in operational environments, very few studies have been published to date. Thus, it is very difficult to establish the degree to which flight operations may exacerbate the fatigue-related challenges that already have been identified in both laboratory and other 24/7 operational environments.

Different ways of collecting data

- Due to the challenges in collecting data mentioned previously, it is necessary to develop scientifically-based data collection protocols that measure a common set of SFs.
- Data can be collected in many ways. These include subjective surveys, such as daily logs; including sleep logs and work schedules, as well as objective data collection tools such as actigraphy and objective performance tests.

Sources

# Grading Rubric: Small Group Presentation

**Group # 1 - Presentation Title: U.S. Airport Ground Security**  
**Date:** 04/17/2019

<table>
<thead>
<tr>
<th></th>
<th>22 to 30 points</th>
<th>15 to 21 points</th>
<th>8 to 14 points</th>
<th>0 to 7 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presentation Organization and Mechanics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>30 / 30</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The presentation was well organized, well prepared &amp; easy to follow.</td>
<td>The presentation had organizing ideas but could have been much stronger with better preparation.</td>
<td>There were minimal signs of organization or preparation.</td>
<td>Presentation lacked organization &amp; had little evidence of preparation.</td>
<td></td>
</tr>
<tr>
<td>No misspellings (visual) or grammatical (oral) errors.</td>
<td>Presentation has no more than 2 misspellings and/or grammatical errors.</td>
<td>Presentation has up to 3 errors; misspellings and/or grammatical.</td>
<td>Spelling (visual) and/or grammatical (oral) errors; 4 or more.</td>
<td></td>
</tr>
<tr>
<td>Presented in logical, interesting sequence. Very easy to follow.</td>
<td>Logical sequence; somewhat interesting; can be followed.</td>
<td>Difficult to follow; team members jump around information.</td>
<td>No sequence of information.</td>
<td></td>
</tr>
<tr>
<td><strong>Presentation Delivery</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>30 / 30</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audience interests are piqued &amp; well considered.</td>
<td>Audience’s knowledge level &amp; interests have been considered.</td>
<td>Opportunities for adjusting the presentation level for the audience have been missed.</td>
<td>Knowledge level of the audience has not been considered.</td>
<td></td>
</tr>
<tr>
<td>Very professional.</td>
<td>Occasionally confident with their presentation; however, the presentation was not as engaging as it could have been.</td>
<td>Lacks professionalism.</td>
<td>Not professional.</td>
<td></td>
</tr>
<tr>
<td>Very confident in delivery &amp; excellent in engaging audience.</td>
<td>Transitions fairly organized.</td>
<td>Not consistent with the level of confidence/preparedness, but had one or two strong moments.</td>
<td>Unconfident &amp; demonstrated little evidence of planning prior to presentation.</td>
<td></td>
</tr>
<tr>
<td>Preparation is very evident.</td>
<td>Transitions are organized &amp; seamless.</td>
<td>Transitions are disorganized.</td>
<td>Shows little interest in conveying information to others.</td>
<td></td>
</tr>
<tr>
<td><strong>Content and Application of Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>30 / 30</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presents major points.</td>
<td>Presents most of the major points.</td>
<td>Presents some of the major points but not all.</td>
<td>Oversimplifies or fails to present the major points.</td>
<td></td>
</tr>
<tr>
<td>States the problem clearly &amp; identifies underlying issues.</td>
<td>Adequately defines the problem. Selects component points; does not recognize some priorities among details in relation to given question.</td>
<td>Fails to define the problem adequately. Some ambiguity in description of issue.</td>
<td>Problem is not well identified. Identifies inappropriate main issue; describes issue inaccurately; loses focus on given point.</td>
<td></td>
</tr>
<tr>
<td>Describes it accurately; selects key component points; recognizes priorities; picks up unstated implications.</td>
<td>Appropriately assesses conclusion or hypothesis in terms of its reliability and its need for further evidence, assesses implications of the conclusion within a larger context.</td>
<td>Indicates weak but relevant reflection on strength &amp; implications of conclusion or hypothesis.</td>
<td>Fails to assess conclusion, raises no appropriate additional questions, and fails to place the argument within a relevant larger context.</td>
<td></td>
</tr>
<tr>
<td><strong>Evidence of Effort</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Excellent research.</strong></td>
<td>Good research.</td>
<td>Little or very weak research effort.</td>
<td>Little evidence of preparation.</td>
<td></td>
</tr>
<tr>
<td><strong>Evidence of Effort</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td>Well-prepared and executed presentation. Presenters were able to competently answer questions from the audience.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions:</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
1. In which century did Hugo Grotius author the principle *Mare Liberum*, otherwise known as the "freedom of the seas?"
   
   A) 1600s.  
   B) 1800s.  
   C) 1900s.

2. Briefly describe what Hugo Grotius meant by the term "freedom of the seas."
   "Being able to sail anywhere across the ocean, that no country could claim sovereignty over the open ocean."

3. At the end of World War I, the allied and associated nations formed the International Commissioner for Air Navigation, and enacted the International Air Navigation Code, which is also referred to as which convention?
   
   A) The Chicago Convention.  
   B) The Paris Convention.  
   C) The Warsaw Convention.

4. Which of the following aspects of international aviation was NOT regulated by the International Commission for Air Navigation as determined by the International Air Navigation Code?
   
   A) Each nation's registry of aircraft.  
   B) Flight of aircraft from one country across the territory of another country.  
   C) Issuance of airworthiness certificates.  
   D) International navigation rules.  
   E) Allows the transportation of arms and explosives on aircraft of one country flying across the territory of a second country without the second country's permission.  
   F) None of the above.

5. True or False: Article 1 of the International Air Navigation Code recognized that none of the High Contracting Parties has complete and exclusive sovereignty over the airspace above its territory or the territorial waters adjacent thereto. Place an "X" in the box next to your answer

   [ ] TRUE  [X] FALSE
6. Which of the following was NOT a result of the Warsaw Convention of 1929?

A. The convention defined that the carrier was NOT liable in case of loss, damage, injury or death due to an accident on an international flight.
B. The convention spelled out procedures for claims and restitution against carriers.
C. The convention laid down the requirements for format and content of air transport documents, passenger tickets, luggage tickets and air consignment notes.

