

Portland Community College
Aviation Science
Program Review

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Executive Overview

This review is intended to fulfill the requirement for a continuous improvement process.

The Aviation Science (AVS) program began in Fall of 1999. It is a two-year Associate of Applied Science degree program, during which the student has the opportunity to earn their FAA Commercial Pilot certificate and FAA Flight Instructor certificate. These certificates qualify the student to teach in a flight school. Though PCC currently has an option to complete the Airplane program without earning the Flight Instructor certificate, no student has yet chosen this option.

A Helicopter program was added to Aviation Science in Fall of 2001. It is the intention of this review to include both airplane and helicopter programs, though little information will be available concerning the helicopter program.

The information for this review came from four areas:

1. A student "focus group" exercise.
2. An analysis of how Aviation Science contributes to PCC's Core Outcomes.
3. Faculty (SAC) input.
4. An analysis of statistical data concerning student success.

Conclusions were drawn primarily from the first three areas. The SAC synthesized a list of immediate action items and a set of questions that need to be addressed during the next review period based on those conclusions.

Though the Aviation Science program has barely been in existence for one review period, this review has been a valuable tool for taking a first look at the program. Dan Kidney, working with Academic Services, suggested that it might be appropriate given the age of the program to focus this review on laying the groundwork for the next three years and the next review. He also provided the Small Group Exercise as a tool (results begin on page 8).

There have been two primary outcomes for this review:

1. Areas have been identified within the program for review and change in the coming months.
2. Development will begin on a set of tools that will allow a more accurate assessment of our progress/success at the next review.

Conclusions

The review finds the Aviation Science program growing and improving. Fall finds the list of students enrolled in the program at 111, with 103 of those attending at least one Aviation Science classroom course. Current headcount is over 190.

The sense from both the faculty and student input is that the student success rate is being positively effected by the actions already being taken in the program. The students are generally satisfied with the program, identifying flexibility, industry exposure and quality of instruction within the program as keys to the program's success so far. The faculty finds that the intended outcomes for the courses are being met.

There are some specific areas identified by both faculty and students that need to be reviewed further. They are specified in the immediate action list.

The biggest challenge for the program is the completion rate for the Flight courses. This is not surprising given the difficulty and financial commitment for these courses. A concentrated effort to give new students more thorough advising and attention during their first few terms seems to be having a positive impact in this area and efforts along those lines will continue. Proven techniques for reducing attrition are being implemented such as:

- Student Activities (ASPCC chartered club)
- Student Mentor Program
- Exposure to industry professionals
- Initial and periodic program advising

Feedback is positive so far, but better information is needed to gauge success. Additional steps to deal with financial issues may also include devoting time in AVS-127 *Introduction to Aviation* specifically to financial planning and identifying program pace options that suite individual life situations.

Related at least in part is this program's struggle with the same issue that PCC faces as a college: People come to this program with a very diverse set of goals, resources, expectations and experience. In response, it will be the goal of this SAC to be on the way to answering both of the following questions in three years at the next review:

What is student success as it relates to the Aviation Science program?

Part of the focus for the Aviation Science in the near future must be on establishing program specific definitions for student success. Due to the nature of our program with respect to the financial commitment necessary on the part of the student, the career path and the impact of weather on the flight training portion of the program, traditional data provided by the PCC Banner system is insufficient.

Students who work part- or full-time in order to fund their training need to spread the program out over a longer time span. Information from Banner would indicate that they discontinue the program every time they skip a term. Some students participate only in select parts of the program with an eye towards transferring to a four-year institution and have no interest in earning an Associate of Science degree. Other students participate in the program solely for self-fulfillment, and are satisfied with earning their Private Pilot certificate with us. They do not view their departure as "dropping out." Do we continue to provide access to this segment of our community? What is success for those students?

One way to ensure a higher rate of student success would be to limit the program to those who could prove their financial ability to complete the program. This, of course, would be contrary to PCC's mission as well as unfair to those students that have to struggle to fulfill their dreams and start a career; arguably some of the best students. Therefore, there will always be students who, due to life changes or lack of funding, will not complete the program. Some of them may return at a later date when additional funding is secured. Should these be counted as successes? These and other similar questions will have to be addressed during the course of the next review cycle.

How many of our students are succeeding?

A system of student tracking within and after the program needs to be established that includes the goals of the student. This will also lead to information about *why* some students are not completing and allow us to address those challenges over which we have some influence. Students that fail to complete the program due to shortcomings in the program need to be separated from those who stop because of financial shortfalls.

