**Sinclair Community College - Continuous Improvement Annual Update 2010-11**

**Program:** Aviation Technology

**Section I: Trend Data**

1. **Program Trend Data**

Our Professional Pilot and Airway Science program (APPAO.AAS) saw a 77% increase in active students from Fall 05 through Fall 07 followed by a 21% drop through Fall10, while at the same time we began to see students graduating from this arduous program with the number of graduates doubling from two to four between Academic Year (AY) 07-08 and 09-10.

Our Aviation Maintenance program (AVIAO.AAS) was our star with a steady 67% increase in active students from Fall 05 through Fall 10. Graduates of the program were few (two in AY 08-09 and one in AY 09-10) although the number of students completing one or more of the three undergirding maintenance certificates (Airframe, General, and Powerplant Aviation Maintenance (AAM.CRT, GAM.CRT, and PPAM.CRT) ) was significantly higher - seven in AY 05-06, 13 in AY 07-08, two in AY 08-09, and nine in AY 09-10.

The Aviation Technology program (AVIAT.AAS) experienced a 63% increase in active students between Fall 05 and Fall 08, with a 20% decline by Fall 10. The graduation rate steadily increased from AY 05-06 through AY 08-09 (four to 13) but dropped off to seven in AY 09-10.

Our Aircraft Dispatcher certificate program (ADSP.STC) saw an increase in active students, holding steady between 26 and 30 students over the last three years. The largest number we've seen complete the certificate program was 16 in AY 08-09 with six completing the certificate the following AY.

The Flight Attendant certificate program (AFAS.STC) has been a pleasant surprise with a big increase from four students in Fall 08 to between 12 and 14 by Fall 10, with ten completing their certificate programs in AY 09-10.

Our average success rate across all AVT degree and certificate programs from FY 05-06 throught 09-10 is 88.2%.

1. **Interpretation and Analysis of Trend Data** *Suggestions of questions that might be addressed in this section: What trends do you see in the above data? Are there internal or external factors that account for these trends? What are the implications for the program or department? What actions have the department taken that have influenced these trends? What strategies will the department implement as a result of this data?*

Contrary to the increase in overall student enrollment over the last two years, the downturn in the economy accompanaied by a depressed job market made a big impact on the number of students enrolled in our Professional Pilot program (APPAO.AAS), because of the expense of the program. We saw what appeared to be a related enrollment drop reflected in our Aviation Technology program (AVIAT.AAS), yet the Maintenance program (AVIAO.AAS) numbers,with its underlying certificates, and the Aircraft Dispatcher (ADSP.STC) and Flight Attendant (AFAS.STC) certificate programs' numbers remained strong. These programs had several displaced workers looking for training and work.

According to Louis Smith, President of Fltops.com, the four factors that created the depressed job market are now disappearing - the mandatory retirement age to 65, elimination of the third pilot due to aircraft manufacturers design of two pilot aircraft for cost savings, increases in oil prices and a depressed economy. The mandatory retirement age for airline pilots changed from age 60 to age 65 on Dec 14, 2007. At that time, the FAA estimated that there were 144,681 Airline Transport Pilots (ATP) in the US as of Dec 31, 2006. Over 13% of those ATPs were between 55 and 59 years of age and over 15% were between 50 and 54 years of age. Keeping the mandatory retirement age at 60 would mean airlines would have lost their most experienced pilots at a rate of almost 3% per year over ten years at a time when the FAA expected passenger traffic to increase by 4% annually. Changing the mandatory retirement age merely put a band-aid on the pilot shortage but it will create a flurry of pilot positions in the next two years.

The FAA long range forecast for 2015-2025 indicates the regional/commuter industry is projected to continue to grow at a relatively faster pace than the large air carriers through both the immediate and extended forecast periods, averaging 5.5 and 4.2 percent, respectively. Most of the growth during the extended forecast period is expected to be derived from markets created by the expanded use of regional jet aircraft to serve markets that cannot be served economically with large jet aircraft. Sinclair students in the Aviation Technology program typically start their careers in the regional/commuter industry - flying for airlines such as PSA, Pinnacle, Colgan, Sky West, ASA and Comair. This forcast affects Sinclair's entire aviation program.

