College of Aeronautics Assessment Plan

July 2016

College of Aeronautics (CoA) program-level assessment is required by the University, the Southern Association of Colleges and Schools (SACS), and the Aviation Accreditation Board International (AABI). Curriculum assessment is also required by AABI. This CoA Assessment Plan establishes assessment policy and procedures to satisfy these assessment requirements.

Course-Level Assessment

The fundamental building block for CoA assessment is course-level assessment. The COA views course level assessment as supportive and integral to program level assessment and to curriculum assessment.

At the beginning of each semester, faculty are required to review and revise (as necessary) their semester syllabi for each assigned course. Course-level student learning outcomes (SLO’s) are an area of major emphasis. The syllabi are then forwarded to the Division Director for review and approval. The Division Director maintains a Master Course Syllabus for each course and insures the faculty’s semester syllabus conforms to the Master Course Syllabus.

Faculty are then required to identify assessment measurements for each student learning objective. Selected course assessment measurements are then incorporated into the program-level assessment process.

Near the end of each semester, students are required to complete a Course and Teacher Evaluation Survey (CATS). These evaluations are reviewed by the Division Director and, if supervisor-level corrective action is indicated, the Division Director and the affected faculty member determine appropriate corrective actions. All surveys are returned to the individual faculty member for their individual assessment and course improvement efforts.

Core Level Assessment

The College of Aeronautics has adopted AABI’s General Outcomes (Criterion 3.3) as its Core Level Outcomes (CLO’s) and Program Level Outcomes (PLO’s). The core level outcomes (Criteria 3.3.2 [1-6] for baccalaureate) degree programs are specifically designed to assess student attainment in the following outcome areas:

1. Professional attributes, requirements or certifications, and planning applicable to aviation careers.
2. Principles of aircraft design, performance and operating characteristics; and the regulations related to the maintenance of aircraft and associated systems.
3. Aviation safety and the impact of human factors on safety.
4. The impact of national and international aviation law, regulations and labor issues on aviation operations.
5. The integration of airports, airspace, and air traffic control in managing the National Airspace System, and
6. The impact of meteorology and environmental issues on aviation operations.

Note: Assessment Coordinators gather this assessment data and upload it to an online repository using Weave Online software.

Core level assessments, as well as program level assessments, are also accomplished through the use of graduate and employer surveys and direct input from the College of Aeronautics Board of Advisors. The office of Institutional Research and Assessment administers the surveys annually, with result reports sent to the Division Director. The Dean of the College of Aeronautics hosts meetings with the college’s Board of Advisors in both formal and informal interaction through telephone calls and direct meetings. Additional core level assessment is accomplished through faculty performance reviews, student course surveys, and curriculum reviews.

The results of the reports generated in the assessment process are reviewed with the Division Director and the faculty in order to identify shortcomings and recommend appropriate changes to produce improvement. Recommendations are presented during faculty meetings and during individual meetings with faculty.

Program-Level Assessment

Program level assessment begins with the creation or adoption of Program Level Outcomes (PLO’s). The College of Aeronautics has adopted AABI’s General Outcomes (Criterion 3.3) as its PLO’s. Each academic program is mapped against the PLO’s, identifying which courses address the specific PLO’s. An assessment map is generated from the program map identifying the courses that will be assessed relative to each PLO. For each course identified on the assessment map, Measurement Statements and Achievement Targets are created. The Measurement Statement will identify the direct and indirect measures used to assess achievement of the PLO’s associated with that course. The Achievement Target will identify the percentage of the class that must have an acceptable outcome on a given measure in order to deem that objective successful accomplished. Results are collected every other academic year during the Fall semester; results are forwarded to the Division Director. The Division Director generates a report outlining the results for each program and any recommendations required based on the results; this report is given to the Dean of the College.

Program level assessment is also accomplished through the use of graduate and employer surveys and direct input from the College of Aeronautics Board of Advisors. The office of Institutional Research and Assessment administers the surveys biennially, with result reports sent to the Division Director. The Dean of the College of Aeronautics hosts meetings with the college’s Board of Advisors in both formal biennial meetings and informal interaction through telephone calls and direct meetings. Additional program level assessment is accomplished through faculty performance reviews, freshman
surveys, and curriculum reviews.

**Closing the Loop**

The results of the reports generated in the assessment process are reviewed with the Dean in order to identify areas of weakness and recommend appropriate changes to produce improvement. Needed improvements are presented during faculty meetings and during individual meetings with faculty.

**University Wide Assessment Initiative**

In response to requirements made by Florida Tech’s regional accrediting body, the Southern Association of Colleges and Schools (SACS), the university is strengthening its assessment efforts. Currently, all levels of the institution are working towards developing a *culture of assessment*. To this end, an Academic Program Assessment Committee (APAC) was formed with the mandate to develop and/or strengthen program level assessment procedures and protocols. APAC has developed the structure of the assessment procedures and has begun the preliminary steps of formalizing the process to be used. Representatives from each academic unit comprise the APAC. The undergraduate UAC representative from the College of Aeronautics is the Division Director.