7. Towards the end of World War II in 1944, representatives of several of the allied nations held the Convention on International Civil Aviation, which is also referred to as:

the Chicago Convention.

8. Briefly describe the aim or the main purpose of the Convention on International Civil Aviation.

To foster the development of civil aviation in a safe and orderly manner, by establishing standards across many aspects of international aviation.

9. Which of the following are part of the international standards and practices that Contracting States of the Convention on International Civil Aviation agreed to comply with to the highest degree of uniformity?

A. Communication and navigation aid and support.
B. Rules of the air and air traffic control practices.
C. Licensing of operations and mechanical personnel.
D. Airworthiness of aircraft.
E. Aeronautical maps and charts.
F. All of the above.

10. What international organization was developed by the Convention on International Civil Aviation?

A. The International Air Transport Association (IATA).
B. The International Airline Pilots Association (IALPA).
C. The International Civil Aviation Organization (ICAO).

11. Which of the following are part of ICAO’s Strategic Objectives for the 2017-2019 Triennium?

A. Safety.
B. Air Navigation Capacity and Efficiency.
C. Security and Facilitation.
D. Economic Development of Air Transport.
E. Environmental Protection.
F. All of the above.
12. At the Chicago Convention, delegates of the States acknowledged which of the following Freedoms of the Air that were previously agreed to with the International Air Transit Services Agreement?

A. Freedoms of the Air 1 and 2.
B. Freedoms of the Air 1 through 5.
C. Freedoms of the Air 3, 4 and 5.

13. At the Chicago Convention, delegates of the States ratified which of the following Freedoms of the Air?

A. Freedoms of the Air 1 and 2.
B. Freedoms of the Air 1 through 5.
C. Freedoms of the Air 3, 4 and 5.

14. Why are the 6th through 9th Freedoms of the Air considered as “so-called” freedom? Because they are not ratified by an IATA convention and must be set up between two or more countries as part of bilateral or multilateral air service agreements.

15. Refer to Figure 1. The Freedom of the Air depicted in Figure 1 is the:

A. Freedom of the Air #1.
B. Freedom of the Air #3.
C. Freedom of the Air #7.

![Figure 1](Image)

16. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is the:

A. Freedom of the Air #4.
B. Freedom of the Air #6.
C. Freedom of the Air #8.

![Figure 2](Image)

17. Refer to Figure 2. The Freedom of the Air depicted in Figure 2 is also known as:

A. Consecutive cabotage.
B. Stand-alone cabotage.
C. Coupled cabotage.
18. True or False. The Five Freedoms Agreement is applicable to international civil aircraft engaged in scheduled air services.

☐ TRUE    ☐ FALSE

19. The 9th Freedom of the Air is also referred to as:
   A. Consecutive cabotage.
   ☐ B. Stand-alone cabotage.
   C. Coupled cabotage.

20. The following statement – “Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with” – defines which of the following?

   ☐ A. An ICAO Standard.
   B. An ICAO Recommended Practice.
   C. Both of the above.

21. The following statement – “Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States should endeavor to conform in accordance with” – defines which of the following?

   A. An ICAO Standard.
   ☐ B. An ICAO Recommended Practice.
   C. Both of the above.

22. Which of the following ICAO Annexes contains the Standards and Recommended Practices (SARPs) that assures that pilots and other air and ground personnel have the competence, skill and training necessary to guarantee efficient and safe operations?

   A. Annex 1 – Personnel Licensing.
   ☐ C. Annex 9 – Facilitation.

23. Which of the following ICAO Annexes contains the SARPs which require that the operation of aircraft engaged in international air transportation must be standardized as much as possible to ensure the highest levels of safety and efficiency?

   A. Annex 3 - Meteorological Service for International Air Navigation.
   ☐ B. Annex 6 – Operation of Aircraft.
   C. Annex 11 – Air Traffic Services.
24. Which of the following ICAO Annexes contains the SARPs which require that all aircraft must be registered and contain a certificate of registration identifying its nationality along with its common registration mark?

B. Annex 6 – Operation of Aircraft.
C. Annex 7 – Aircraft Nationality and Registration Marks.

25. Which of the following ICAO Annexes contains the SARPs which are used so that to assure safety, all aircraft must be designed, constructed and operated in compliance with the airworthiness requirements of the State of Registry of the aircraft?

A. Annex 6 – Operation of Aircraft.
B. Annex 8 – Airworthiness of Aircraft.
C. Annex 11 – Air Traffic Services.

26. Which of the following ICAO Annexes contains the SARPs which were put in place because air traffic is projected to grow rapidly over the next couple of decades and safety risks of these increased operations must be assessed?

A. Annex 19 – Safety Management.
B. Annex 16 - Environmental Protection.

27. Within the organization of the ICAO, the 192-member States comprise which of the following?

A. The Assembly.
B. The Council.
C. The Secretariat.

28. At the Chicago Convention, a Multilateral Transport Agreement was rejected by a majority of the states and all that was left to work out in terms of commercial freedoms were negotiations between two countries, known as a:

A. Multi-lateral Air Services Agreement.
B. Bilateral Air Services Agreement.
C. Pluralateral Air Services Agreement.

29. Which of the following type certificate is used under 14 CFR Part 23 for an aircraft having a seating configuration, excluding pilot seats, of nine or less, a maximum certificated takeoff weight of 12,500 or less, and intended for non-acrobatic operation?

A. Normal category.
B. Utility category.
C. Limited category.
30. Which category of special airworthiness certificate is issued to operate aircraft that are limited to special purposes identified in the applicable type design, such as aircraft used for agricultural purposes?

