



**Division of Mathematics, Science, &  
Technology**

**Aviation Department**

**PROGRAM REVIEW 2016**

A PROCESS FOR  
SELF-EVALUATION AND  
CONTINUOUS IMPROVEMENT

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**Bergen Community College**

PROGRAM: Aviation

PROGRAM REVIEW TEAM: William Klappert

Others involved:

Prof. Emily Vandalovsky, Chair, Department of Computer Science, Engineering & Information Technologies (CEIT)

Dr. P.J. Ricatto, Dean, Division of Mathematics, Science, & Technology

Ms. Tonia McKoy and staff, Office of Institutional Research

DATE OF THIS REPORT: April 12, 2016

PERIOD OF YEARS BEING REVIEWED: 2014-2016

## OVERVIEW

The Aviation Program is comprised of AS.NSM.AVT.OPR – Associate in Science, Aircraft Operations, AS.PS.AVT.ADM – Associate in Science, Aviation Administration and AAS.IDT.AVIONICS, Associate in Applied Science, General Engineering Technology/Avionics Option.

The Program prepares students to transfer into the junior year of a baccalaureate program in AVT or a related area such as Aircraft Dispatch or Air Traffic Control. The degree program includes the required and elective courses of several career paths within the aviation industry.

### **Below are the learning outcomes the three programs share:**

- Aviation students need to develop a broad foundation in concepts that will help them remain adaptable in changeable work environments. The Aviation Program addresses current and long-term trends in the marketplace. Program learning goals for Aviation students are: Demonstrate the fundamental concepts of Aeronautics, the historical development from the pioneers of aviation through the implementation of sophisticated computer based avionics systems. Students will be introduced to the development of today's aviation infrastructure, and the government agencies that have charted the course for the world's most advanced transportation system.

One of College's mission and goals is to educate a diverse student population in a supportive and challenging academic environment. The Aviation Program is fully supporting and implementing plans continuously for that goal.

## SUMMARY OF SIGNIFICANT DEVELOPMENTS

1. **Continuous curriculum development.** The aviation landscape is constantly changing to reflect improvements in technology that result in enhanced safety for the aviation infrastructure. The aviation classes at Bergen Community College are adapting to these ongoing changes, and we have participated in numerous seminars and workshops to provide our students with a curriculum that prepares them to enter this dynamic work environment.
2. To date over 2300 hours of simulator instruction has been provided to the aviation students at Bergen Community College. This simulator experience is essential to the learning outcomes of the aviation students. This simulator time can be credited to the aviation students enrolled in AVT-100. The 3 credit lecture presently offered should be expanded to a lecture/lab format, 4 credit/6 hours.
3. To enhance of students aviation knowledge, AVT-115, Aviation Meteorology, should be expanded from 1 credit to 3 credits. Aviation Meteorology is an essential component of the student's aviation curriculum, and will allow transfer students to gain additional credits when utilizing the current articulation agreements with Embry Riddle Aviation University and Vaughn College.
4. Students would benefit from a class dedicated to Avionics fundamentals and operational guidelines. This offering will replace the Avionics Degree program currently offered by the college. Utilization of the three desktop simulators will allow instructors to review all operating capabilities. Avionics engineering basics and industry standards will be covered in depth.
5. The program is finalizing an agreement with a local flight school to offer a Co-op course that will give credits for students earning actual flight hours and for passing the FAA Private Pilot written test.

## **Building partnerships/internships/externships**

Participation in events:

- STEM Community College Summit at Bergen Community College
- BCC Summer Intensive
- NJAAPT (NJ physics teachers) Seminar
- College wide BCC Open House for prospective students
- Kids at Work
- Boy Scouts of America Jamboree at Rhinebeck Aerodrome. **Explorer Post 747**, sponsored by BCC, hosted an informative display for the college featuring one of the desk top simulators
- Success presentations for Sonja Brown
- Open houses for various troops from the Girl Scouts, Cub Scouts and Boy Scouts of America
- Eagle program for at risk high school students
- Aviation program for local high schools at Teterboro Airport
- Twice weekly simulator Open House to recruit BCC students and gain program exposure
- ILR (Institute for Learning in Retirement) – I have volunteered to teach America’s greatest generation numerous times over the past three years. These sessions included a series of classes conducted on a weekly basis throughout the semester.