Assessment Coordinators (AC’s) are responsible to develop their respective unit’s assessment plan. AC’s either generate, or adopt appropriate Program Learning Outcomes (PLO’s), measurement statements, and complete course and assessment mapping. Assessment Coordinators gather assessment data and upload it to an online repository using Weave Online software. AC’s then create an assessment report which is reviewed by the Division Review Committee (DRC) which then makes recommendations, where needed, in order to affect appropriate change to a program. The undergraduate AC from the College of Aeronautics is the Division Director.

Within the academic sector of the university, a Divisional Review Committee (DRC) is composed of all Assessment Coordinators from the departments, degree programs, or academic units that make up a particular division. The co-Chairs of the DRCs are two of their corresponding APAC representatives. A division can be an entire academic college, group of colleges, and/or academic units within the institution of Florida Tech. There are five academic Divisional Review Committees. Representatives of the College of Aeronautics and the College of Engineering have been grouped together to form a DRC. This grouping was made due to the similarities between the AABI and ABET accreditation models.

APAC’s goal is to improve the assessment efforts of the entire university. A complete review of all colleges and departments is ongoing and will be a continuing process with the ultimate goal of improving all programs.

Following are the Assessment Maps and Measurement Statements for all College of Aeronautics academic programs. It is important to note that the Program-Level Student Learning Outcomes (PLO’s) are addressed directly and indirectly and to various depths in other courses not
identified below. The Tables below only identify a purposive sample of courses that the CoA has chosen to collect sample evidence.
### Assessment Map

**7102 Aeronautical Science Flight, B.S.**

Common Classes for Degree Assessment

<table>
<thead>
<tr>
<th>Program-Level Student Learning Outcomes (PLO’s)</th>
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<th>AVM 4301</th>
<th>AVT 4201</th>
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<td>6. Ability to engage in and recognize the need for life-long learning</td>
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<td>7. Ability to assess contemporary issues</td>
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</tbody>
</table>
Measurement Statements

7102 Aeronautical Science Flight B.S.

Outcome 1: Ability to apply mathematics, science, and applied sciences to aviation-related disciplines

Measure 1.1: 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Calculate the stall speed in a 45 degree bank level turn if the 1G stall speed is 50 knots.

Measure 1.2: 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Induced drag varies inversely with the square of velocity. If an airplane has 100 pounds of induced drag at 150 KCAS, how much induced drag will be present at 75 KCAS? At 300 KCAS?

Outcome 2: Ability to analyze and interpret data

Measure 2.1: 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw an accurate 80

Measure 2.2: 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw a graph depicting the lift coefficient, $C_L$ vs. the angle of attack, AOA for a cambered airfoil. Label the x and y-axis with typical values. Identify the maximum lift coefficient, $C_{L_{\text{max}}}$ and the stall angle of attack on the appropriate axis.

Outcome 3: Ability to work effectively on multi-disciplinary and diverse teams

Measure 3.1 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing development of a Civil Aircraft Accident Plan.

Measure 3.2 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing performing an Organizational Analysis.

Outcome 4: Ability to make professional and ethical decisions

Measure 4.1: 80% of the students enrolled in AVM4301 Aviation Labor Law and Employment Standards, should demonstrate proficiency by successfully completing the Dal-Tex Optical case study exercise involving a simulated NLRB decision on an ULP charge.

Measure 4.2: 80% of the students enrolled in AVM4301 Aviation Labor Law and Employment Standards, should demonstrate proficiency by successfully completing the Arbitrator Decision and Award on a Simulated Grievance Arbitration case study exercise.
Outcome 5: Ability to communicate effectively, using both written and oral communication skills

Measure 5.1: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper and oral presentation.

Measure 5.2: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper and oral presentation.

Outcome 6: Ability to engage in and recognize the need for life-long learning

Measure 6.1: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by correctly answering question number 61 on the final examination.

Measure 6.2: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper.

Outcome 7: Ability to assess contemporary issues

Measure 7.1: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 4 on the final examination referencing recent airline mergers in the global airline industry.

Measure 7.2: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 29 on the second examination referencing availability of used aircraft in the second-hand market.

Outcome 8: Ability to use the techniques, skills, and modern technology necessary for professional practice

Measure 8.1: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by correctly answering question 1 of the BATD Lab exercise number 14.

Measure 8.2: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by correctly answering question 2 of the BATD Lab exercise number 14.

Outcome 9: Ability to assess the national and international aviation environment

Measure 9.1: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 49 on the final examination referencing cabotage rights between countries of the USA and EU.

Measure 9.2: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the term paper analyzing the national and international aviation environment.
**Outcome 10**: Ability to apply pertinent knowledge in identifying and solving problems

**Measure 10.1**: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 24 on examination 2.

**Measure 10.2**: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 48 on examination 3.

**Outcome 11**: Ability to apply knowledge of business sustainability to aviation businesses.

**Measure 11.1**: 80% of the students enrolled in AVM 4303 General Aviation Ops and Mgt., should demonstrate proficiency by successfully completing a project which includes airport sustainability.