Graduation rates are curious and do not accurately reflect the success of many of our flight and maintenance students. Our experience has been that students in the Aviation Maintenance program either refuse to declare a program, or they will take only the classes they need to earn the time required by the Federal Aviation Administration (FAA) to be able to test for their FAA maintenance certificates. As a matter of fact, the FAA website shows the following FAA maintenance certificates awarded to Sinclair students:

FAA Aviation

Maintenance

Certificates AY 05-06 AY 06-07 AY 07-08 AY 08-09 AY 09-10

Airframe 3 1 2 5 6

Powerplant 5 3 3 5

General 2 1 2 5 2

Compare that to the Sinclair graduation numbers:

Program AY 05-06 AY 06-07 AY 07-08 AY 08-09 AY 09-10

AAM.CRT 2 4 1 1

PPAM.CRT 3 6 1 7

GAM.CRT 2 3 1

One final issue that is a detriment to our Maintenance program is its location at the MVCTC (15 miles from the Sinclair campus) and the fact that all of our maintenance classes are night and weekend classes. That leaves little time for our students to take other classes, and it leaves many of them with little desire to finish a degree. This must certainly stunt growth. We have seen many potential students as well as capable and highly qualified potential instructors walk away in frustration when they find out the location and class hours. Several potential instructors have told us were the teaching positions full time rather than part time, that would have made the location and class hours much easier to deal with.

We have seen our professional flight students in APPAO.AAS struggle over the years with obtaining the funding necessary to see them through the entire flight training program. Often they will simply switch their major to the AVIAT.AAS program just so they can complete their degree while they do what they can to find the money to finish their aviation certificates, ergo the low APPAO.AAS graduation numbers compared to the population.

We are making a conscious effort department-wide to encourage our students to declare a major and to earnestly pursue their degrees. We are emphasizing the fact that employers use holding a degree as a discriminator among job applicants.

Overall our students do a good job in the classroom as indicated by our strong success rate of 88.2%.

**Section II: Progress Since the Most Recent Review**

1. What was the fiscal year of the most recent Program Review for this program? 2007-2008
2. Briefly summarize the goals that were listed in Section IV part E of the most recent Program Review Self-Study (this section of the Self-Study asks “What are the department’s/program’s goals and rationale for expanding and improving student learning, including new courses, programs, delivery formats and locations”)?

- Expand pilot training to better meet industry demand for new pilots

- Find the right formula for satisfying the extremely high demand for Flight Attendants

- Publicize the Flight Dispatcher program to attract more candidates to this "hidden profession"

- Relocate the Aircraft Maintenance program into the Wright Airplane Factories to double or triple its enrollment.

- Closely track industry developments and quickly change to provide appropriate training. Recent examples are: composite materials for aircraft structures; "glass" cockpit instrumentation vs. old electromechanical gauges; changes in FAA licensure to streamline pilot training; changes in air traffic control from ground-based analog radar to space-based digital satelite systems such as GPS

1. Have these goals changed since your last Program Review Self-Study?  If so, please describe the changes.

no

1. What progress has been made toward meeting any of the goals listed above in the past year?

1. We moved our flight training to Aviation Sales, Inc., at Wright Brothers Airport over three years ago. This allows us the luxury of training from an uncontrolled airport, making sortie generation much simpler and faster. A full cadre of flight instructors, most of whom are Sinclair graduates or students, is in place, and a rigorous training program has been certificated by the FAA under 14 CFR Part 141 .

2. Our Flight Attendant program was revamped to a one-quarter, 17 credit hour program. Since that time we have seen a marked increase in enrollment, and we have seen great success with job placement. Well over half of the program graduates have been hired by regional and national airlines. We have publicized the program campus-wide as well as in the newspaper and on radio.