The aviation department has worked tirelessly to establish paid internships with distinguished aviation organizations. Over the last three years we have had interns working in the air traffic control tower at **Newark Liberty International Airport, United Airlines, Republic Airlines, The Port Authority of New York and New Jersey, Flight Safety International** (the largest professional pilot training company in the world), **Teterboro Airport AvPorts**, and **Jet Aviation Teterboro**.

The internship candidates are guided through the job application process with resume preparation, and a full interview commensurate with a Fortune 500 company. The interview is followed by a comprehensive evaluation of the candidate’s performance. An interview is then conducted by the internship provider, and I discuss the candidate’s strengths and weaknesses with the interviewer. A final decision is made, and all participants are provided with a written evaluation of their performance.

Of the ten paid internships offered for aviation students, three have resulted in full time positions for the students.

Bergen Community College's Aviation Department has established articulation agreements with two prominent aviation schools, **Embry Riddle Aviation University** and **Vaughn College**. This will provide our students with a seamless transition to continue their studies in aviation. At the end of this semester, seven graduating students will be attending to Embry Riddle Aviation University in Daytona Beach.

The aviation department runs a successful simulator dry lease program, allowing flight instructors to utilize the aviation lab for flight training, thus gaining exposure and revenue for Bergen's Aviation Program. This program requires weekly scheduling and coordination of simulator utilization, and to date has produced revenue in excess of \$20,000.

At times, detailed maintenance is required on the simulators. I have attended a week long simulator maintenance course given by Frasca and during the spring break of 2014, donated a full week of my time performing complex maintenance on the simulator electrical system, and replacing high wear items that included the fuel selector, electrical master switch, parking brake and Trufeel potentiometers on the aileron and rudder systems. To date, 2300 hours of simulator training has been conducted as an added benefit to the students attending Bergen's aviation program.

The contributions to the aviation community include active participation on advisory boards for Bergen Technical Schools and Barringer Aviation High School. We were instrumental in establishing the aviation program at Bergen Technical Schools, and training their aviation instructor. Both Bergen Technical School and Barringer purchased FAA approved desk top simulators identical to the simulators at BCC.

## **FOCUS ON STUDENTS**

### **Student Satisfaction**

Below is a sample of a typical course evaluation. The percentages indicate the highest level of satisfaction. The comments are indicative of the teaching effectiveness: **"Outstanding professor"**, **"Would tell a friend"**, **"Better than this cannot be!"**, **"Very valuable resource"**, **"Each class is unforgettable"**, **"Awesome professor"**.

	Question Text	N	Top Two	Avg	Sch Avg	Str Agree	Agree	Neutral	Disagree	Str Disagree
1	Org. manner	7	100%	5	4.4	100%	0%	0%	0%	0%
2	Comm. clearly	7	100%	5	4.3	100%	0%	0%	0%	0%
3	Positive environ	7	100%	5	4.4	100%	0%	0%	0%	0%
4	Helpful feedbk	7	100%	5	4.3	100%	0%	0%	0%	0%
5	Supp. progress	7	100%	5	4.3	100%	0%	0%	0%	0%
6	Enhanced interest	7	100%	5	4.2	100%	0%	0%	0%	0%
7	Timely feedbk	7	100%	5	4.3	100%	0%	0%	0%	0%
11	Overall inst	7	100%	5	4.3	100%	0%	0%	0%	0%
14	Challenged	7	100%	4.9	4.2	86%	14%	0%	0%	0%
15	Incr. knowledge	6	100%	5	4.3	100%	0%	0%	0%	0%
16	Assigns. = objectvs	7	100%	5	4.3	100%	0%	0%	0%	0%
17	Texts enhanced exp	7	86%	4.6	4.3	71%	14%	14%	0%	0%
18	Tests = content	7	100%	5	4.3	100%	0%	0%	0%	0%
19	Materials logical	7	100%	4.7	4.2	71%	29%	0%	0%	0%
						<b>Heaviest</b>	<b>Avg +</b>	<b>Avg</b>	<b>Avg -</b>	<b>Lightest</b>
20	Workload	7	0%			0%	14%	71%	14%	0%
						<b>Str Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Str Disagree</b>
21	Recomd. course	7	100%	4.9	4.1	86%	14%	0%	0%	0%
22	Attended reg	7	100%	5	4.6	100%	0%	0%	0%	0%
23	Prepped	7	100%	5	4.5	100%	0%	0%	0%	0%
24	Str. desire	7	100%	5	4.1	100%	0%	0%	0%	0%
25	Required	7	71%	3.7	4.3	43%	29%	0%	14%	14%