**Measure 11.2** – 80% of the students enrolled in AVM 4303 General Aviation Ops and Mgt., should demonstrate proficiency by successfully answering an essay question on aviation sustainability on the final exam.
## Assessment Map

### 7103 Aeronautical Science Non-Flight, B.S.

#### Common Classes for Degree Assessment

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Measurement Statements

7103 Aeronautical Science Non-Flight, B.S.

**Outcome 1:** Ability to apply mathematics, science, and applied sciences to aviation-related disciplines

**Measure 1.1:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Calculate the stall speed in a 45 degree bank level turn if the 1G stall speed is 50 knots.

**Measure 1.2:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Induced drag varies inversely with the square of velocity. If an airplane has 100 pounds of induced drag at 150 KCAS, how much induced drag will be present at 75 KCAS? At 300 KCAS?

**Outcome 2:** Ability to analyze and interpret data

**Measure 2.1:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw an accurate depiction of a total drag vs. velocity curve. Label the axis with the correct names and units. Identify the minimum drag, $D_{min}$ point and areas where induced drag dominants and areas where parasite drag dominants.

**Measure 2.2:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw a graph depicting the lift coefficient, $C_L$ vs. the angle of attack, AOA for a cambered airfoil. Label the x and y-axis with typical values. Identify the maximum lift coefficient, $C_{L\text{ Max}}$ and the stall angle of attack on the appropriate axis.

**Outcome 3:** Ability to work effectively on multi-disciplinary and diverse teams

**Measure 3.1** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing development of a Civil Aircraft Accident Plan.

**Measure 3.2** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing performing an Organizational Analysis.

**Outcome 4:** Ability to make professional and ethical decisions

**Measure 4.1** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing actions required after inadvertent penetration of an ADIZ.

**Measure 4.2** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing sources of safety authority.
**Outcome 5:** Ability to communicate effectively, using both written and oral communication skills.

**Measure 5.1:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper and oral presentation.

**Measure 5.2:** 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper and oral presentation. *In process*

**Outcome 6:** Ability to engage in and recognize the need for life-long learning

**Measure 6.1:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper.

**Measure 6.2:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 28 on examination number 3 referencing recognition of the importance of current court decisions.

**Outcome 7:** Ability to assess contemporary issues

**Measure 7.1:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 4 on the final examination referencing recent airline mergers in the global airline industry.

**Measure 7.2:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 29 on the second examination referencing availability of used aircraft in the second-hand market.

**Outcome 8:** Ability to use the techniques, skills, and modern technology necessary for professional practice

**Measure 8.1:** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing methods for data collection as a safety program development director.

**Measure 8.2:** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing guidelines contained in a Civil Aircraft Accident Plan.

**Outcome 9:** Ability to assess the national and international aviation environment

**Measure 9.1:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 49 on the final examination referencing cabotage rights between countries of the USA and EU.
**Measure 9.2:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the term paper analyzing the national and international aviation environment.

**Outcome 10:** Ability to apply pertinent knowledge in identifying and solving problems

**Measure 10.1:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 24 on examination 2.

**Measure 10.2:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 48 on examination 3.

**Measure 11 – Ability to apply knowledge of business sustainability to aviation businesses**

**Measure 11.1:** 80% of the students enrolled in AVM4701 Airport Management, should demonstrate proficiency by successfully completing a project which includes airport sustainability.

**Measure 11.2 – 80% of the students enrolled in AVM4701 Airport Management, should demonstrate proficiency by successfully answering an essay question on aviation sustainability on the final exam.**
### Assessment Map

#### 7113 Aviation Management Flight, B.S.

**Common Classes for Degree Assessment**

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Measurement Statements

7113 Aviation Management, Flight Option, B.S.

**Outcome 1:** Ability to apply mathematics, science, and applied sciences to aviation-related disciplines

**Measure 1.1:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Calculate the stall speed in a 45 degree bank level turn if the 1G stall speed is 50 knots.

**Measure 1.2:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Induced drag varies inversely with the square of velocity. If an airplane has 100 pounds of induced drag at 150 KCAS, how much induced drag will be present at 75 KCAS? At 300 KCAS?

**Outcome 2:** Ability to analyze and interpret data

**Measure 2.1:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw an accurate depiction of a total drag vs. velocity curve. Label the axis with the correct names and units. Identify the minimum drag, $D_{\text{min}}$ point and areas where induced drag dominants and areas where parasite drag dominants.

**Measure 2.2:** 80% of the students enrolled in AVS2102 Aerodynamics, should demonstrate proficiency by correctly answering the following exam question: Draw a graph depicting the lift coefficient, $C_L$ vs. the angle of attack, AOA for a cambered airfoil. Label the x and y axis with typical values. Identify the maximum lift coefficient, $C_L_{\text{Max}}$ and the stall angle of attack on the appropriate axis.