3. We constantly recruit students through industry job fairs, high school career fairs and college days, message boards, networks, and other outreach events such as the Vectren Dayton Airshow.

4. Our desire is to relocate the Maintenance program, whether to the Wright Airplane Factory (the old Delphi plant on West Third St.) or some other location. We continue to build up our own supplies and training devices through the capital budget process in anticipation of standing on our own. How much more needs to be spent will depend on whether new or used equipment can be purchased. The current estimate is $105,000. This does not include the lease or purchase of a facility. MVCTC rent is currently $25,000 per year, but we expect to see an increase in the near future.

5. We are pursuing purchase of a new flight simulator with "glass" cockpit to update our training and to enhance our recruiting "wow" factor. All modern regional jets and transport category aircraft are equipped with glass cockpits. These are the aircraft that our students will fly when they leave our program to begin their careers. According to Landsberg (2011), a National Transportation Safety Board (NTSB) study looked at a very particular subset of general aviation glass cockpit aircraft manufactured during the years 2002 through 2006—a period in which newly manufactured aircraft were transitioning from analog instruments to glass. It said that glass cockpit aircraft were involved in fewer total accidents than their proportion of the test group would predict, but a higher number of fatal accidents than would be predicted. “That is consistent with what we found in both of our studies of technically advanced aircraft,” said Bruce Landsberg, president of the AOPA Air Safety Foundation. “The key is the mission. As the NTSB staff noted, glass cockpit aircraft tend to be used for more demanding flights involving longer distances and, often, instrument meteorological conditions.” The NTSB study again echoed earlier Air Safety

Foundation reports, saying that pilot training and proficiency with the avionics suite are crucial to deriving safety benefits from glass cockpits. NTSB Chairman

Deborah A.P. Hersman noted at one point that glass cockpits may eventually yield a measurable safety benefit as more of them enter the fleet and more pilots gain experience with the systems. Flying any glass cockpit aircraft requires transition training to familiarize the pilot with the aircraft's systems. Transition training is most effective when a pilot prepares ahead of time. Experience with conventional or analaog instruments (which we currently train in) do not adequately prepare our students to operate glass cockpit avionics; however, software applications and glass cockpit trainers have been proven to be effective in transition training.

We are in the process of developing a UAV/UAS certificate program in response to the growing demand for operators of these systems. We must constantly be vigilant for changes in the aviation industry, especially regarding FAA certification and licensure. All indicators point toward a huge demand for operators and maintainers in the next few years, so we must be ready to respond to that need.

Again, according to the FAA, the total pilot population is forecast to increase from 640,113 in 1999 to over one million by the year 2025, an average annual growth rate of 1.8 percent over the 26-year forecast period. Much of the growth results from the continuing demand for Airline Transport Pilots. Additionally, recent industry program initiatives designed to promote the benefits of general aviation flying to businesses and the public, to stimulate growth in the number of new pilots, and to develop an improved flight training infrastructure (glass cockpit) are also expected to contribute to the growth in the pilot population. During this same time period, the number of instrument rated pilots is expected to increase from 308,951 to 463,600. The percentage of instrument rated pilots decreases from 48.3 percent in 1999 to 45.8 percent in 2025 because of the projected increases in student pilots relative to the total pilot population.

1. What Recommendations for Action were made by the review team to the most recent Program Review? What progress has been made towards meeting these recommendations in the past year?

• Document program learning outcomes for each program within the department and evidence of student learning within each program.

Program outcomes are documented. Student learning is evident in the success rate described in Section I. a. Additionally, our department programs have strong indicators of proficiency in the learning outcomes for the program because of the nearly 100% requirement for passing stringent FAA testing for licensing. Any failure by a student in the FAA testing process becomes a matter of permanent record with the Federal Government. Nearly all of our students are enrolled in programs that require them to pass these stringent FAA oral and written exams to obtain their certifications. These exams typically range from three to 12 hours in duration. This is the "gold standard" for gauging competencies. That the students must be skilled in their technical knowledge is a given. They must also be able to present this knowledge in exhaustive written and oral testing by outside examiners in order to qualify for licensing. Qualifying standards are generally 70%, or higher. The pass rate for our pilot and flight dispatch students is 98+%. Maintenance students have a pass rate of 100%. We typically pre-test our students on an individual basis, to higher standards, before signing them off to take the FAA exams.

