Program Name: Aeronautics Maintenance Technology

Assessment Period: 2009 - 2014

Program Mission Statement:
The Aeronautics Maintenance Technology program’s mission is to:

- Provide students with the opportunity to gain the documented knowledge and experience to qualify for certification as aircraft mechanics as required by the Code of Federal Regulations Title 14 Part 65 and in the manner prescribed by CFR Title 14 Part 147, as approved by the Honolulu Flight Standards District Office.

- Enable students to attain their personal educational goals by becoming highly qualified aviation maintenance technicians, meeting the needs of the aviation industry and thereby promoting safety in aviation.

- Provide specialized training as necessary for prospective aircraft technicians and industry.

Program Student Learning Outcomes:

- Satisfactorily pass the Federal Aviation Administration (FAA) knowledge, oral, practical and written examinations in General, Airframe, and Powerplant subjects

- Obtain FAA general mechanic, airframe and powerplant certification

- Demonstrate a working knowledge and mechanical ability to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147

- Identify, install, inspect, fabricate and repair aircraft sheet metal and synthetic material structures

- Maintain and repair any part in any aircraft system of any rotorcraft, light aircraft, air carrier aircraft, glider, or balloon within the regulatory limits imposed by the FAA certification, without error, to ensure the safety of the flying public

- Display proper behavior reflecting satisfactory work habits and ethics to fulfill program requirements and confidence to prepare for employment
Part I.

1. Executive Summary to Program Status
2. Response to previous program review recommendation.

Part II. Analysis of the Program

Program Description

The Aeronautics Maintenance Department is an approved aviation maintenance technician training facility operating under Federal Aviation Administration Air Agency Certificate No. DI9T087R with Airframe, Powerplant, and combined Airframe and Powerplant ratings. It is the only such school in the Pacific Basin.

History

The program was started in 1949, moved to a purpose built facility near the present Aloha and Hawaiian maintenance facilities in 1959, then moved to the present facility on `Iako Place in 1995. The program curriculum has gone through several revisions, the last major change being in 1989.

Program goals/Occupations for which this program prepares students

This program academically and legally prepares graduates for federal testing which results in the awarding of the federal Airframe and Powerplant Certificates. Once these certificates are awarded, graduates are qualified to maintain and repair any part of any aircraft system in any rotorcraft, light aircraft, air carrier aircraft, glider, or balloon within the regulatory limits imposed by the FAA certification, without error, to ensure the safety of the flying public.

Program Student Learning Outcomes (SLO)

- Satisfactorily pass the Federal Aviation Administration (FAA) knowledge, oral, practical and written examinations in General, Airframe, and Powerplant subjects
- Obtain FAA general mechanic, airframe and powerplant certification
- Demonstrate a working knowledge and mechanical ability to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147
- Identify, install, inspect, fabricate and repair aircraft sheet metal and synthetic material structures
• Maintain and repair any part in any aircraft system of any rotorcraft, light aircraft, air carrier aircraft, glider, or balloon within the regulatory limits imposed by the FAA certification, without error, to ensure the safety of the flying public

• Display proper behavior reflecting satisfactory work habits and ethics to fulfill program requirements and confidence to prepare for employment

Admission requirements

An individual who meets the general college admission requirements and the specific program prerequisites as listed in the catalog can enroll in the program. In addition, individuals with previous experience, civilian or military, or a single certification, or who have qualified for a single certification, may be admitted to the program to complete their certification requirements.

Credentials, licensures offered

Students enrolling in the Aeronautics program have three choices:

1. Certificate of Achievement in Aviation Maintenance Technician Certification: This program consists of the General Maintenance curriculum of 500 hours, the Airframe Maintenance curriculum of 750 hours, and the Powerplant Maintenance curriculum of 750 hours which meets the FAR Part 147 minimum required total of 1900 hours of theory and laboratory instruction in four (4) semesters and an additional semester of General Education courses. A Certificate of Achievement will be awarded to students completing the Aviation Maintenance Technician Certification program, upon application.

2. Associate in Science Degree in Aeronautics Maintenance Technology is awarded to students who complete the additional General Education requirements as well as the General, Airframe, and Powerplant Maintenance curricula as outlined under the Certificate program.

3. Transfer Option to prepare for the Completion of the Aviation Systems Management Degree in a 4-year program.

Faculty and staff

The program has three full-time faculty and two APTs who are qualified to substitute for any class in any subject.

Resources

Our resources are listed in our Part 147 program and approved by the local FSDO (Flight Standards District Office) and include our facility, aircraft, engines, equipment, tooling, computers, manuals and other miscellaneous items, adequate to provide the training necessary for an individual to qualify for certification as an aircraft mechanic.

Articulation agreements

Although we have no formal articulation agreements, our training is recognized for academic credit for most four year aircraft maintenance related degree programs.
Community connections, advisory committees, Internships, Coops, DOE connections

We meet twice each year with our Program Advisory Committee.