Intermediate steps, such as Private Certificate, Instrument Rating, etc., may need to be identified in order to facilitate tracking of student success. Though these steps do not meet the employability requirements for certificate programs, issuance of awards at these steps would help quantify student progress while also providing some additional positive reinforcement.

The non-financial issues brought forth in the “What doesn’t work” sections of the discussion group exercise appear to be readily addressed. There will need to be a reassessment of credit hours assigned to each course as well as reexamination of some of the course material / structure.

Given the complex nature these questions and the action list, it is unlikely that the sole full-time faculty will have the time necessary to accomplish all that is desired. Some part-time involvement and appropriate funding may be necessary if another full-time faculty is not added to the program.

Action Items

Define Student Success for Aviation Science Courses and Program

- Accommodating diverse student goals
- Consider committee
- Investigate work in other programs

Develop Student Tracking Systems

- Flight course progress reporting
- Comprehensive student file

Investigate Alternative Program Options

- Sorting of Continuing/Community Education students from Degree/Career students
- Investigate work in other programs

Review Credit Hour Distribution and Content for these courses:

- AVS-130
- AVS-140
- AVS-150
- AVS-147

Continue to Encourage / Establish Student Activities

- PCC Flight Crew (ASPCC Charter)
- AVS Student mentor program

Improve Program Advising

- Inclusion of financial planning
- More detailed printed / web-based material
- Improved program orientation
- Periodic

Continue Training of PCC Staff

- Financial Aid Staff
- Advising Staff

Grading Policy Review

- Make-up quiz/exam policies
- Uniform inclusion of attendance grading across the program
- Review Flight Course Grading
 - Investigate inclusion of attendance, homework and other criteria
 - Investigate possibility of P/NP for these courses

Review Stage Checks

- Consider elimination of redundant stage checks

Review All Courses for Cultural Awareness Opportunities

- Investigate other programs' work in this area.
- Seek outside advice

PCC Core Outcomes

As part of this review, each of PCC's core outcomes was examined to determine whether they were being fulfilled within the AVS program. They are addressed individually below.

While overall the SAC found that the Aviation Science includes the majority of these outcomes within its courses at a robust level, we feel that inclusion of Cultural Awareness is weak. Though it is discussed in a couple of classes, the students' awareness is not assessed at this time. Given our industry's lack of diversity, we feel that further effort is warranted and this will be the subject of SAC discussions in the near future with the goal of inclusion of this outcome well before the next review.

Communication

Graduates of Portland Community College should be able to communicate effectively by determining the purpose of communication; analyzing audience and context to use appropriate language and modality; and by responding to feedback to achieve clarity, coherence, and effectiveness.

Communication is thoroughly addressed within the AVS program on several levels. Specific techniques are taught for speaking up in stressful situations as part of our industry's Crew Resource Management philosophies. These philosophies are presented early in the program and used as a framework for discussion in every course. This framework is proven for our industry, and borrowed with permission from a local Regional Airline.

Air Traffic Control communication is integral to the Flight courses throughout the program.

Networking skills, including informational interviewing, are included in detail in the *Aviation Careers* course (AVS-227).

In the course of earning the Flight Instructor Certificate towards the end of the program, communication is covered in much greater detail, including the laws of learning, instructional techniques and lesson planning. The effectiveness of the exposure to communication skills within the program can be measured by the effectiveness of the instructors that we are graduating. Feedback from the school that has hired our first few graduates is very positive.

In addition to what we teach within the AVS courses, students seeking a degree must also necessarily be further exposed to communication skills while earning the required General Education credits.

Community and Environmental Responsibility

Graduates of Portland Community College should be able to apply scientific, cultural, and political perspectives in understanding the natural and social world and in addressing the consequences of human activity both globally and locally, demonstrating an understanding of social change and social action.

Within the AVS core courses, our impact on society and the environment are routinely included in relation to various topics. Our industry tends to be controversial with regards to the general public, and we are constantly involved, as an industry, in efforts to be good neighbors and improve the image that we project. This effort is and will continue to include our students.

These areas are specifically covered in *Introduction to Aviation* (AVS-127), and enforced throughout the program.

In addition to what we teach within the AVS courses, students seeking a degree must also necessarily be further exposed to consideration of the community and environment while earning the required General Education credits.

Critical Thinking and Problem Solving

Graduates of Portland Community College should be able to think critically and creatively to solve problems, understanding and using various methods of reasoning and evaluating information and its sources.