• Incorporate formative assessment throughout the program to provide more information about students’ progressive mastery of key concepts and skills. Identify reasons for attrition and develop strategies to improve retention.

Formative assessment is the key to our success, especially in the professional pilot, maintenance, and aircraft dispatcher programs. The FAA requires milestones, defined by FAA regulations, be met throughout the education/training process before progression to the next level or FAA certification is earned. Attrition can most often be directly related to money (especially in the professional pilot program) and the time required to complete the programs. We see this usually with those students who are working full time and trying to take the minimum hours required to maintain financial aid.

• Evaluate the scope of programs the department is offering in light of available resources. Although the quantity and quality of work accomplished by this relatively small department is quite impressive, sustaining the growing workload evident in recent years may not be feasible.

At this time, we are near or at the limit of what we can sustain, yet, at the same time, this very dedicated staff of only four full-time employees (the chair, one professor, one ACF, and one professional staff) is always looking for ways to expand and improve the programs. Two examples: the Aviation Diesel grant and the potential UAV/UAS program. We very successfully utilize a large cadre of highly qualified adjunct faculty, who bring with them the most current knowledge and trends in the industry. The downside is a certain difficulty in maintaining continuity and consistency of instruction, and the sheer logistic difficulty of hiring and scheduling our adjunct faculty, which changes every quarter. We have seen several capable and highly qualified potential part-time instructors walk away in frustration when they find out the location and class hours of the maintenance program. Several of them told us were the teaching positions full time rather than part time, that would have made the location and class hours much easier to deal with. Most worrisome is that with only one chair, one professor, one ACF, and one professional staff, who are collectively running three degree programs and five certificate programs, with an enrollment of about 75 FTE, we constantly face the threat of severe consequences from losing one or more of these four key people. Our one professor teaches strictly flight courses, while our ACF splits his time between flight and maintenance courses. All the rest are adjuncts. We have literally no depth to keep this department operating properly if any one of the four departs on short or no notice. We could aleviate some of this tension by adding at least one full time faculty member dedicated to the maintenance program.

• Evaluate the viability of the flight attendant program in its present form. Explore whether a continuing education versus credit model is more appropriate and whether a blend of online and face-to-face instruction may better meet the needs of prospective students and employers.

See Section II. c. 2.

• Track graduates and their success in employment and further study.

Our faculty and staff do all they can to track our graduates and to maintain contact with them, but this is only as good as the effort our graduates put into maintaining that contact with us.

**Section III: Assessment of Outcomes**

The Program Outcomes for this program are listed below. **At least one-third of your program outcomes must be assessed as part of this Annual Update, and across the next three years all of these program outcomes must be assessed at least once**.

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| --- | --- | --- | --- |
| **Aviation Technology** Program Outcomes | In which courses are these program outcomes addressed? | Which of these program outcomes were assessed during the last fiscal year? | Assessment Methods  Used |
| **1)** Computer Literacy | AVT 105  AVT 240 |  |  |
| **2)** Critical Thinking/Problem Solving | AVT 110 |  | * Stage checks |
| **3)** Information Literacy | AVT 105  AVT 240  AVT 242 |  |  |
| **4)** Oral Communication | AVT 105  AVT 240  AVT 242 |  | * Quality of oral presentations |
| **5)** Values/Citizenship/Community | AVT 105  AVT 240  AVT 242 |  |  |
| **6)** Written Communication | AVT 105  AVT 240  AVT 242 |  | * Quality of written assignments |

1. For the assessment methods listed in the table above, what were the results? What changes are planned as a result of the data? How will you determine whether those changes had an impact?