A. Limited category.
B. Restricted category.
C. Experimental category.

31. The four-stroke cycle used by aircraft reciprocating engines is referred to as the:

A. Brayton Cycle.
B. Otto Cycle.
C. Carnot Cycle.

32. The process by which the typical jet engine operates is referred to as the:

A. Brayton Cycle.
B. Otto Cycle.
C. Carnot Cycle.

33. Refer to Figure 3. Typical classification of piston engines is done by noting how the cylinders are arranged around the engine's crankshaft. The type of engine depicted in Figure 3 is classified as a:

A. Horizontally opposed engine.
B. In-line engine.
C. Radial engine.

Figure 3

34. The ICAO statement, "The country where the manufacturer who developed the aircraft design is located" refers to:

A. The State of Manufacture.
B. The State of Registration.

35. The ICAO statement, "The country in which the owner of the aircraft has that aircraft registered" refers to:

A. The State of Registration.
B. The State of Manufacture.
36. The FAA term "When an aircraft or one of its component parts meets its type design and is in a condition for safe operation" is used to define:

A. The type certification process.
B. The airworthiness of an aircraft.
C. The aircraft's Approved Maintenance Schedule.

37. The ICAO SARPs allow the civil aviation authority (CAA) of a state to approve a type certificate for an aircraft and subsequently issue an airworthiness certificate for the aircraft. In the U.S., the CAA is referred to as:

A. The Department of Homeland Security (DHS).
B. The Federal Aviation Administration (FAA).
C. The Department of Transportation (DOT).

38. The ICAO statement "All the processes ensuring that, at any time in its life, an airplane complies with the technical conditions fixed to the issue of its Certificate of Airworthiness and is condition for safe operation" refers to the subject of:

A. Air Operator Certificate (AOC) holders.
B. Approved Maintenance and Repair Organizations (MROs).
C. Continued Airworthiness of an aircraft.

39. ICAO states that aircraft maintenance is to be conducted by whom?

A licensed AMTCE.

40. True or false. Refer to Figure 4. The certificate in Figure 4 is required to be in the aircraft when the aircraft is being operated.

☑ TRUE ☐ FALSE

Figure 4
EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The case study at the end of Chapter 1 details the shooting down of a civil aircraft, KAL 007, by the Soviet Union on Sept. 1, 1983. The case states that the “ICAO found itself in the middle of a heated debate between rival States.” Describe what this debate was about.

2. The case study at the end of Chapter 2 details the accident of China Airlines Flight 611 (CI 611). The Boeing 747 aircraft had encountered a tail strike. The aircraft was not repaired in accordance with the Boeing Structural Repair Manual. The incorrect repair placed a doubler over the damaged skin, which prevented subsequent inspections of the damaged skin. The scratches on the tail skin eventually led to metal fatigue in the skin, which turned into cracks and caused the tail to separate the aircraft. This resulted in a loss of cabin pressure and shortly after the rest of the aircraft came apart. Who ultimately bears the responsibility for this tragic event?

Place an “X” next to the name(s) of the organization or person that you feel is responsible for the accident.

ICAO
Chinese Civil Aviation Authority X
Boeing Aircraft Company
China Airlines X
The Aircraft Maintenance Engineer who performed the repair X
1. In accordance with ICAO's Annex 1, Personnel Licensing, which of the following are required to be eligible for and/or to hold a certificate?
   A. Minimum age is reached.
   B. Minimum amount of experience met.
   C. Any medical requirement met.
   D. The required amount of operational experience is met.
   E. Competency is proven.
   F. Currency requirements are met.
   G. All of the above.

2. Who determines whether a pilot needs to be type rated in a particular aircraft?
   A. The State Civil Aviation Authority (CAA).
   B. ICAO.
   C. The International Air Transport Association (IATA).

3. What is meant by a pilot being "type rated" in an aircraft?
   A. The pilot has received the minimum amount of training required for the certificate or license required to fly that class of aircraft.
   B. The pilot has received additional training in that class of aircraft that is considered to be beyond the scope of what is necessary to obtain a certificate or license required to fly that class of aircraft.

4. True or False. ICAO requires a pilot to be type rated to legally fly any aircraft over 12,500 lbs. Maximum gross Takeoff weight (MGTOW) and/or is equipped with a turbojet powerplant. Place an "X" in the box next to your answer.
   ☑ TRUE ☐ FALSE

5. True or False. ICAO considers the medical standards that a person must meet if required for a certificate or license to be a maximum set of standards to be met. Place an "X" in the box next to your answer.
   ☐ TRUE ☑ FALSE
6. An airline transport pilot is required to obtain which class of medical certificate?
   A. Class I.
   B. Class II.
   C. Class III.

7. A private pilot is required to obtain which class of medical certificate?
   A. Class I.
   B. Class II.
   C. Class III.  
   → in ppts its says class III, book class II

8. Which Part of ICAO Annex 6 Operations of Aircraft is applicable to international general aviation airplanes?
   A. Part 1.
   B. Part 2.
   C. Part 3.

9. Which Part of ICAO Annex 6 Operations of Aircraft is applicable to international commercial and general aviation helicopters?
   A. Part 3.
   B. Part 4.
   C. Part 5.

10. How does ICAO define “business aviation?”
    Business Aviation - any flight conducted for corporate travel purposes in which aircraft may be under full ownership, fractional ownership, or charter.

11. What term is used by ICAO to describe an airline that charges fares, or carries persons for hire as a business with the intent of earning profits?
    A. Legacy air carrier.
    B. Regional air carrier.
    C. Commercial air carrier.

12. A major airline that earns at least $1,000,000,001+ in annual operating revenue would be a part of which basic air carrier grouping?
    A. I
    B. II.
    C. III.
13. Briefly describe how the airline performance indicator known as “available seat miles” is calculated.

\[ \text{ASM} = \text{capacity} \times \text{of seats} \times \text{total miles of flight} \]

14. The airline performance indicator that measures the percentage of available seating capacity that is filled with passengers in an aircraft is referred to as the:

A. Breakeven load factor.
B. Load factor.
C. Passenger revenue mile.

15. A flight generates a revenue of $40,000. The distance of the flight leg is 1,500 miles. There are 300 passengers on the flight. What is the passenger yield (rounded to the third digit)?

\[ \text{Passenger Yield} = \frac{R_p}{(P^*D_p)} = \frac{40,000}{(300)(1500)} = \frac{40,000}{450,000} = 0.089 \]

Answer: 0.089%

16. Which of the following ICAO annexes details the SARPs used for aircraft to transport dangerous goods by air?

A. Annex 18.
B. Annex 20.
C. Annex 24.

17. ICAO's Global Aviation Safety Plan (GASP) requires which of the following for contracting States?

- A. Implement an effective safety oversight system.
- B. Implement a State safety program (SSP).
- C. Development of advanced safety oversight system which includes predictive risk management.
- D. All of the above.