These areas are presented in *Introduction to Aviation* (AVS-127) and then expanded and repeated throughout the program in terms of Crew Resource Management, Aeronautical Decision-Making, and Pilot Judgment. The FAA mandates inclusion of these materials in all the ground schools. These areas are further expanded within the Flight Instructor ground, and exercised extensively in all of the flight courses.

Cultural Awareness

Graduates of Portland Community College should be able to demonstrate an understanding of the varieties of human cultures, perspectives, and forms of expressions as well as their own cultures complexities.

There are discussions in *Introduction to Aviation* (AVS-127) and *Aviation Careers* (AVS-227) specifically about the lack of diversity in our industry. A review is in order to see whether more might be included in the program to encourage this outcome. Hillsboro Aviation has a culture-rich environment due to their involvement in the international flight training industry. Enforced or encouraged involvement with international students there may go a long way towards improving this area.

Professional Competence

Graduates of Portland Community College should demonstrate mastery in a discipline or profession at a level appropriate to program and transfer requirements through the application of concepts, skills, processes, and technology in the performance of authentic tasks that enhance community involvement and employability.

PCC instructors and Instructor Check Pilots assess the students' practical skills and knowledge throughout the program. In addition, they are required to take numerous FAA written tests and flight tests with FAA designated examiners. These tests are thorough and, since the designated examiner comes from outside the program, objective. The students who have earned at least their Flight Instructor certificate are employed and we have received positive feedback from their employer.

The Aviation Science program provides for studies in aviation technical subject areas beyond what the FAA requires and what the typical pilot would receive during this phase of their training. This in-depth coverage includes the following courses:

Introduction to Aviation (AVS-127)

Applied Aerodynamics (AVS-137)

Aircraft Systems and Structures (AVS-147)

Aviation Laws and Regulations (AVS-237)

Economics of Flight Operations (AVS-267)

Self-Reflection

Graduates of Portland Community College should be self-appraising in applying the knowledge and skills they have learned, examining and evaluating personal beliefs, and comparing them with the beliefs of others.

As part of the Aeronautical Decision-Making and Pilot Judgment training in *Introduction to Aviation* (AVS-127), the students are required to participate in a self-assessment of hazardous attitudes. This is enforced in each ground school.

Flying is an intense, difficult set of skills that require constant self-evaluation, objectivity and growth in order to master. An objective self-assessment of the students' ability to perform each flight is a mandatory part of the pre-flight process throughout the program. The student must be willing to see their own character traits that are a barrier to learning and performing in a (sometimes) very stressful environment if they are to make it through the program.

Aviation Careers (AVS-227) begins with self-reflection exercises on what will bring satisfaction from future employment, and this is used as a framework for discussing the job-hunting process.

Faculty Input

After reviewing the Student Small Group exercise (begins page 8) and what statistical data was available, the faculty in the Aviation Science program identified the following areas for additional review:

Grading Policies

Though the faculty members feel well oriented toward the outcomes for each class, the grading policies for each class have been largely left to each instructor. The instructor then communicates their policy to the students via the course handout. Though there have not been any serious problems or complaints due to this approach so far, there are some sound reasons for exploring a more homogeneous policy towards the inclusion of attendance in grade calculation, homework, make-up exams, etc.

Program Access

The faculty members are seeing a very diverse set of student goals in some of the courses in the Aviation Science program. It is felt that consideration should be given to directing students with like goals (e.g.: earning just a Private Pilot certificate vs. seeking a career) into appropriate, separate sections or to a cooperative schedule with the Continuing/Community Education department. The goal of such a change would be to provide the most appropriate training possible for each student. Using EST certificates within the program has already been explored and was determined not to apply due to the lack of employment opportunity for students who have not completed the whole AVS program.

Statistical Analysis

As we began looking at the statistical information supplied by Institutional Research and pulling information from Banner ourselves, it became clear that the data we had available was going to be insufficient for a meaningful analysis. This is due to two factors: First, that the Aviation Science program only began in Fall of 1999; Second and more importantly, Banner as we know it is not set up to track the progress of students in courses that may span more than one term.

When a given course is queried in Banner for grades (SFASLST), the information that is given is the grade given at the end of the registered term. If the student received a Course in Progress (CIP), which has been the case for the majority of students, CIP is all we see. In order to see if the student eventually earned a grade, we have to pull up individual transcripts (SHACRSE). Here the current grade is given, but not the date that it was earned.