**Outcome 3:** Ability to work effectively on multi-disciplinary and diverse teams

**Measure 3.1** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing development of a Civil Aircraft Accident Plan.

**Measure 3.2** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing performing an Organizational Analysis.

**Outcome 4:** Ability to make professional and ethical decisions

**Measure 4.1** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing actions required after inadvertent penetration of an ADIZ.

**Measure 4.2** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing sources of safety authority.
Outcome 5: Ability to communicate effectively, using both written and oral communication skills

Measure 5.1: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper and oral presentation.

Measure 5.2: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper and oral presentation.

Outcome 6: Ability to engage in and recognize the need for life-long learning

Measure 6.1: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by correctly answering question number 61 on the final examination.

Measure 6.2: 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper.

Outcome 7: Ability to assess contemporary issues

Measure 7.1: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 4 on the final examination referencing recent airline mergers in the global airline industry.

Measure 7.2: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 29 on the second examination referencing availability of used aircraft in the second-hand market.

Outcome 8: Ability to use the techniques, skills, and modern technology necessary for professional practice

Measure 8.1: 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing methods for data collection as a safety program development director.

Measure 8.2: 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing guidelines contained in a Civil Aircraft Accident Plan.

Outcome 9: Ability to assess the national and international aviation environment

Measure 9.1: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 49 on the final examination referencing cabotage rights between countries of the USA and EU.
Measure 9.2: 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the term paper analyzing the national and international aviation environment.

Outcome 10: Ability to apply pertinent knowledge in identifying and solving problems

Measure 10.1: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 24 on examination 2.

Measure 10.2: 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 48 on examination 3.

Outcome 11: Ability to apply knowledge of business sustainability to aviation businesses.

Measure 11.1: 80% of the students enrolled in AVM4701 Airport Management, should demonstrate proficiency by successfully completing a project which includes airport sustainability.

Measure 11.2 – 80% of the students enrolled in AVM4701 Airport Management, should demonstrate proficiency by successfully answering an essay question on aviation sustainability on the final exam.
### Assessment Map

**7114 Aviation Management Non-Flight, B.S.**

Common Classes for Degree Assessment Matrix

<table>
<thead>
<tr>
<th>Program-Level Student Learning Outcomes (PLO’s)</th>
<th>AVS 2101</th>
<th>AVT 4201</th>
<th>AVM 4302</th>
<th>AVM 4501</th>
<th>AVT 4301</th>
<th>AVM 4701</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ability to apply mathematics, science, and applied sciences to aviation-related disciplines</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ability to analyze and interpret data</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Ability to work effectively on multi-disciplinary and diverse teams</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4. Ability to make professional and ethical decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5. Ability to communicate effectively, using both written and oral communication skills</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Ability to engage in and recognize the need for life-long learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7. Ability to assess contemporary issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8. Ability to use the techniques, skills, and modern technology necessary for professional practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9. Ability to assess the national and international aviation environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>10. Ability to apply pertinent knowledge in identifying and solving problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11. Ability to apply knowledge of business sustainability to aviation businesses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Measurement Statements

7114 Aviation Management, Non-Flight, B.S.

**Outcome 1:** Ability to apply mathematics, science, and applied sciences to aviation-related disciplines

**Measure 1.1:** 80% of the students enrolled in AVS2101 Aviation Physical Science, should demonstrate proficiency by correctly answering the following exam question:

1. An airplane weighing 12,000N is in a 30° bank turn. The wings are producing 12,000N of lift. (Hint: Don’t assume the turn is level):
   
   (a) Compute the vertical and horizontal components of lift:

   (b) Compute the net forces along the vertical and horizon axis:

   (c) Compute the vertical and horizontal accelerations:

**Measure 1.2:** 80% of the students enrolled in AVS2101 Aviation Physical Science, should demonstrate proficiency by correctly answering the following exam question: The Boeing 767-400ER is available with two Pratt and Whitney PW4062 engines each developing 63,300 lbs. (i.e. force of 281,558 N) of thrust at sea-level. The B-767 is loaded to a maximum takeoff weight of 400,000 lbs. (i.e. mass of 181,440 kg). Assume the frictional force opposing the forward motion is 5184 N, determine the airplane’s acceleration during the take-off roll.

**Outcome 2:** Ability to analyze and interpret data

**Measure 2.1:** 80% of the students enrolled in AVS2101 Aviation Physical Science, should demonstrate proficiency by correctly answering the following exam question:

A Piper Warrior has the following force distribution. Datum is slightly behind the propeller’s spinner.

- Center of lift, $L_{(wing)}$ = 2500 lbs. @ 90 inches;
- Center of gravity, $W$ = 2100 lbs. @ 70 inches;
- Tail-down force, $L_{(tail)}$ = 400 lbs. @ 195 inches.