Text Responses

Question: What did this instructor do well?

Professor Klappert is an outstanding professor and, in my opinion, a very valuable resource. Professor Klappert has inspired my future and I am forever thankful. If I were to recommend one teacher for every student to have at least once it would be him. Even if you do not plan on entering the field of aviation his classes can very well appeal to all. He is a highly knowledgeable professor both in his field (especially), and abroad. Makes sure ALL questions and concerns are accounted for. 10/10 Highly Recommend. Would tell a friend!

Very hands on showed great life examples.

The instructor taught each chapter clearly and showed why aviation safety is important in the industry.

help increase the knowledge towards my major

Captain Klappert succeeded to make each class unforgettable. He is a corporate pilot with over 30 years and 25,000 hours of flight under his belt, a good instructor, and a wonderful human being. He is very clear in presenting the lessons, giving examples from his own career or scientific documentaries. I had both Intro to Aeronautics and Aviation Safety, and I must say it was a pleasure to hear his lectures. I will definitely miss him.

Question: How can this instructor make changes to improve this course?

Professor Klappert runs a tight ship. If you fail this class it is your fault because he makes it clear what you need to know to pass the course and be a successful student aviator.

Did 100% couldnt ask any more.

I think the course is fine. No changes need to be made

i cant believe im saying this, but perhaps more homework.

Better than this cannot be!!

Question: Is there anything about this course that we did not ask but you would like to tell us?

There's no better way to learn aviation than by actually doing it that's why I think more sim time is needed.

Awesome professor!

	Fall 2011		Fall 2012		Fall 2013		Fall 2014	
	#	%	#	%	#	%	#	%
Am. Indian/Alaska Native	-	-	0	0%	0	0%	0	0%
Asian	-	-	0	0%	0	0%	0	0%
Black/African American	-	-	0	0%	1	17%	2	22%
Hawaiian/Pacific Islander	-	-	0	0%	0	0%	0	0%
Hispanic, all races	-	-	1	100%	3	50%	2	22%
Two or more races	-	-	0	0%	0	0%	0	0%
White	-	-	0	0%	1	17%	4	44%
<b>Total Known Race</b>	-	-	<b>1</b>	<b>100%</b>	<b>5</b>	<b>83%</b>	<b>8</b>	<b>89%</b>
Non-Resident Alien*	-	-	0	0%	0	0%	0	0%
Unknown	-	-	0	0%	1	17%	1	11%
<b>Total Enrollment</b>	-	-	<b>1</b>	<b>100%</b>	<b>6</b>	<b>100%</b>	<b>9</b>	<b>100%</b>

\*Category includes individuals of diverse ethnic/racial backgrounds

	Fall 2011		Fall 2012		Fall 2013		Fall 2014	
	#	%	#	%	#	%	#	%
Under 18 years old	-	-	0	0%	0	0%	0	0%
18 to 21 years old	-	-	0	0%	4	67%	8	89%
22 to 24 years old	-	-	0	0%	0	0%	0	0%
25 to 34 years old	-	-	1	100%	0	0%	1	11%
35 years and older	-	-	0	0%	2	33%	0	0%
<b>Total Enrollment</b>	-	-	<b>1</b>	<b>100%</b>	<b>6</b>	<b>100%</b>	<b>9</b>	<b>100%</b>

Although the sample size is small, the aviation department has endeavored to provide both scholastic and internship opportunities to those groups not that have not traditionally participated in aviation related careers. For example, 50 percent of this year's group of interns is represented by females, and 60 percent of the candidates are of Hispanic descent. We have a number of female students enrolled in aircraft operations, a field previously dominated by males.