18. Which of the ICAO Safety Performance Enablers refers to “the uniform and consistent implementation of ICAO provisions”?

A. Resources.
B. Standardization.
C. Collaboration.
19. Which of the ICAO Safety Performance Enablers refers to “a lack of an adequate safety oversight organization and infrastructure within the civil aviation authority (CAA)?”

A. Resources.
B. Standardization.
C. Safety Information Exchange.

20. Which of the following State Safety Performance Indicators “enables States and regions to review the safety performance of their systems and to take action, if needed, to address discrepancies between existing and desired performance levels?”

A. Performance-based approach.
B. Phased approach to implementation.

21. Which of the following concepts complements the traditional approach to safety oversight, which is primarily focused on prescriptive regulatory compliance, with a performance-based approach that defines actual safety performance levels within an SSP framework?

A. Required level of safety performance (RLoSP).
B. Acceptable level of safety performance (ALoSP).

22. Which of the following manuals is used to provide practical guidance material to assist those responsible for air navigation services management in improving the efficiency and cost-effectiveness of the services and to assist in the sustainable development of air navigation infrastructure?


23. Which of the following is considered to be “is the global voice of air traffic management (ATM) worldwide?”

A. The Civil Air Navigation Services Organization (CANSO).
B. Next Generation Air Transportation System (NextGen).
C. Single European Sky ATM Research (SESAR).

24. Refer to Figure 1. Which type of radar surveillance system is being depicted in Figure 1?

A. Primary surveillance radar (PSR).
B. Secondary surveillance radar (SSR).

![Figure 1]
25. Which volume of ICAO Annex 14 contains the SARP used for the design and construction of international airports?

A. Volume I.  
B. Volume II.  
C. Volume III.  
D. All of the above.

26. St. Louis Lambert International Airport can have both an ICAO airport identifier or an IATA airport identifier. The identifier “KSTL” is which type of airport identifier?

Answer: ICAO

27. Which of the following is considered to be “the only global trade representative of the world’s airports?”

A. Airport Purchasing Group (APG).  
B. American Association of Airport Executives (AAAE).  
C. Airport Council International (ACI).

28. The area of an airport that includes parking lots, fuel tank farms and access roads is known as:

A. Airside area.  
B. Landslide area.

29. Which of the following types of airport revenue includes airline terminal space rentals, airline landing fees, and usage fees for terminals, gates, services and passenger counts?

A. Aeronautical revenue.  
B. Non-aeronautical revenue.

30. Refer to Figure 2. During a ramp inspection, a person found the items depicted in Figure 2. The items found are commonly referred to as:

Figure 2
EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The Chapter 4 case study provides information about the disappearance of Malaysia Airlines Flight 370. Only small parts of the aircraft have been found to date. Make an informed guess about what might have happened: massive emergency, such as an onboard fire; incapacitated crew due to a loss of air pressure; hijacking; the pilots deliberately diverted the aircraft.

2. The Chapter 5 case study discusses an overrun of a runway by Southwest Airlines Flight 1248. The case study concludes with the development of the runway end safety area (RESA). Discuss who should be required to pay for such an upgrade to an airport; the airport or the users (air carriers) taking off from and landing at such an airport.

In this country, we have several airports that are at risk of danger due to short runways. Some, like LGA, are handicapped by their geologies surrounding while others simply have shorter runways. My answer to this question depends on the desires of the interested parties. Off the reason is to maintain the safety of the passengers; then it is the professional duty of the airport to do that. However, if passengers want longer runways so that they can get to further destinations then they should be responsible for paying for expansion.
Place circle your answer, write your essay answer in the space provided, place an X in the box to denote “true” or “false,” and write your answer on the line provided.

1. Which of the ICAO Annexes contains the SARPs used for aircraft incident and accident investigation?
   A. Annex 7.
   C. Annex 12.
   D. Annex 27.

2. Which of the ICAO Annexes contains the SARPs used for search and rescue operations?
   A. Annex 12.
   C. Annex 18.
   D. Annex 19.

3. Which of the following documents is the ICAO’s top strategic safety document?
   A. The Trip Strategy Compendium.
   D. The Universal Safety Oversight Audit Program.

4. By which year does ICAO expect all contracting states to have effectively implemented a state safety plan?
   A. 2019.
   B. 2022.
   C. 2030.
   D. 2050.

5. Over the last 10 years ICAO reports that commercial aircraft accident rates have generally been:
   A. Increasing.
   B. Remaining flat.
   C. Decreasing.
   D. Decreasing for the first five years and increasing after that.
6. ICAO defines "an occurrence which includes the loss of life or the loss of the aircraft" as an:

A. Accident.
B. Incident.
C. Both above.
D. None of the above.

7. ICAO defines "an occurrence, other than an accident, associated with the operation of the aircraft which affects or could affect the safe operation of the aircraft" as an:

A. Accident.
B. Incident.
C. Neither of the above.
D. Both above.

8. Refer to Figure 1. Based on the figure, what is the primary cause of aircraft accidents?

A. Technical causes.
B. Human causes.
C. Both above.
D. Neither of the above.

![Figure 1](image-url)
9. True or False. Refer to Figure 2. The mechanical failure which causes the greatest number of accidents coupled with the highest % of total for all primary causes in the aircraft electrical systems/instruments.

☐ True  ☐ False

![Graph showing the percentage of total causes and the number of accidents for various systems.]

Figure 2

10. ICAO’s Annex on Search and Rescue is supplemented by which of the following?

☐ B. The Regional Air Navigation Agreement.

11. True or False. The authorities of a Contracting State who wish their search and rescue units to enter the territory of another Contracting State for search and rescue purposes shall transmit a request, giving full details of the projected mission and the need for it, to the rescue coordination center of the State concerned or to such other authority as has been designated by that State.

☐ True  ☐ False

12. Which of the following air-ground signals by aircraft mean the ground signals have been understood during daylight hours?