Distance delivered/off campus programs, if applicable

Not applicable

Part III. Quantitative Indicators for Program Review

AERO - Aeronautics Maintenance Technology

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Part IV. Analysis of Program

Overall, the AERO program continues to improve although it is still maintaining a Cautionary status. The job outlook forecast still remains positive and the projected number of new jobs and replacement positions are expected to grow in the next decades. Aviation periodicals quote Boeing and others sources that as many as 650,000 new mechanics will be needed world-wide by the year 2030. Locally, Hawaiian Airlines tells us they need more mechanics and is working to implement an apprentice system, Aloha Air Cargo has an apprentice system to guarantee the number of mechanics they will have available, and every member of our Advisory Committee tells us that they are having trouble finding people to hire, and expect to do so in the coming months and years.
Analysis of individual items is as follows:

Item 1: From what we can tell, it would appear that the State supplied New and Replacement Positions may be off by as much as a factor of three, as it does not include part-time employment.

Item 3: The number of Aero Majors has increased throughout the five year period. Our starting classes have all been full for the past several years.

Items 9 and 10: These are tied to our FAA limitation of class size, which requires one instructor for 25 students in a class. Although we start with a slightly higher number, with the agreement of the local FSDO (Flight Standards District Office) first semester attrition leaves us with the lower numbers.

Item 10: Our Persistence varies over the years due to a number of factors but remains close to 75%. We traditionally have a much lower retention rate with our first semester students, but some classes are better than others. Apparently some enter our program underprepared or without totally realizing just how time-consuming or strenuous this program can be. Regardless of the reason our first semester attrition rate is often somewhere around 15-20%, with many leaving within the first few weeks.

Item 15: Our Cost per Student Semester Hour varies over the years, but doesn't show a definite trend.

Item 17: Our Successful Completion, which have dropped recently requires some explanation. The current hiring climate means that many students who gain their certification go to work immediately, and don't continue on to achieve a degree. We are still awaiting the implementation of the system policy UHCCP #5.205, Notation of Academic Credentials from 2013 to count our program completions as an automatic award Certificates of Completion. We know that we have had, in the past, a high number of incompletes. This number of incompletes we (the Aero faculty) felt were primarily the results of a policy established by our previous Director. The policy allowed Aero students to maintain an incomplete grade for up to a year and a half. This seemed to create an atmosphere that there was no urgency in completing the classes on time and as a result, many didn't. This policy was formed as a result of our passport program, which resulted in additional projects, and at the time seemed warranted. When we discontinued the passport program about ten years ago, this extension program remained in effect, and the incompletes continued without justification. We have discontinued this policy effective the Fall 2011 semester. Having made the policy change, the on-time passing rate has jumped to over 90%.

Item 20: Another low value, Unduplicated Degrees/Certificates Awarded which rose from a low value of 3 to low value of 6 down to 2 basically due to the fact that the majority of the students entering the Aero program seem to be primarily concerned with receiving their FAA Airframe and Powerplant Certification. Those who opted to continue on and earn a Certificate of Achievement or an Associate Degree usually do so after completing the Aero program by the completion of the necessary liberal arts classes (additional semesters). As a result, the graduates from the Aero program who have completed the Aero courses and have received a Certificate of Completion (which is not currently recognized by this evaluation and which is all that is necessary for the FAA A&P certificate testing) have not yet earned or received an Associate Degree or Certificate of Achievement. This reflects in low numbers on this evaluation, which does not accurately depict the results of the students who attend the Aero program. We are currently in the process of having our Certificate of
Completion recognized as a program completion, which will result in more favorable figures for the Aero program. Historically, the overall average of students who are still enrolled by the end of the first semester (i.e. those who are not no-shows, or who drop early in the program) who complete the program and are eligible for their certification exams is close to 60%. Those students who complete the curricula are awarded our Part 147 Certificate of Completion that they need to be able to be signed off by the local Flight Standards District Office (FSDO) to be able to take their knowledge, oral and practical exams for their certification as aircraft mechanics.

Item 20d: Consequently “Other Certificates Awarded” is not 0, as we issue two FAA recognized Certificates of Completion per student who completes the curriculum requirements of the program as per our Part 147 Manual. The system has no means of measuring this necessary certificate issuance. As our enrollment continues to increase with industry demand and student interest, the numbers of the certificates that we award will increase. Once issued our certificates, our students who test almost invariably pass their written, oral and practical tests and become certificated mechanics, which is their goal while attending the program. Inexplicably, we have students who complete the courses, get their Certificates of Completion from us, and never take the certification exams. We don't know why, and it makes no sense to anyone else familiar with the effort that it takes to qualify for certification, but obviously their life goals changed after they became qualified. In some cases, an opportunity arises where certification is not necessary, and they move on to a different career. In addition, one of the difficulties our graduates have faced is that the FAA has not had a Designated Mechanic Examiner in the state of Hawaii for the past year or so, and students had to go out of state to take their exams, at considerable expense. There is now a single DME in the state, but there should be several more, in order to test applicants in a timely fashion and to provide alternatives.

Item 39: Given the goals of our students, it's rare when they transfer to a four-year program at UH, or other four-year school.

Perkins Data

2P1 Completion Rate is inaccurate in that the system does not recognize our Certificates of Completion, which is what most of our students wish to attain.