The Aviation Explorer Post 747, chartered by Bergen Community College with the Boy Scouts of America, meets monthly in TEC 105. This group is open to all genders between the ages of 16 to 20, and the college has gained enrollment from this organization.

## FOCUS ON FACULTY AND STAFF

The Aviation Program has one tenure track faculty

William Klappert	
<b>Degrees</b>	<b>Certifications</b>
BS Business Administration and Finance AS Aerospace Technology	FAA Certified Airline Transport Pilot FAA Certified Multi Engine Pilot FAA Certified Flight Instructor Airplane FAA Certified Flight Instructor Instrument FAA Certified Ground Instructor Gulfstream 550, Captain Type Rating Gulfstream 450, Captain Type Rating Gulfstream V, Captain Type Rating Dassault Falcon 2000, Captain Type Rating Bombardier Challenger, Captain Type rating Rockwell Sabreliner, Captain Type Rating Category III Certified
<b>Teaching Experience</b>	<b>Professional Experience</b>
32 years, FAA certified flight instructor 3 years Community College	Distinguished aviation career as Captain and retired Chief Pilot for Nielsen Media Research.

## FOCUS ON THE CURRICULUM

The Associate in Science Degree Program in Aircraft Operations or Aviation Administration prepares students to transfer into the junior year of a baccalaureate program.

Program includes required and elective courses in aeronautical knowledge, meteorology, aviation weather reports and safety analysis.

Program learning goals:

- Demonstrate an understanding of basic principles of flight, aircraft design and how they are applied to current technology. The course will outline advances in propulsion, efficiency, aerodynamics, composite materials and computer integration for aircraft avionics. Thorough understanding of satellite based navigation systems and the importance to future airspace utilization. Atmospheric conditions adversely affecting aircraft performance and safety will be thoroughly analyzed.

- Knowledge of the primary structure and systems of aircraft resulting in the ability to apply those basic concepts to safely fly an aircraft. The student will understand the operation of electronic flight information systems in today's modern aircraft. They will develop a working knowledge of aircraft flight management systems and apply these skills on computer based simulators.
- Be able to perform an analysis of weather using advanced weather forecasting models and aviation specific weather reports. The student will learn how to interpret and utilize the weather reports essential to proper preflight decision making. Analysis of weather resources available online, via data link and through voice communications will provide the student with an overview of the vast amounts of information available to aviators.
- Demonstrate the fundamental concepts of aircraft performance using the aircraft flight manual charts to determine aircraft weight and balance, take off distances, climb gradient, fuel requirements, landing distances resulting in the ability for using them to plan and manage flight in real-world applications.
- The ability to solve navigation problems using aeronautical charts and plotters to calculate courses. The student will determine the effects of wind, atmospheric conditions and other factors associated with safety of flight. Calculations will be performed with the use of aviation circular slide rules, electronic aviation calculators and computer based software.
- Application of aeronautical decision making to include aero medical factors, risk management, situational awareness, management of automation and resource management. Factors contributing to the error chain and ultimately to risk mitigation.

### *Recommended Changes to the curriculum*

- To increase the student's knowledge base and receive credit for simulator time students earn during open hours in the simulator facility, a one credit, three hour laboratory component will be added to Introduction to Aeronautics (AVT 100).
- Aviation Meteorology (AVT 115) is a fundamental core course, stressing the effects of weather on safe flight planning. The course covers reading and understanding aviation weather reports, forecasts and maps. The course will be changed from a one credit to a three credit course to better prepare our students to matriculate to the four year baccalaureate programs utilizing our articulation agreements.
- Since many Aircraft operations students are ready to start their flight training while they are in the program, students to create a PLA ( prior learning agreement) so that students who earn a private pilot's license with an external flight school while at BCC or prior to entering the program can earn AVT elective credit for this significant accomplishment.