☐ A. By rocking the aircraft’s wings.
☐ B. By flashing on and off twice the landing lights, and if not so equipped, by switching on and off twice its navigation lights.
☐ C. By performing a high-speed, low pass over the survivors.
☐ D. Neither of the above.
13. Which of the following ground-air visual messages by survivors means that the survivors "require medical assistance?"

A. N.
B. Y.
C. X.
D. Z.

14. Which of the following ground-air visual signals by rescue units means that "information received that aircraft is in this direction?"

A. XX.
B. → →.
C. LL.
D. ///.

15. Which of the following ground-air visual signals by rescue units means that "we are not able to continue; returning to base?"

A. XX.
B. → →.
C. LL.
D. ↔ ↔.

16. ICAO defines "Human Factors" as being:

A. About people in their living and working situations.
B. About people and their relationship with machines.
C. About people and their relationship with procedures.
D. About people and their relationship with the environment about them.
E. About people and their relationships with other people (at work).
F. All of the above.

17. True or False. The safety output is best illustrated by past accidents where Human Factors have been either the cause of the accident or a contributory element to it.

[ ] True  [ ] False
18. The efficiency output of a flight crew can be affected by levels of motivation, flight deck design, crew training, supervision, adherence to standard operating procedures and crew resource management.

☐ True  ☐ False

19. Refer to Figure 3. What is the name of theoretical model that illustrates how accidents occur in organizations?

Swiss Cheese Model

Figure 3

20. Refer to Figure 3. In this theoretical model, the proximal causes of an accident such as the pilot getting distracted are referred to as:

☐ A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.

21. In the theoretical model shown in Figure 3, the proximal causes of an accident such as the pilot getting distracted are referred to as:

☐ A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.
22. In the theoretical model shown in Figure 3, elements in the organization which contributed to the accident such as senior managers' purchasing decisions, line management pressures, unsafe climate and culture coupled with fatigue and confusing warnings are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.

23. In the theoretical model shown in Figure 3, the alignment of all necessary windows of opportunity at all levels in the organization, thus leading to the occurrence of an accident is called the:

causation chain.

24. Which type of training is used by flight crew (and others in a safety critical role within aviation) to enhance the safety of every flight by promoting the use of non-technical skills, like teamwork and decision making to ensure sound situational awareness and problem solving?

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

25. Which of the following safety concepts uses the Line Operations Safety Audit (LOSA) as an important way to help develop countermeasures to operational errors?

A. Crew Resource Management.
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State safety program.

26. Which of the following safety concepts uses flight simulators to take pilots through situations that could occur in flight?

A. Crew resource management (CRM).
B. Line oriented flight training.
C. Threat and error management (TEM).
D. State Safety Program.
27. The safety concept that requires the organization itself to examine its operations and the decisions around those operations, allows an organization to adapt to change, increasing complexity, and limited resources, and promoting the continuous improvement of safety through specific methods to predict hazards from employee reports and data collection is referred to as:

Safety Management Systems

28. The ICAO Annex which contains the SARPs outlining the safety management steps that contracting States must follow is:

A. Annex 15.
B. Annex 19.
C. Annex 7.
D. Annex 25.

29. In accordance with ICAO’s safety management annex it the foundation of a proactive safety strategy based on the implementation of a:

A. System of regulations enacted by the Civil Aviation Authority of each contracting state.
B. A State Safety Program (SSP).
C. Threat and error management (TEM) system.
D. All of the above.

30. Which of the following is a web-based system on the ICAO Secure Portal linking a collection of safety and efficiency datasets and web applications to perform online safety, efficiency and risk analysis?

A. The integrated Safety Trend Analysis and Reporting System (iSTARS).
C. The Line operated safety audit (LOSA).
D. The Universal Safety Oversight Audit Program (USOAP).

31. Which ICAO program was initially launched in January 1999, in response to widespread concerns about the adequacy of aviation safety oversight around the world?

A. The Global Aviation Safety Plan (GASP).
B. The State Safety Program (SSP).
C. The Universal Safety Oversight Audit Program (USOAP).
D. The line operated safety audit (LOSA).
32. The International Air Transport Association (IATA) provides members and other eligible industry members with information and acts as a gateway to the multiple sources and areas of aircraft operation and now includes information from over 470 different organizations?

A. The Universal Safety Oversight Audit Program (USOAP).
B. The Global Aviation Data Management (GADM) program.
C. Integrated Management Solutions (IMX).

33. True or False. The Universal Safety Audit Program (USOAP) audits focuses on a State's capability in providing safety oversight by assessing whether the State has effectively and consistently implemented the critical elements (CEs) of a safety oversight system.

☐ True  ☐ False

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The case study of Chapter 8 describes the Swissair Flight 111 (SR 111) flight that left the U.S. headed to Geneva, Switzerland. The SR 111 crew declared an emergency and shortly after that the aircraft crashed into the territorial waters of Canada. Briefly describe the various stakeholders who might have an interest in the investigation of this accident which stakeholder ICAO requires should lead the investigation.

State of occurrence: Canada, primary investigator.
State of registry: Whatever country it is registered by.
State of operator: Switzerland
State of manufacture: The home country of the aircraft manufacturer is involved, presumably the US/Fra.
State of design: Country that designed the aircraft
Other stakeholders: Manufacturer, airline, country of origin and destination.
1. Any aircraft intended to be flown without a pilot on board is referred to in the Convention on International Civil Aviation (Doc 7300), signed at Chicago on December 7, 1944 and amended by the ICAO Assembly as a:
   A. Piloted aircraft.
   B. Drone.
   C. Remotely piloted aircraft system (RPAS).

2. Which of the following terms describes the condition when an RPAS can operate along with some level of adaptation or support that compensates for its inability to comply within existing operational constructs?
   A. Accommodation.
   B. Integration.

3. The availability of regulations, standards, and relevant supporting technology to allow remotely piloted aircraft to fly amongst manned aircraft is referred to as:
   A. Accommodation.
   B. Integration.

4. A feature of a remotely piloted aircraft system that involves employing sensors of some type (such as radar or cameras) to sense if the aircraft is flying too close to an object (such as a tall building or another aircraft) and then takes steps to fly away from the potential danger is referred to as:
   A. Detect and Avoid (DAA).
   B. Command and Control (C2).