Is this airplane in pitch-attitude equilibrium? Justify your answer.

**Measure 2.2:** 80% of the students enrolled in AVS2101 Aviation Physical Science, should demonstrate proficiency by correctly answering the following exam question: During cruise flight, a Cessna 182 produces an airflow of 55.0 m/s across the surface of a thin flat inspection plate with a diameter of 10.0 cm. Disregarding the protruding fasteners, calculate the Reynolds number and determine if the flow is laminar or turbulent. Use an air density of 1.23 kg/m$^3$ and viscosity of $1.79 \times 10^{-5}$Ns/m$^2$.

**Outcome 3:** Ability to work effectively on multi-disciplinary and diverse teams
**Measure 3.1** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing development of a Civil Aircraft Accident Plan.

**Measure 3.2** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing performing an Organizational Analysis.

**Outcome 4:** Ability to make professional and ethical decisions

**Measure 4.1:** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing actions required after inadvertent penetration of an ADIZ.

**Measure 4.2:** 80% of the students enrolled in AVT4301 Aviation Safety, should demonstrate proficiency by correctly answering an embedded question on the final examination referencing sources of safety authority.

**Outcome 5:** Ability to communicate effectively, using both written and oral communication skills

**Measure 5.1:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper and oral presentation.

**Measure 5.2:** 80% of the students enrolled in AVT4201 Advanced Aircraft Systems, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Selected Aircraft System Paper and oral presentation. (In process)*

**Outcome 6:** Ability to engage in and recognize the need for life-long learning

**Measure 6.1:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by successful completion, as determined using a grading rubric, of the Current Issue Paper.

**Measure 6.2:** 80% of the students enrolled in AVM4302 Aviation Law, should demonstrate proficiency by correctly answering question number 28 on examination number 3 referencing recognition of the importance of current court decisions.

**Outcome 7:** Ability to assess contemporary issues

**Measure 7.1:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 4 on the final examination referencing recent airline mergers in the global airline industry.

**Measure 7.2:** 80% of the students enrolled in AVM4501 Air Transportation Management, should demonstrate proficiency by correctly answering question number 29 on the second examination referencing availability of used aircraft in the second-hand market.
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Measure 11.2 – 80% of the students enrolled in AVM4701 Airport Management, should demonstrate proficiency by successfully answering an essay question on aviation sustainability on the final exam.
CoA Assessment Plan - AABI Criteria

The CoA has established assessment requirements in accordance with the AABI Accreditation Criteria Manual, Form 201 as follows:

Criterion 3.1 Students

The quality and performance of the students and graduates are important considerations in the evaluation of an aviation program. The institution MUST:

a. Evaluate, advise, and monitor students to determine its success in meeting program goals.
b. Have and enforce policies for the acceptance of transfer students and for the validation of courses taken for credit elsewhere.
c. Have and enforce procedures to assure that all students meet all program requirements.
d. Publish standards for the selection and admission of students which are related to the educational mission and purposes of the institution.
e. Maintain recent examples of student work, to include examinations, homework problems, laboratory exercises and reports. These items will include evidence of student competence in both subject matter areas and communications skills.
f. Assess the effectiveness of its validation methods in granting credit for non-collegiate achievement.
g. Produce records reflecting the employment or continuing education experience of students graduating from the program during each of the preceding five years.

Criterion 3.2 Program Mission and Educational Goals

The aviation program MUST have a mission statement that reflects an educational philosophy, purposes, and general intent, and that clearly complements the institutional mission. The mission statement MUST be published and widely available to the institution’s constituents. The administration of the institution MUST enable the aviation program to develop and to carry out fully its unique responsibilities as defined by its stated mission. The aviation program for which an institution seeks accreditation or reaffirmation MUST have in place:

a. Published educational goals, having sufficient detail to be measured, that are consistent with the mission of the institution and these criteria.
b. A process based on the needs of the programs’ various constituencies in which the goals are determined and periodically evaluated.
c. A curriculum and process that ensure the achievement of these goals.
d. A recurring system of evaluation that demonstrates achievement of these goals and uses the results to improve the effectiveness of the program.

Criterion 3.3 Student Learning Outcomes

Aviation programs MUST demonstrate that graduates are able to:
a. apply mathematics, science, and applied sciences to aviation-related disciplines
b. analyze and interpret data
c. work effectively on multi-disciplinary and diverse teams
d. make professional and ethical decisions  
e. communicate effectively, using both written and oral communications skills  
f. engage in and recognize the need for life-long learning  
g. assess contemporary issues  
h. use the techniques, skills, and modern technology necessary for professional practice  
i. assess the national and international aviation environment  
j. apply pertinent knowledge in identifying and solving problems  
k. apply knowledge of business sustainability to aviation issues  

3.3.2 Aviation Core. Aviation programs MUST demonstrate that their graduates are able to:  

1. Describe the professional attributes, requirements or certifications, and planning applicable to aviation careers.  
2. Describe the principles of aircraft design, performance and operating characteristics; and the regulations related to the maintenance of aircraft and associated systems.  
3. Evaluate aviation safety and the impact of human factors on safety.  
4. Discuss the impact of national and international aviation law, regulations and labor issues on aviation operations.  
5. Explain the integration of airports, airspace, and air traffic control in managing the National Airspace System.  
6. Discuss the impact of meteorology and environmental issues on aviation operations.  

