Annual Report for Assessment of Outcomes 2012-13

Subject Area Committee Name: **Aviation Maintenance Technology**
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Degree or certificate assessed: **AAS***

This table of CORE OUTCOMES MAPPING shows the alignment of the College Core Outcomes to the courses within the AMT degree and certificate classes.

Mapping Level Indicators:

2 Basic demonstration and application of knowledge and skills.
3 Demonstrated comprehension and is able to apply essential knowledge and skills.
4 Demonstrates thorough, effective and/or sophisticated application of knowledge and skills.

Core Outcomes:

1. Communication.
2. Community and Environmental Responsibility.
3. Critical Thinking and Problem Solving.
4. Cultural Awareness.
5. Professional Competence.
6. Self-Reflection.

Course #	Course Name	CO3
AMT 101	Intro to Airframe & Powerplant	2
AMT 102	Aircraft Electricity I	4
AMT 105	Aviation CFRs & Related Subjects	4
AMT 106	Aircraft Applied Science	4
AMT 107	Materials and Processes	4
AMT 109	Assembly & Rigging	4
AMT 115	Aircraft Structures & Inspection	4
AMT 117	Reciprocating Engine Theory & Maintenance	4
AMT 120	Propellers & Engine Installation	4
AMT 121	Turbine Engine Theory & Maintenance	4
AMT 123	Ignition Systems	4
AMT 124	Fuel Metering Systems	4
AMT 203	Aircraft Electricity II	4
AMT 204	Aircraft Electricity III	4
AMT 208	Aircraft Systems	4
AMT 211	Composite Structures	4
AMT 212	Sheet Metal	4
AMT 213	Hydraulic, Pneumatics & Landing Gear	4
AMT 214	Instruments, Communication & Navigation Systems	4
AMT 216	AMT Practicum / Airframe	4
AMT 218	Powerplant Inspection	4
AMT 219	Turbine Engine Overhaul	4
AMT 222	Reciprocating Engine Overhaul	4
AMT 225	AMT Practicum / Powerplant	4

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The following list shows the AMT degree and certificate outcomes that align with the PCC College core outcome of **critical thinking and problem solving**:

- Make independent and accurate airworthiness judgments in the process of inspecting and maintaining aircraft structures and powerplants in accordance with applicable airworthiness requirements.
- Develop and implement a plan for aircraft maintenance action based on research and understanding of appropriate maintenance and inspection data.
- Troubleshoot aircraft structures, powerplants and their associated systems with a discerning recognition of the specific malfunction within the scope of the overall aircraft and associated systems and accomplish the correct maintenance action that will allow approval for return to service of the affected items.
- Develop and act upon a personal attitude and plan of "Safety Awareness" and compliance that includes one's self, ones' co-workers, the work area, and the aircraft.
- Satisfy the FAA required competencies for completing the required written, oral and practical exams for the Airframe and Powerplant ratings of the FAA Mechanic certificate.
- Integrate airframe and powerplant knowledge to create adaptable solutions to evolving problems satisfying the greater aviation maintenance industry need.

1. The AMT department implemented several changes to the following class projects with the focus on improving students' attainment of outcomes.

AMT213
The SAC removed an Instructional Goal from the course content and moving it to AMT115:
F. Assembly and Rigging, (appendix C, #27)
"Conduct a landing gear retraction test"
Making changes to the Project List (Pink Sheet) per the CCOG.

AMT115.
Adding "Conduct a landing gear retraction test" to the Project List (Pink Sheet) from AMT213

AMT214.
The SAC made several changes to the Project List (Pink Sheet) of the CCOG. We rewrote the projects to identify clear direction and content and removing unnecessary content and confusion from the directions.

AMT109.
The SAC made several changes to the Project List (Pink Sheet) of the CCOG. We rewrote the projects to identify clear direction and content and removing unnecessary content and confusion from the directions.

AMT124.
The SAC made several changes to the Project List (Pink Sheet) of the CCOG. We removed some projects that were no longer relevant to the outcomes. We rewrote the projects to identify clear direction and content and removing unnecessary content and confusion from the directions.

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2. The AMT department continues to focus on the college core outcome of critical thinking and problem solving. Our assessment of student outcomes is based mostly on the input from FAA designated mechanic examiners (DME's) both present and previous. The DME input, although indirect, provides a significant basis to compare our curriculum with the FAA practical test standards. These standards have been published for several years but the department is currently able to concentrate on making necessary changes that will enhance student attainment of our outcomes.

In previous year's work, the SAC focused mainly on our program review and on improving our published outcomes. With that task accomplished, we are now able to focus on selected classes to examine the student demonstrated projects that the faculty uses to assess class outcomes. Those projects are made part of our FAA-approved manual and demonstrate to the FAA that all students will perform those projects to a satisfactory level.

3. The SAC believes that this method of assessment of outcomes is effective for the AMT program. Because the FAA standards identify the minimum acceptable level of knowledge and performance for a successful student (or applicant for a certificate and rating), our program standards are held to the same level. By using the practical test standards published by the FAA, we are able to prescribe projects that must be satisfactorily completed by every student in every class. In reviewing the outcome of critical thinking and problem solving, we find the following definitions and rubric to be guidance.

- ***Critical thinking*** *is a habit of mind characterized by the comprehensive exploration of issues, ideas, and events before accepting or formulating an opinion or conclusion. The following rubric is considered*

	Capstone	**Milestones**
Explanation of issues	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.
Evidence *Selecting and using information to investigate a conclusion*	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence in priority order.	Conclusion is logically tied to a range of information; related outcomes (consequences and implications) are identified clearly.

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- ***Problem solving*** *is the process of designing, evaluating, and implementing a strategy to answer a question or achieve a desired goal. The following rubric is considered*

	Capstone	**Milestones**
Define Problem	Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.	Demonstrates the ability to construct a problem statement with evidence of most relevant contextual factors, and problem statement is adequately detailed.
Identify Strategies	Identifies approaches for solving the problem that apply within a specific context.	Identifies approaches for solving the problem, only some of which apply within a specific context.
Propose Solutions/Hypotheses	Proposes solutions/hypotheses that indicate a deep comprehension of the problem. Solution/hypotheses are sensitive to contextual factors as well as all of the following: ethical, logical, and cultural dimensions of the problem.	Proposes solutions/hypotheses that indicate comprehension of the problem. Solutions/hypotheses are sensitive to contextual factors as well as the one of the following: ethical, logical, or cultural dimensions of the problem.
Evaluate Potential Solutions	Evaluation of solutions is deep, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is adequate, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.
Implement Solution	Implements the solution in a manner that addresses thoroughly and deeply multiple factors of the problem.	Implements the solution in a manner that addresses multiple factors of the problem in a surface manner.
Evaluate Outcomes	Reviews results relative to the problem defined with thorough, specific considerations of need for further work.	Reviews results relative to the problem defined with some consideration of need for further work.

The SAC recognizes that performance less than the milestones shown above would be less than acceptable to the FAA in a certification testing environment and therefore our program establishes the same standards of performance for every student, for every required (level 3) project, in every class.

4. The SAC needs to continue this class-by-class analysis of projects. The current target is to review AMT101, AMT105, AMT107, AMT120 and AMT208. It is well that we continue the momentum that we had last year.

5. The SAC continues to feel that the work done this last year is very important and will improve student achievement of outcomes. It needs to be the work of the faculty, in concert with the FAA, to develop the projects. The projects need to be clearly defined and the achievement levels understood. This is mostly done by written project directions, but is sometimes delivered (or supplemented) by oral instructions or demonstrations.