The classroom instruction for AVT 110, Private Pilot Ground School, was adjusted to accommodate the FAA Part 141 instructional process template which requires specific milestones be met throughout the education/training process before progression to the next level of instruction. FAA Part 141 required we rigidly structure ground school training and flight training curricula by implemented a series of stage checks in both ground school and flight lab to align the ground and flight training curricula. We saw students were progressing at a different pace between their ground training and their flight training, often finding themselves disassociated. We are now seeing more consistent knowledge retention and confident skills from classroom to cockpit. Obviously, the ground school student’s progress through his/her flight training is constantly evaluated by the flight instructor, and when consistent deficiencies are observed among flight students, those deficiencies are assessed and considered by both ground and flight instructors.

AVT 105, 240, and 242 all require oral presentations of different types of material, whether a simple report, a personal assessment, or a mock interview. In addition, classroom participation and interaction are required. In some cases, presenters are evaluated not only by their instructor, but by their classmates as well. We will continue to stress the importance of students’ ability to listen carefully and to communicate logically, clearly, and confidently.

In the course of evaluating students’ written assignments in AVT 105, 240, and 242, faculty recognized the desperate need for improvement in written communication skills. Faculty now require students to receive feedback from the Sinclair Writing Center. This has made a notable difference in the quality of the written assignments, although the Writing Center’s review is far from thorough.

b) What other changes have been made in past years as a result of assessment of program outcomes? What evidence is there that these changes have had an impact?

Our flight training provider received its FAA certification under CFR 14 Part 141 certification, which means the flight training is now conducted with continuous assessment by the chief flight instructor to insure students’ progressive mastery of key concepts and skills. FAA Part 141 required we rigidly structure ground school training and flight training curricula by implemented a series of stage checks in both ground school and flight lab to align the ground and flight training curricula. We saw students were progressing at a different pace between their ground training and their flight training, often finding themselves disassociated. We are now seeing more consistent knowledge retention and confident skills from classroom to cockpit.

1. Describe general education changes/improvements in your program/department during this past academic year (09-10).

We continue to place increased emphasis on communication, not just reading and writing, but also listening and speaking. Generally, incoming students are poorly schooled in listening and oral presentation skills. As stated above, we require our students to have their written assignments reviewed by the Writing Center.

**Section IV: Improvement Efforts for the Fiscal Year**

1. **FY 09-10:** What other improvement efforts did the department make in FY 09-10?  How successful were these efforts?  What further efforts need to be made? If your department didn’t make improvement efforts during the fiscal year, discuss the strengths and weaknesses of the department over the last year and how the department plans to address them in the coming year.

The department’s strength lies in the experience, the unique qualifications, and the dedication of faculty and staff, as well as in the current industry experience and qualifications of our part-time instructors which all translate directly into quality instruction. At the same time the fact we have to rely on so many adjuncts is itself a weakness. In addition, our department has no “bench strength” in its full-time faculty and staff as discussed in Section II.e. One new full-time faculty to teach on the maintenance side would provide stability for our professional staff / maintenance program coordinator and would certainly help alleviate the fruit-basket-turnover we have experienced lately among the maintenance adjuncts. We also have several long-time, dedicated, part-time instructors in our specialty courses who are nearing retirement for whom we must be seeking replacement instructors.

1. **FY 10-11:** What improvement efforts does the department have planned for FY 10-11? How will you know whether you have been successful?

We will continue to assess the quality of our programs and to improve the instruction within those programs by hiring qualified part-time instructors. We will continue to pursue the relocation of our aviation maintenance program to a stand-alone location which, by its very nature, will allow for both day and night classes; we are confident this would increase our enrollment by a factor of two to three times. It most certainly would improve our image, thus improving the results of our recruiting. We will pursue avenues to promote better and more efficient use of our flight simulator. We will continue our recruiting efforts and will continue to look for ways to improve our program completion rates.

Questions regarding completion of the Annual Update? Please contact the Director of Curriculum and Assessment at 512-2789 to schedule a time to review the template and ask any questions.