The fact that PCC's information system is not designed with our program in mind does not excuse us from tracking our students' progress. We do, in fact, have records of each student's progress through each flight course in minute detail as part of the FAA's requirements as an approved flight school. If asked to determine the progress of any given student individually we could do so with less than a day's notice. However, pulling historical data from that system for the whole program would be cumbersome. This is clearly an area that needs to be fixed, and will top the list of SAC activities with regard to the flight courses in the immediate future. Some systems currently being used within the Division for other programs will be examined to determine whether they would suffice as is or could be modified for use by Aviation Science.

Future student progress tracking must include student expectations, a reasonably accurate estimate of how much of the "In Progress" courses have been completed at the end of each term, the performance so far and the expected completion time. Students who stop progressing should be given an "exit" interview to assess whether the program has fallen short or the student simply lacks funding. Once we have some usable information we can make some specific recommendations based on statistical data.

An unscientific sampling of the flight classes indicates that the completion rate has been historically low in these courses, which validates the impression of that faculty expressed. Due to the short program history and the above mentioned shortcomings of the data available, we feel it is more appropriate to address the very real student completion issues based on student and faculty feedback for this review.

Student Small Group Exercise

A small group exercise (focus group) was conducted with students from the Aviation science program to obtain feedback concerning program effectiveness. Participation was voluntary and invitations were distributed to the student body via a variety of channels to ensure that every student had the opportunity to participate. Eight students participated in the exercise.

The exercise focused on three questions:

1. What aspects of the Aviation Science program do you really like?
2. What aspects of the Aviation Science program would you like to see changed? What specific suggestions can you make to bring about these changes?
3. What are some things YOU can do to gain more from this program?

The exercise consisted of three main phases:

1. Student Individual Interview; the students answered the questions in writing working individually.
2. Student Group Interview; the students worked in groups of four to rank the individual responses that the most people agreed on.
3. Guided Discussion; each group presented their answers, all groups participated in paraphrasing to achieve agreement, and the room was polled to get a vote on each statement.

After the exercise was completed an additional hour was spent in discussion to gain further input. Comments from this discussion are included after the vote results that follow.

Student Individual Interview Results

These are the results of the first part of the small group exercise, where the students were asked to write and rank their answers as individuals.

What aspects of the Aviation Science program do you really like?

Student A

1. Instructors and Students are all enthusiastic and helpful.
2. Willingness of instructors/professors to work with my schedule.
3. College credit for flying!!
4. The relationship between Embry-Riddle's program & the PCC AVS one is a great thing. Keep it going!

Student B

1. I like the small size of the classes;
2. that the group of students in the program had some variety;
3. that there is flexibility in the order that you can take the academic classes.

Student C

1. Inclusion of a variety of outside speakers and representatives who were brought in or we went to go see to gain insight about the field of aviation.

Student D

1. Individual attention/lessons.
2. Scheduled around my time.

Student E

1. The partnership with HAI is an excellent choice. They're very professional, supportive & provide a multitude of instructors (to fit every personality/learning style of student).
2. The non-flight/non-ground courses seem to cover necessary topics more in-depth. Without them I would feel significantly less prepared at this stage of my training.

Student F

1. Flying and credit.
2. The support class structure, ie Aviation Law, Aerodynamics, Systems and Careers really support what we learn in the ground school classes.

Student G

1. I really like the Jeppesen syllabus used for my flight training. Written material is thorough, detailed, and well explained.
2. Most instructors very knowledgeable and teach well more than what the book has to offer.

What aspects of the Aviation Science program would you like to see changed? What specific suggestion can you make to bring about these changes?

Student A

1. Certain courses are only offered periodically – not every term, and as a result students moving faster or slower than the program is designed for have to wait months for a class or spend a lot of extra money to complete the course in a timely manner.
2. The AVS program should be integrated with the college bound program for high school students. This will encourage the participation of up & coming potential pilots with a lot of years ahead of them.

Student B

1. The distribution of credits for several of the ground schools seems strange (fewer for instrument and more for commercial – reversing that would be good).

Student C

No answers

Student D

“No comment – satisfied”

Student E

1. I would like to have had a more in-depth study of systems & structure. I believe it should be a 2 semester class (or class with lab).
2. For me, Intro to Aviation should have been a pre-requisite or co-requisite for P.P. Ground.
3. We need recitation / study groups for the more technical classes.

Student F

1. The redundancy of have a stage check flight and an end of course. They should be combined like HAI does for their non-PCC students. You don't have this redundancy in a math classes (math class test doesn't cost \$250 - \$400).
2. The grading for flight courses should include attendance and participation in the grade. There is too much resting on just the stage checks for a good grade. It doesn't cost money to study for a math test; it does for flight.