3.3.3 Program Criteria. Each program MUST develop outcomes appropriate to satisfy applicable AABI program-specific criteria (see Criterion 5.0)  

3.3.4 Other. Outcomes may be developed as appropriate to satisfy additional program, institutional and/or other accrediting body requirements.  

**Criterion 3.4 Curriculum**  

The curriculum requirements specify components appropriate to aviation programs, but do not prescribe specific courses. The program’s faculty MUST ensure that the aviation curriculum specifies outcomes as identified in Criterion 3.3, consistent with the mission and goals of the program and institution. Students MUST be prepared for careers in aviation and aerospace through the curriculum culminating in comprehensive projects or experiences based on the cumulative knowledge and skills acquired in earlier course work. The institution MUST assure that student learning in the classroom is well integrated with learning in the associated laboratory for aviation courses. The curriculum MUST include:  

a. College level mathematics and basic sciences appropriate to the program.  

b. General education components that complement the technical content of the curriculum and are consistent with the program and institution mission and goals.  

c. Components that satisfy AABI program-specific criteria.
Criterion 3.5 Faculty and Staff

Full-time and adjunct faculty directly involved in an aviation program MUST meet at least the minimum standards for academic credentials specified by the institution and required by the regional or national accrediting agency. The faculty MUST be of sufficient number as determined by student enrollment and the expected outcomes of the program. Each program MUST have at least one dedicated full-time faculty member. Faculty MUST engage in teaching, service, and scholarship. Flight instructional, and other laboratory staff, not holding full-time faculty appointments and rank are not considered faculty for the purposes of this section.

The institution MUST demonstrate an appropriate mix of full-time and adjunct faculty necessary to fulfill its stated program outcomes.

3.5.1 Qualifications. The mission of a particular aviation program will directly affect the makeup of the faculty who participate in the program. The faculty MUST have sufficient qualifications to develop, guide, deliver, evaluate, and improve the program. The overall qualifications of the faculty may include such factors as education, diversity of backgrounds, applicable experience, teaching performance, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and applicable certifications, registrations, or licenses.

3.5.2 Recruitment and Selection. Recruitment and selection of faculty members MUST be consistent with institutional, regional, and national mandates. Candidates SHOULD be sought with degree(s) from other than the parent institution to encourage a cross-fertilization of ideas and maintenance of high quality program standards.

3.5.3 Rank, Promotion and Tenure. Opportunities for appointment at all institutional ranks, as well as opportunities for promotion and tenure (for tenure-track faculty), MUST be consistent with those for full-time faculty across other units of the institution. In addition, the uniqueness of the professional qualifications required for participation in the many facets of collegiate aviation MUST be considered when making these judgments.

3.5.4 Salaries and Working Conditions. Salaries for aviation faculty MUST fall into the same ranges as those offered to other faculty members of the institution in comparable disciplines. Aviation faculty teaching loads MUST be in accordance with the institution’s standards.

3.5.5 Support Personnel. The administration MUST provide for an adequate number and quality of support staff. An adequate number of technical, flight and ground instructors whose academic credentials are consistent with the needs of the program MUST be available. Support personnel MUST also have proper certification and/or appropriate experience for the program.

3.5.6 Faculty and Instructional Staff Evaluation. Institutions MUST have a process for faculty evaluation to include all full-time and adjunct aviation faculty.
Ongoing evaluations of all full-time aviation faculty, along with appropriate follow-up actions where necessary, MUST ensure teaching effectiveness, service accountability, professional development and scholarship and lead to continued program improvement.

3.5.7 Faculty Development. All institutions MUST have a policy that supports active faculty development. All full-time and adjunct faculty members SHOULD be encouraged to further their professional academic development, thus enhancing their individual contributions to the institution, the program, and the students. Professional development of aviation faculty includes opportunities available to all faculty and also those which may be unique to the aviation field. Examples of acceptable and desirable forms of faculty development include but are not limited to:

- Acquisition of advanced degrees;
- Acquisition of advanced aviation certification;
- Membership and participation in professional aviation associations;
- Participation in community, regional, and national aviation functions;
- Cooperative efforts with area schools in furthering aviation education faculty exchange programs;
- Sabbatical and/or professional development leaves.

**Criterion 3.6 Facilities, Equipment, and Services**

Classrooms, laboratories, and associated equipment MUST be adequate to accomplish the program goals and provide an atmosphere conducive to learning. Appropriate facilities MUST be available to foster faculty-student interaction and to create a climate that encourages professional development and professional activities. Programs MUST provide opportunities for students to learn the use of modern applicable instruments and equipment. Computing and information infrastructures MUST be in place to support the scholarly activities of the students and faculty and the educational goals of the institution. The quality of off-campus aviation courses at remote facilities or airport locations MUST be maintained at least to the level of on-campus courses.