5. A feature of a remotely piloted aircraft system that involves technology that ensures the unmanned aircraft remains in constant, secure contact via radio with ground-based pilots and air traffic control – but also knows what to do on its own to stay safe in case that signal is lost is referred to as:
   A. Detect and Avoid (DAA).
   B. Command and Control (C2).
6. TRUE or FALSE. Refer to Figure 1. The type of data link shown between the remotely piloted aircraft and the remote pilot station is referred to as radio line of sight.

☐ True  ☒ False

![Diagram of a remote piloted aircraft and remote pilot station with a radio line of sight.]

Figure 1

7. The term that takes into consideration all components of the system needed for operational safety, i.e. the Remotely Piloted Aircraft (RPA), Remote Pilot Station (RPS), and the Command and Control (C2) Link system(s) takes into account system configuration, usage, environment, and the hardware and software of the entire system is:

Airworthiness

Interface System

8. Agreements between two or more airlines to cooperate on a substantial level are referred to as:

Alliances

9. The first airline alliance between Pan American Airways and Pan air do Brasil was formed in which year?

C. 1939.

☐ 1939.

10. The first large airline alliance, between Northwest Airlines and KLM, was created when both airlines agreed to code share on a large scale in which year?

11. Benefits for airlines doing business in an alliance include cost reduction for airlines from which of the following?

A. Sharing sales offices.
B. Sharing maintenance facilities.
C. Sharing operational facilities, e.g. catering or computer systems.
D. Sharing operational staff, e.g. ground handling personnel, at check-in and boarding desks.
E. Sharing investments and purchases, e.g. in order to negotiate extra volume discounts.
F. All of the above.

12. Which of the following is NOT a benefit for the traveler flying with an airline alliance?

A. Lower prices due to lowered operational costs for a given route.
B. More departure times to choose from on a given route.
C. Decreased number of destinations.

13. Which of the following are considered potential disadvantages for travelers flying with an airline alliance?

A. Higher prices when all competition is erased on a certain route.
B. Less frequent flights on certain routes.
C. Both of the above.

14. An international policy concept that calls for the liberalization of the rules and regulations of the international aviation industry is referred to as:

open skies

15. TRUE or FALSE. The primary objectives of a liberalization policy is to liberalize the rules for international aviation markets and maximize government intervention as it applies to passenger, all-cargo, and combination air transportation as well as scheduled and charter services.

□ True  [ ] False minimize

16. Which of the following are advantages of Open Skies policies?

A. Vastly expanded international passenger and cargo flights to and from the United States.
B. Promoting increased travel and trade.
C. Enhancing productivity and spurring high-quality job opportunities and economic growth.
D. All of the above.
17. An Open Skies agreement signed by the U.S. with New Zealand, Singapore, Brunei, and Chile, later joined by Samoa, Tonga, and Mongolia is referred to as the:

A. 2007 Air Transport Agreement.
B. WOW Alliance.
C. 2001 Multilateral Agreement on the Liberalization of International Air Transportation (MALT). 

18. What does the International Air Transport Association (IATA) attempt to promote for the customers of international aviation?

A. The highest possible levels of customer service.
B. Safe, reliable, secure and economical air services.
C. Safe, reliable and secure transportation regardless of its cost.

19. What is the mission of the IATA's Simplifying the Business (SIB) program?

A. Provide better service for passengers.
B. Provide lower costs for the industry.
C. Provide better service for passengers and lower costs for the industry.

20. TRUE or FALSE. The IATA's inBag program is intended to target the handling of baggage by the industry's airlines.

[ ] True [ ] False

21. What is the purpose of the IATA Operational Safety Audit (IOSA) Program Manual (IPM)?

A. To provide guidance material to be used by the airlines when preparing for the IOSA.
B. To provide support information to be used by airlines when preparing for an IOSA.
C. To provide a complete source of information of the standards used when an IOSA of an airline is conducted.

22. What is the purpose of the IATA's IOSA Quality Assurance (QA) Program?

A. To define the lines of managerial authority and responsibility.
B. To monitor, assess and measure the performance in all areas of the IOSA program.
C. To implement periodic surveys of customer expectations.
23. What is the purpose of the IOSA Standards Manual (ISM)?

A. To provide the operational standards, guidance material and support information to be used by the airlines when preparing for the IATA Operational Safety Audit (IOSA).
B. To specify the complete list of information that is found in an IOSA Audit Report (AR).
C. To provide a complete source of information of the standards used when an IOSA of an airline is conducted.

24. What is used as the source of the IOSA Standards and Recommended Practices (ISARPs)?

A. The ICAO’s Standards and Recommended Practices (SARPS).
B. The FAA’s International Aviation Safety Assessment Program (IASA).
C. The European Community’s Safety Assessment of Foreign Aircraft (EC-SAFA).

25. What is the Auditor charged with assessing the operator against during an IOSA?

A. The information in the IPM.
B. The information in the ISM.
C. The guidance material found in the ISARPs.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The recreational use of remotely piloted aircraft by operators with limited aviation experience can occasionally result in the devices entering airspace where they pose a risk to aircraft with pilots onboard. To reduce this risk, some have suggested that manufacturers should be required to install GPS technology that recognizes restricted areas and prevents drones from entering. This strategy has been called geo-fencing. What do you think? Would this be a practical solution? How might it impact the cost of RPA technology? Might geo-fences be susceptible to illegal and malicious hacking?

This might not be practical for a few reasons. First, sensors can be disabled or hacked in the drone to negate the effect of geo-fences. Second, there would need to be constant updates on the locations, which will be a heavy cost. Finally, drones with HD cameras have the ability to stay within the geo-fence but still capture photos of restricted areas or take other actions.
Place circle your answer, write your essay answer in the space provided, place an X in the box to denote "true" or "false," and write your answer on the line provided.

1. In which century did Hugo Grotius author the principle *Mare Liberum*, otherwise known as the "freedom of the seas?"
   A. 1600s.
   B. 1800s.
   C. 1900s.

2. Briefly describe what Hugo Grotius meant by the term "freedom of the seas."
   He believed that people should be allowed to sail the seas without restrictions by government.