- Adjust the overall program requirements in the Aviation Operations degree (AS.NSM.AVT.OPR) degree by three credits to make room for the credits added above.

## **FOCUS ON COMMUNITY**

- During the past three years we have launched various initiatives for students and community members. The Wings Aviation Club was formed and is open to all students attending the college. The club has been active in recruiting aviation students and providing trips to locations such as Lockheed Martin Corporation, to fly a state of the art F-35 air superiority fighter simulator. We have endeavored to give back to the community by offering open houses to local nonprofit organizations, and by chartering an Aviation Explorer Post with the Boy Scouts of America. Mr. Klappert is a Boy Scout merit badge counselor, and has developed working relationships with the local Girl Scout troops, Boy Scout troops, and the Northern New Jersey Council of the Boy Scouts of America. The aviation department has worked tirelessly to establish internships with distinguished aviation organizations. At present, we have two student interns working in the air traffic control tower at Newark Liberty International Airport, two students with the Port Authority of New York and New Jersey, one student at Flight Safety International and two students with AvPorts and Jet aviation at Teterboro Airport. The Aviation Department has three students who have gained full time positions with Flight Safety International, United Airlines and Republic Airlines as a result of the internship program.
- Initiatives with the local aviation community include sponsoring FAA events for the FAASTEAM, which is a training forum for pilots and aviation enthusiasts. The college runs a successful simulator dry lease program, allowing local flight instructors to utilize the aviation lab for flight training, thus gaining exposure for Bergen's Aviation Program. This summer the simulators will be used for continuing education classes training young adults. Throughout the college year, open houses will be conducted weekly to promote the program to enrolled students.

## **ACTION PLAN**

### **Goal 1:** Make the following appropriate changes to the Aviation courses and Program

Objective 1: Add a one credit, three hour laboratory component to the Introduction to aviation (AVT 100) course so that the students can earn credit for all the valuable simulator time that then need.

Responsible Parties: William Klappert (program coordinator), Emily Vandalovsky (ADC), PJ Ricatto ( Dean of MS&T)

Timeframe: 2016-17 academic year

Resource Implications: Minimal, the simulator lab is already operational

Objective 2: Change the Aviation Meteorology (AVT 115) class from a one credit course to a three credit course in order to cover all the necessary material and better articulate with our 4 year partner Institutions

Responsible Parties: William Klappert (program coordinator) , Emily Vandalovsky (ADC), PJ Ricatto ( Dean of MS&T)

Timeframe: 2016-17 academic year

Resource Implications: Minimal, all the facilities and equipment are already available on campus

Objective 3: Create a Flight Training PLA for students in the Aviation Operations degree (AS.NSM.AVT.OPR) degree so that students who earn a private pilots license either prior to or in parallel with their Aircraft operations degree can earn AVT elective credit for their work.

Responsible Parties: William Klappert (program coordinator) , Emily Vandalovsky (ADC), PJ Ricatto ( Dean of MS&T)

Timeframe: 2017-18 academic year

Resource Implications: None, all the facilities and equipment will be provided by the external Flight School

Objective 4: Adjust the overall program requirements in the Aviation Operations degree (AS.NSM.AVT.OPR) degree by three credits to make room for the credits added above.

Responsible Parties: William Klappert (program coordinator) , Emily Vandalovsky (ADC), PJ Ricatto ( Dean of MS&T)

Timeframe: 2016-17 academic year

Resource Implications: None, all the facilities and equipment are already available on campus

**Goal 2:** Establish a co-op with a local FAA approved Part 141 flight school.

Objective 1: Allow students to earn credits for flight training.

Timeframe: 2016

Responsible Parties: William Klappert, Dean PJ Ricatto

Resource Implications: The College must approve the optional 3 credit course. This will strengthen the articulation agreements with participating universities.

Objective 2: Allocate resources to fund FAA Private Pilot written exam for AVT 100 students who successfully pass the class.