3.6.1 Laboratory Facilities. The size of an institution, the scope and emphasis of its academic program, and its declared purposes and goals are factors to be taken into account with respect to facilities and equipment considerations. Certain programs in aviation require substantial laboratory and classroom facilities to serve the objectives of both teaching and research. Laboratory equipment, computers, etc., MUST be appropriate to the program goals and SHOULD be the type encountered in industry and practice. Support and instructional personnel MUST be provided to 7/29/2014, 9:11 AM Page 19 of 35
implement and maintain the laboratory component of the program. Pre- and post-briefing rooms SHOULD afford privacy and MUST be sufficient in number to handle the instructor-student pairs using the facility at any onetime.

3.6.2 Flight Equipment. Careful consideration MUST be given to the number of aircraft available to ensure that students can complete the program in a reasonable period of time. The institution MUST provide an adequate number of safe, reliable, and appropriately equipped and maintained aircraft to satisfy program goals.

3.6.3 Library. Access to appropriate reference materials MUST be adequate for the aviation program(s).

**Criterion 3.7 Institutional Structure and Support**

Institutional structure, support, financial resources, and constructive leadership MUST be adequate to assure the quality and continuity of the aviation program throughout the period of accreditation. Resources MUST be sufficient to attract, retain, and provide for continued professional development of a well-qualified faculty. Resources MUST be sufficient to acquire, maintain, and operate facilities and equipment appropriate for the aviation program. In addition, support personnel and institutional services MUST be adequate to meet the program needs.

**Criterion 3.8 Aviation Safety Culture and Program**

To foster an effective safety culture, the institution MUST have and use a verifiable formal aviation safety program that involves students, faculty and staff for operations involving flight, maintenance, avionics and other aviation laboratories. The institution’s aviation safety program MUST incorporate SMS key components appropriate to its national regulators’ guidance and institution size and scope, and SHOULD be coordinated with the institution’s overall safety program.

**Criterion 3.9 Relations with Industry**

There MUST be evidence of a relationship between the aviation program and the practicing professionals in the industry. The aviation faculty MUST develop and evaluate each program with advice from appropriate industry associations and/or professionals in the field.

**Criterion 3.10 Continuous Assessment and Improvement**

Each program MUST have an assessment process that includes a written plan with documented results. This process MUST incorporate relevant evidence used to regularly assess the program. The results of the assessment MUST be used to effect continuous improvement of the program.

Comprehensive Assessment Plan. The comprehensive assessment plan and process MUST address:

1. Students
2. Program Mission and Educational Goals
3. Student Learning Outcomes
4. Curriculum
5. Faculty and Staff
6. Facilities, Equipment and Services
7. Institutional Structure and Support
8. Aviation Safety Culture and Program
9. Relations with Industry

3.10.2 Assessment Plan and Process. The assessment plan and process MUST include:

1. Timelines, metrics and responsibilities for the assessment process.
2. Evidence and how it is collected and analyzed.
3. How the assessment results are used to improve program effectiveness.

**Criterion 3.11 Complementary Degree Programs**

Complementary degree programs involve two or more institutions working together to offer a degree program, and the degree granting institution does not offer all elements of the program. In these circumstances the following criteria MUST be met:

3.11.1 Unit Offering Degree. The academic unit offering the degree program must be clearly and distinctly identified with an aviation orientation.

3.11.2 Students Transferring. If the degree granting institution accepts students from other than the complementary programs, these students must be enrolled in a separately designated program.

**Criterion 3.12 Credit for Non-Collegiate Achievement**

For credits that are neither covered by articulation agreements nor determined by the degree granting institution to be substantially similar to courses it offers at the lower-division level, the degree granting institution MUST establish validation procedures if advanced placement, waiving of requirements, or granting of credit for experience is offered. Each institution MUST maintain published non-collegiate credit policies and adequate records to evaluate the effectiveness of the validation techniques used.

3.12.1 Credit for Aviation Credentials. Entering students who have aviation credentials may elect to challenge the appropriate courses.

Institutions which recognize aviation credentials as a measure of requisite knowledge, skill, and experience MUST establish validation procedures to ensure that the student meets or exceeds the standards of the institution’s courses. The validation procedures MUST include documentation of the student's competency appropriate to the aviation credentials held.
CoA Assessment Plan for AABI Criteria

Criterion 3.1 through 3.12 (other than 3.3, 3.4, and 3.10)

Assessment is conducted by the CoA according to the AABI Criterion outlined above and AABI Criterion in 3.10 Continuous Improvement as described below.

Criterion 3.3 Student Learning Outcomes (Program Assessment)

Program assessment is conducted according to the policy and procedures established in this document sections above for courses and programs, which includes capstone courses where students must demonstrate they are able their abilities to meet AABI Criterion3.3.2.