3. Towards the end of World War II in 1944, representatives of several of the allied nations held the Convention on International Civil Aviation, which is also referred to as:
   Chicago Convention

4. Briefly describe the aim or the main purpose of the Convention on International Civil Aviation.
   The purpose was to make civil aviation safe and standardized for the states that participated, and they hoped an airplane for the entire world to join

5. Which of the following are part of the international standards and practices that Contracting States of the Convention on International Civil Aviation agreed to comply with to the highest degree of uniformity?
   A. Communication and navigation aid and support.
   B. Rules of the air and air traffic control practices.
   C. Licensing of operations and mechanical personnel.
   D. Airworthiness of aircraft.
   E. Aeronautical maps and charts.
   F. All of the above.

6. Why are the 6th through 9th Freedoms of the Air considered as "so-called" freedom?
   Because not every ECAC state follows them.
Questions 7 through 10: Match the letter of the description of a Freedom of the Air to its corresponding picture.

A. The right granted by one State to another State to put down and to take on, traffic coming from or destined to a third State.
B. The right of transporting cabotage traffic of the granting State on a service performed entirely within the territory of the granting State – known as stand-alone cabotage.
C. The right for an aircraft to make a technical/refueling stop in a second state while traveling to a third State.
D. The right that allows a foreign airline to fly from its home country (Country A) to Country B and then operates domestic services in Country B – known as consecutive cabotage.

7. A

8. B

9. D

10. C

11. The following statement – "Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with" – defines which of the following?

A. An ICAO Standard.
B. An ICAO Recommended Practice.
C. Both of the above.
12. The ICAO statement, “The country where the manufacturer who developed the aircraft design is located” refers to:

A. The State of Manufacture.
B. The State of Registration.

13. The ICAO statement, “The country in which the owner of the aircraft has that aircraft registered” refers to:

A. The State of Registration.
B. The State of Manufacture.

14. The category of civil aircraft operations that involves all civilian flying except scheduled passenger airline service is referred to as:

General aviation

15. How does ICAO define “business aviation?”

General aviation activities that are utilized for business practices. Essentially, aircraft that fly to transport business executives

16. What term is used by ICAO to describe an airline that charges fares, or carries persons for hire as a business with the intent of earning profits?

A. Legacy air carrier.
B. Regional air carrier.
C. Commercial air carrier.

17. Briefly describe how the airline performance indicator known as “available seat miles” is calculated.

Available seat miles is calculated by multiplying the amount of space in each aircraft by the amount of seats open on an aircraft

18. The airline performance indicator that measures the percentage of available seating capacity that is filled with passengers in an aircraft is referred to as the:

A. Breakeven load factor.
B. Load factor.
C. Passenger revenue mile.
19. A flight generates revenue of $75,000. The distance of the flight leg is 3,000 miles. There are 400 passengers on the flight. What is the passenger yield (rounded to the third digit)?

\[
R_p = \text{total passenger revenue generated} \\
P = \text{total number of passengers generating revenue} \\
D_p = \text{total distance travelled by the passengers}
\]

\[
\text{Passenger Yield} = \frac{R_p}{P \cdot D_p}
\]

Answer: 1.57

20. Which of the ICAO Safety Performance Enablers refers to “the uniform and consistent implementation of ICAO provisions?”

A. Resources.
B. Standardization.
C. Collaboration.

21. Which of the ICAO Safety Performance Enablers refers to “a lack of an adequate safety oversight organization and infrastructure within the civil aviation authority (CAA)?”

A. Resources.
B. Standardization.
C. Safety Information Exchange.

22. Which of the following State Safety Performance Indicators “enables States and regions to review the safety performance of their systems and to take action, if needed, to address discrepancies between existing and desired performance levels?”

A. Performance-based approach.
B. Phased approach to implementation.

23. The area of an airport that includes parking lots, fuel tank farms and access roads is known as:

A. Airside area.
B. Landslide area.

24. Which of the following types of airport revenue includes airline terminal space rentals, airline landing fees, and usage fees for terminals, gates, services and passenger counts?

A. Aeronautical revenue.
B. Non-aeronautical revenue.
25. "The establishment of evidence, that when combined, provides confidence that an individual is who they claim to be" is used to describe the term:

A. Evidence of Identity.
B. Machine Readable Travel Document.
C. Advance Passenger Information.

26. The Travel Document Issuing Authority (TDIA) having a high level of confidence that an identity exists and is living is sometimes referred to as the process of:

A. Proving an identity.
B. Linking an identity.
C. Tracing an identity.

27. The TDIA having a high level of confidence that a person "can be connected to and uses an identity" is sometimes referred to as the process of:

A. Proving an identity.
B. Linking an identity.
C. Tracing an identity.

28. Terrorist acts, including bombings and hijackings of commercial aircraft, are referred to as:

A. Criminal acts.
B. Unlawful acts of interference.

29. Aggressive, senseless or violent acts such as drug smuggling or human trafficking are referred to as:

A. Criminal acts.
B. Unlawful acts of interference.

30. Within the aviation industry, acts of terrorism are typically considered to be politically motivated criminal acts that takes the form of:

hijackings

31. List at least three types of atmospheric weather conditions that can affect how an aircraft can be operated.

wind shear, thunderstorms, microbursts
32. Which ICAO annex contains the SARPs used for environmental protection?
   A. Annex 6.
   B. Annex 16.
   C. Annex 26.

33. Which Volume of the annex referred to in Question #22 contains the SARPs required for environmental protection from aircraft noise?
   A. Volume I.
   B. Volume II.
   C. Volume III.

34. Which Volume of the annex referred to in Question #22 contains the SARPs required for environmental protection from aircraft engine emissions?
   A. Volume I.
   B. Volume II.
   C. Volume III.

35. List at least two effects of aviation on the earth’s climate.
   - Creates contrails that are basically manmade clouds.
   - Releases toxic chemicals and carbon dioxide into the atmosphere.

36. An environmental initiative system whereby the total amount of engine emissions is capped and allowances, in the form of permits to emit CO₂, can be bought and sold to meet emission reduction objectives is referred to as:
   A. A carbon dioxide buyout program.
   B. An emissions trading scheme.