Timeframe: 2016

Responsible Parties: William Klappert, Dean PJ Ricatto

Resource Implications: the College must be willing to fund the cost of the written exam for all eligible students with signed authority from William Klappert, FAA Certified Ground Instructor.

**Goal 3:** Work with career services and regional employers to expand internships.

Objective 1: Increase number of internships to 15 per semester by fall 2017.

Timeframe: 2017

Responsible Parties: William Klappert

Resource Implications: Most students will be working at internship providers that pay the students, freeing up resources for additional internships.

**Goal 4:** Develop more articulation agreements.

Objective 1: Provide additional opportunities for students seeking a bachelor's degree.

Timeframe: 2017 – 2108

Responsible Parties: William Klappert, Dean PJ Ricatto, Transfer Coordinator Dianna O'Connor

Resource Implications: Additional agreements will offer students a diversified selection for continuing their education pursuits.

# Bergen Community College

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## **ASSESSMENT REPORT FORM FOR ACADEMIC PROGRAM**

**Assessment Period:** Fall 2014 - Spring 2016

**Department/Program:** Aviation

❖ **Program Description or mission/goal statement of the Department/Program:**

Demonstrate the fundamental concepts of Aeronautics, the historical development from the pioneers of aviation through the implementation of sophisticated computer based avionics systems. Students will be introduced to the development of today's aviation infrastructure, and the government agencies that have charted the course for the world's most advanced transportation system.

- ❖ Demonstrate an understanding of basic principles of flight, aircraft design and how they are applied to current technology. The course will outline advances in propulsion, efficiency, aerodynamics, composite materials and computer integration for aircraft avionics. Thorough understanding of satellite based navigation systems and the importance to future airspace utilization. Atmospheric conditions adversely affecting aircraft performance and safety will be thoroughly analyzed.

- ❖ Knowledge of the primary structure and systems of aircraft resulting in the ability to apply those basic concepts to safely fly an aircraft. The student will understand the operation of electronic flight information systems in today's modern aircraft. They will develop a working knowledge of aircraft flight management systems and apply these skills on computer based simulators.
- ❖ Be able to perform an analysis of weather using advanced weather forecasting models and aviation specific weather reports. The student will learn how to interpret and utilize the weather reports essential to proper preflight decision making. Analysis of weather resources available online, via data link and through voice communications will provide the student with an overview of the vast amounts of information available to aviators.
- ❖ Demonstrate the fundamental concepts of aircraft performance using the aircraft flight manual charts to determine aircraft weight and balance, take off distances, climb gradient, fuel requirements, landing distances resulting in the ability for using them to plan and manage flight in real-world applications.
- ❖ The ability to solve navigation problems using aeronautical charts and plotters to calculate courses. The student will determine the effects of wind, atmospheric conditions and other factors associated with safety of flight. Calculations will be performed with the use of aviation circular slide rules, electronic aviation calculators and computer based software.
- ❖ Application of aeronautical decision making to include aero medical factors, risk management, situational awareness, management of automation and resource management. Factors contributing to the error chain and ultimately to risk mitigation.

## Summary

With a total of 10 internships offered last year, we have placed students with highly prestigious organizations in the field of aviation. These include Newark Tower, Flight Safety International, The Port authority of NY/NJ, Teterboro Airport and Republic Airlines. Many of these internships were paid by the participating companies, and to date three of the internships have resulted in the students being hired full time.

We continue to leverage our relationship with the community by actively participating with local nonprofit organizations. The **BCC sponsored Aviation Explorer Post 747** with the Boy Scouts of America has been a great success, and we will be showcasing the aviation program at this year's Jamboree.

The Aviation Wings Club has continued to attract members and we have completed numerous high profile trips to Newark Tower, United Airlines and Flight Safety International.



Utilization of the simulators to demonstrate various weather scenarios in meteorology PHY114 has expanded the effectiveness of the simulators for student centered learning activities. Conceptualizing cloud types, precipitation intensities and different weather characteristics enhance the students understanding and retention.