Criterion 3.4 Curriculum and 3.10 Continuous Improvement

In addition to the Criterion 3.3 Student Learning Outcomes described above, the CoA assesses curriculum via a formal, documented methodology as described below, and many informal, undocumented methods such as faculty interface and discussion with other faculty, students, parents, employers, and industry contacts.

Curriculum assessment focusing on aviation core topic coverage is conducted according to policy and procedures established in thissection.

AABI Criterion: The program’s faculty MUST ensure that the aviation curriculum specifies outcomes as identified in Criterion 3.3, consistent with the mission and goals of the program and institution. Students MUST be prepared for careers in aviation and aerospace through the curriculum culminating in comprehensive projects or experiences based on the cumulative knowledge and skills acquired in earlier course work. The institution MUST assure that student learning in the classroom is well integrated with learning in the associated laboratory for aviation courses.

c. College level mathematics and basic sciences appropriate to the program.

d. General education components that complement the technical content of the curriculum and are consistent with the program and institution mission and goals.

c. Components that satisfy AABI program-specific criteria.

The CoA assessment plan to meet this criterion is described herein.

The CoA Undergraduate Curriculum Committee (CoAUGCC) proposes to the CoA faculty an Aviation Core Topic Coverage/Course Matrix as shown below which correlates aviation core topics with CoA courses. The CoAUGCC suggests to the faculty that students successfully completing the courses identified in the topic-course matrix will have met the aviation topic criteria required in each aviation topic component. The CoA faculty reviews and approves the matrix. With this action, the CoA faculty affirms that students successfully completing the courses identified in the topic-course matrix will have met the aviation topic criteria required in each aviation topic component.
Each course instructor is provided copies of the Common Classes for Degree Assessment Matrixes which includes instructions and expectations for course instructors. Subsequently, each course instructor updates his/her semester course outline/syllabus to insure the identified aviation core topics are included in class material.

Evidence that students have successfully completed the courses identified as containing aviation core topics is located in the students’ program completion/graduation transcript located in the Paws/Banner database.

AABI Criterion: Each program MUST have an assessment process that includes a written plan with documented results. This process MUST incorporate relevant evidence used to regularly assess the program. The results of the assessment MUST be used to effect continuous improvement of the program.

Comprehensive Assessment Plan. The comprehensive assessment plan and process MUST address:

1. Students
2. Program Mission and Educational Goals
3. Student Learning Outcomes
4. Curriculum
5. Faculty and Staff
6. Facilities, Equipment and Services
7. Institutional Structure and Support
8. Aviation Safety Culture and Program
9. Relations with Industry

The CoA process and timeline for ongoing assessment of the curriculum (for aviation core topic coverage), including all items listed in 1 through 9 above includes:

1. Timeline (schedule) of assessments.

The Undergraduate Curriculum Committee meets at least once a semester to discuss and resolve current curriculum issues, including aviation core topic coverage. The committee may meet in addition to these meetings on an as-needed basis. The CoA faculty and staff meet periodically to discuss and resolve other issues listed above.

2. What, how and from whom data/issues are collected

Each instructor’s semester course outline/syllabus is collected by the Division Director and forwarded to the CoA Undergraduate Curriculum Committee for aviation core topic coverage assessment. Deficiencies in the other elements are collected by faculty and staff.

3. How assessment results are used and by whom to document successes and shortcomings.

The CoA Undergraduate Curriculum Committee informs the Division Director of shortcomings and recommends corrective actions as necessary. Other items, such listed above are forwarded to the Division Director and/or the Dean of the CoA. How plans are established to address shortcomings
The CoA Undergraduate Curriculum Committee (CoAUGCC) recommends a corrective action plan to the Division Director. The Division Director establishes a corrective action plan and, with CoAUGCC aid, insures corrective actions are completed by the relevant course instructors. All items listed in 1 through 9 above are evaluate by the Dean of the CoA

4. How the assessment results are used to improve programeffectiveness

Any shortfall identified in the assessment process is monitored by the Division Director, the CoAUGCC, and/or the Dean until successfully resolved. Further, the CoAUGCC continues to assess and recommend curriculum improvements over and above aviation core topic coverage.

In addition, evidence of the curriculum assessment process is captured in CoAUGCC meeting announcements and minutes as well as documents prepared for the University Undergraduate Curriculum Committee (UUGCC).
<table>
<thead>
<tr>
<th>Professional Issues</th>
<th>Aircraft</th>
<th>Safety</th>
<th>Legal and Labor Issues</th>
<th>Resource Management</th>
<th>Environmental</th>
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<tbody>
<tr>
<td>Attributes of an aviation professional</td>
<td>Design</td>
<td>Performance</td>
<td>Operating characteristics</td>
<td>Maintenance</td>
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Table – Aviation Core Topic Coverage/Course Matrix
(Reference AABI 201, Criterion 3.3.2)