37. Is the environmental initiative noted in Question #29 currently approved by the ICAO?
   A. Yes.
   B. No.

38. ICAO defines "an occurrence which includes the loss of life or the loss of the aircraft" as an:
   A. Accident.
   B. Incident.
   C. Both above.
   D. None of the above.
39. ICAO defines “an occurrence, other than an accident, associated with the operation of the aircraft which affects or could affect the safe operation of the aircraft” as an:

A. Accident.
B. Incident.
C. Neither of the above.
D. Both above.

40. ICAO’s Annex on Search and Rescue is supplemented by which of the following?

B. The Regional Air Navigation Agreement.

41. True or False. The authorities of a Contracting State who wish their search and rescue units to enter the territory of another Contracting State for search and rescue purposes shall transmit a request, giving full details of the projected mission and the need for it, to the rescue coordination center of the State concerned or to such other authority as has been designated by that State.

☐ True  ☐ False

42. ICAO defines “Human Factors: as being:

A. About people in their living and working situations.
B. About people and their relationship with machines.
C. About people and their relationship with procedures.
D. About people and their relationship with the environment about them.
E. About people and their relationships with other people (at work).
F. All of the above.

43. Refer to Figure 1. What is the name of theoretical model that illustrates how accidents occur in organizations?

Swiss cheese model

Figure 1
44. Refer to Figure 1. In this theoretical model, the proximal causes of an accident such as the pilot getting distracted are referred to as:

A. Active errors.
B. Latent errors.
C. Windows of opportunity.
D. None of the above.

45. Which type of training is used by flight crew (and others in a safety critical role within aviation) to enhance the safety of every flight by promoting the use of non-technical skills, like teamwork and decision making to ensure sound situational awareness and problem solving?

A. Crew resource management (CRM).
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State Safety Program (SSP).

46. Which of the following safety concepts uses the Line Operations Safety Audit (LOSA) as an important way to help develop countermeasures to operational errors?

A. Crew Resource Management.
B. Line oriented flight training (LOFT).
C. Threat and error management (TEM).
D. State safety program.

47. Which of the following safety concepts uses flight simulators to take pilots through situations that could occur in flight?

A. Crew resource management (CRM).
B. Line oriented flight training.
C. Threat and error management (TEM).
D. State Safety Program.

48. The safety concept that requires the organization itself to examine its operations and the decisions around those operations, allows an organization to adapt to change, increasing complexity, and limited resources, and promoting the continuous improvement of safety through specific methods to predict hazards from employee reports and data collection is referred to as:

safety management systems.
49. The availability of regulations, standards, and relevant supporting technology to allow remotely piloted aircraft to fly amongst manned aircraft is referred to as:

A. Accommodation.
B. Integration.

50. Which of the following terms describes the condition when an RPAS can operate along with some level of adaptation or support that compensates for its inability to comply within existing operational constructs?

A. Accommodation.
B. Integration.

51. A feature of a remotely piloted aircraft system that involves employing sensors of some type (such as radar or cameras) to sense if the aircraft is flying too close to an object (such as a tall building or another aircraft) and then takes steps to fly away from the potential danger is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

52. A feature of a remotely piloted aircraft system that involves technology that ensures the unmanned aircraft remains in constant, secure contact via radio with ground-based pilots and air traffic control – but also knows what to do on its own to stay safe in case that signal is lost is referred to as:

A. Detect and Avoid (DAA).
B. Command and Control (C2).

53. TRUE or FALSE. Refer to Figure 2. The type of data link shown between the remotely piloted aircraft and the remote pilot station is referred to as radio line of sight (RLOS).

[Diagram of radio link between aircraft and ground station]
54. Agreements between two or more airlines to cooperate on a substantial level are referred to as:

Alliance

55. Benefits for airlines doing business in an alliance include cost reduction for airlines from which of the following?

A. Sharing sales offices.
B. Sharing maintenance facilities.
C. Sharing operational facilities, e.g. catering or computer systems.
D. Sharing operational staff, e.g. ground handling personnel, at check-in and boarding desks.
E. Sharing investments and purchases, e.g. in order to negotiate extra volume discounts.
F. All of the above.

56. Which of the following is NOT a benefit for the traveler flying with an airline alliance?

A. Lower prices due to lowered operational costs for a given route.
B. More departure times to choose from on a given route.
C. Decreased number of destinations.

57. Which of the following are considered potential disadvantages for travelers flying with an airline alliance?

A. Higher prices when all competition is erased on a certain route.
B. Less frequent flights on certain routes.
C. Both of the above.

58. Which of the following are advantages of Open Skies policies?

A. Vastly expanded international passenger and cargo flights to and from the United States.
B. Promoting increased travel and trade.
C. Enhancing productivity and spurring high-quality job opportunities and economic growth.
D. All of the above.

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C. To implement periodic surveys of customer expectations.

EXTRA CREDIT – If you want to answer an extra credit question, choose only one of the following to answer. You can earn up to five (5) points for your answer.

1. The case study at the end of Chapter 1 details the shooting down of a civil aircraft, KAL 007, by the Soviet Union on Sept. 1, 1983. The case states that the "ICAO found itself in the middle of a heated debate between rival States." Describe what this debate was about.

2. The Chapter 5 case study discusses an overrun of a runway by Southwest Airlines Flight 1248. The case study concludes with the development of the runway end safety area (RESA). Discuss who should be required to pay for such an upgrade to an airport; the airport or the users (air carriers) taking off from and landing at such an airport.

3. The case study of Chapter 8 describes the Swissair flight 111 (SR 111) flight that left the U.S. headed to Geneva, Switzerland. The SR 111 crew declared an emergency and shortly after that the aircraft crashed into the territorial waters of Canada. Briefly describe the various stakeholders who might have an interest in the investigation of this accident and which stakeholder ICAO requires should lead the investigation.

When such an upgrade is made to an airport, the financial burden is basically levied on those who use the airport. Airlines may fees for flying at airports that in turn pay for upgrades such as this. When upgrades like this occur a small fee may be added to the ticket at each passenger to pay for a certain upgrade. The taxpayer also pays for airports as they are funded by the government.