Student G

1. Although I am not using the Cessna Syllabus, I generally hear less than great things about it. I have talked with instructors teaching it and students enrolled in it and the general consensus is that it is unliked. I only wish I could give specific examples.

What are some things YOU can do to gain more from this program?

Student A

1. Make time for the General Ed portion of it.
2. Share textbooks / resources with other students.

Student B

No answers

Student C

1. Thank for initiative to talk more to the people running the program.
2. I signed-up for the PCC flight club, but my life (family, job) keeps me away sometime from the meetings.

Student D

1. More financial aid – this is a very expensive program.

Student E

No answers

Student F

No answers

Student G

1. Spend more time on MS Flight Sime for the instrument rating.
2. Read more books like “Stick and Rudder.”
3. Investigate ATC system more.

Student Group Interview Results

These results are from the second part of the small group exercise during which the students formed two groups of four to rank their individual responses to the questions.

What aspects of the Aviation Science program do you really like?

Group A

1. Flexibility.
2. Individual attention.
3. Partnership with HAI.
4. Varied speakers / field trips.

Group B

1. Reason to stay in college – flying.
2. Ground school conveniently located at Hillsboro Airport.
3. Embry Riddle program's relationship to PCC's AVS program.

**What aspects of the Aviation Science program would you like to see changed?
What specific suggestions can you make to bring about these changes?**

Group A

1. Systems and Structures should be 2 classes with study groups.
2. Change credits for ground schools.

Group B

1. Financial Aid.
2. Flight test redundancy.
3. Flight grades dependent very heavily on test scores & not on pilot ability.
4. Standards in conducting stage checks flight.

What are some things that YOU can do to gain more from this program?

Group A

1. Find more financing.

Group B

1. Put together study groups so students can pool knowledge & resources.

Guided Discussion / Voted Results

These results are from the third and final part of the small group exercise. Each group was asked for their highest-ranking answer. The wording of the answer was fine-tuned and a vote was taken of all the students. When the exercise has been completed, a less formal session was conducted to allow the students to expand and make suggestions. Those results are also included here.

What Works?

Statement	Agree	Disagree	Neutral
Flexibility	7	1	0
College Credit for Flight Training	8	0	0
Exposure to Industry	8	0	0
Transfer to 4 yr. Degree	7	0	1
HAI / Variety of Instructors	8	0	0
Ground school at airport	8	0	0

To increase flexibility:

1. More responsive scheduling.
2. Distance learning courses.
3. Advanced classes.

To take better advantage of transfer to 4-yr. institution:

1. Better information available at PCC.

Take better advantage of HAI:

1. Location of classes.

To better exposure to industry:

1. Increase guests and tours in AVS-127.
2. Increase guests and tours in AVS-267.
3. Utilize the PCC Flight Crew.
4. Cross-attendance for guest speakers (send students from multiple classes).

What doesn't work?

Statement	Agree	Disagree	Neutral
Access to financial aid	6		2
AVS-147 too much for 4 credits	3	1	4
Redundant stage checks (last two of each course, may apply to some ground schools)	5	0	3
Distribution of credit hours for ground	7	0	1
Stage checks to heavily weighted	3	3	2
Inconsistency of stage checks (inconsistent in both the area being tested and standards applied)	6	0	2

To fix distribution of credit hours for ground courses:

1. Add more new material for AVS-150 rather than review Private Pilot material
2. Increase credit hours for AVS-130 from 3 to 4 to allow more classroom time.
3. AVS-120 moves too slow given the tool of CD-ROM's, and moves too fast without them.
4. Flight courses are also generally under-rated.

To provide for better financial aid:

1. Have more options for airplane commercial program: some with more multi-engine training and some with less (more affordable).
2. Educate PCC's financial aid personnel more thoroughly about AVS program.
3. CIP grade should be known to be acceptable for financial aid.

For more reasonable, fair stage checks:

1. Add other criteria: attendance, homework...
2. Standardize both areas to be tested and standards.
3. Give out (more) stage check information with the syllabus.
4. Give more specific advanced notice of oral material.
Note: students recognized that standardization of stage check may reduce flexibility somewhat.

What can you do?

Statement	Agree	Disagree	Neutral
Arrange for financing ahead of time and make realistic estimates	6		2
Schedule Carefully	8	0	0
Get involved with student activities	7	0	1

Student activities (Flight Crew) are beneficial.