4P1 Student Placement has been met and we foresee that that number will continue to increase as the job market for our graduates is very tight.

5P1 and 5P2 Nontraditional Participation: the aviation industry would view nearly all of our graduates as nontraditional as measured by cultural and racial differences.

Part V. Curriculum Revision and Review

Every course offered is assessed each and every time it is offered.

We monitor changes in Part 147 curriculum requirements and get approval for any changes to the curriculum from the FAA that we incorporate. In addition, where no substantial change is required to our Manual, we include subject matter addressing the technical progress of the industry so that our
students can be prepared to meet the requirements of the industry when they go to work. We then update PLOs and SLOs as required.

**Part VI. Survey Results**

**Student satisfaction**

Our students enter the program in order to receive their FAA Airframe and Powerplant certificates, which will allow them to obtain employment in the field of their choice. As the majority of our graduates do reach this goal, their satisfaction is achieved. In addition, returning graduates all speak highly of the educational achievement required of the program, particularly as compared to coworkers who may have not received the type, scope, and rigor of training that they themselves experienced in our program.

**Occupational placement in jobs**

As is evident in our Perkins Data 4P1, job placement rates are very high. We foresee this number increasing as the job market for aviation mechanics is very tight.

**Employer satisfaction**

Although all of our committee members say that they will need to hire in the near future, the most compelling evidence is that not only are our students being hired, our committee members keep urging us to increase our output to meet their demands. Each meeting our members are asked about the quality of our graduates that they have hired, and their ratings are all good to excellent. This is in agreement with the results reported by students who have been hired by other operators as to how well they have been prepared by our courses. Almost invariably, they report that they are better prepared than graduates of other Part 147 programs, former military personnel, and even other employees that have been working for several years.

**Part VII. Analysis of Program**

**Alignment with mission**

Our mission is to provide the community with an education which allows for the attainment of FAA certification. We provide all of the skills, knowledge, and training that is legally required for this certification. As we have been operating under FAA oversight and approval continuously since 1989, we have met all of the requirements of that mission.
Strengths and weaknesses based on analysis of data

The demand for aviation mechanics is high and will continue to grow. We will continue to see increases in employment for graduates and incoming enrollment. Quality of incoming students needs to increase in order to increase our persistence. We are currently in the process of working with local operators Hawaiian Airlines and Aloha Air Cargo to introduce a program for high school students interested in becoming aircraft mechanics. This emphasis on quality at the high school level should increase the preparedness of our incoming students.

As noted earlier, the eventual recognition of the college and system of our Certificates of Completion, FAA certification, and the automatic issuance of Certificates of Achievement will dramatically increase our certificate numbers and will no longer require us to explain inaccurate data.

Evidence of quality/Evidence of student learning

The level of achievement for each individual SLO as well as the Program SLOs is 70% as defined by CFR Title 14, Part 147, 65.17(b). This means that every assignment and project that the students in the program complete must be done to at least a 70% absolute grading scale, but most final grades are in the mid-80% globally. As required by the FAA, every SLO is assessed for each student.

The SLOs are mapped to the PLOs using a matrix listing the PLOs and the evaluation method used. Each course assesses student achievement with numerous objective and subjective evaluations, including, on average, a dozen subject objective exams, a final exam, oral exams, written work, and practical tasks, which are tallied on a Project Check List for each student, signed off by the student and the instructor, as well as tables of student scores recorded using MicroGrade Pro course software. Records for each student are compiled and filed at the Aero facility and kept indefinitely.

Students that complete the program meet all of the PLOs and SLOs, by regulation.

Our Part 147 Manual, which our approved agreement with the FAA, states that all work will be completed to a 70% standard or better for an individual to pass the classes and complete the curricula requirements. By completing the curricula requirements, the student satisfactorily completes both course and program SLOs to the required standard.

Resource sufficiency

As with many programs, we are continually looking for ways to increase our resources. We currently receive grants from Boeing, without which we could not operate. Although these grants have been fairly steady over the past five years, they are not a guaranteed source of income. We find it difficult to effectively plan for future requirements without a solid source of funding.

We are and continue to pursue the approval for the introduction of lab fees. As our enrollment grows, our costs also grow. Without a commensurate increase in funds for our higher enrollment, we will simply need to begin turning students away. Several of our courses require extensive purchasing of supplies with which students create projects that are their own to keep. We feel that these supplies should be eligible for inclusion in a lab fee.
Recommendations for improving outcomes

Our FAA approved curriculum and system of instruction has been operating with success by several measures over the years. It works well for the individuals who are prepared for the required course work. We continue to seek assistance for individuals who come into the program and prove deficient academically to be successful.

Part VIII. Action Plan

We are working to have a close working connection to local operators, notably Hawaiian and Aloha Air Cargo. They want to work with us to provide a conduit for middle and high school students to get on a pathway to get the basic education they need to be able to go into our program, be successful in completing the program, and ultimately get hired as certificated mechanics. This will include outreach, public relations, recruitment, advertising, etc., efforts as necessary, using their resources, and working with the HCC personnel.

Part IX. Resource and Budget Implications

The outreach effort will be funded by the operators, which indicates the level of interest in our program and our graduates.