

# **"Enhancement of the Aviation Technology Program at Burlington Technical Center"**

**A submission by the Vermont Space Grant Consortium to NASA Announcement #NNH14ZHA003C:**

**"Competitive Opportunity for Partnerships with Community Colleges and Technical Schools"**

- **Project Specific Objectives**

1. The first objective is to increase enrollment within the program through scholarship mechanism and targeted recruiting; the tangible outcome of this effort would be a larger certified aircraft maintenance workforce within the State of Vermont.
2. The second objective involves the development of new experimental, wind tunnel-based modules at the University of Vermont for BTC students to acquire new skills involving aerodynamic measurements. This curricular addition especially benefits students considering attending a baccalaureate institution post-graduation.
3. The final objective focuses on the development of business management aspects of aviation management for inclusion into the BTC curriculum for graduates pursuing employment within the commercial sector.

# Robert Letovsky is no “rocket scientist”!

**From:** Irvine, Angela  
**Sent:** Thursday, February 19, 2015 11:05 AM  
**To:** Neuhauser, John <JNeuhauser@smcvt.edu>; Talentino, Karen A <ktalentino@smcvt.edu>; Tarnacki, Mark <mtarnacki@smcvt.edu>; Ayres, Jeffrey <jayres@smcvt.edu>  
**Cc:** Letovsky, Robert <rletovsky@smcvt.edu>  
**Subject:** NASA grant awarded to Robert Letovsky

Hello Jack, Karen, Jeff and Mark:

I wanted to inform you that Robert Letovsky has been awarded a grant from NASA. (I know that sounds ridiculous but it is true!) He collaborated with Darren Hitt at UVM on a proposal to enhance the aviation technology program at Burlington Technical Center. His portion of the project is to develop the business administration component of the program to include business courses for the students participating in the program. He will be developing the courses over the next two summers and working with the Technical Center to incorporate them into the curriculum. These courses are a critical aspect of the Aircraft Management degree program.

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**From:** Neuhauser, John  
**Sent:** Friday, February 20, 2015 5:33 PM  
**To:** Letovsky, Robert <rletovsky@smcvt.edu>  
**Cc:** Irvine, Angela <airvine@smcvt.edu>; Talentino, Karen A <ktalentino@smcvt.edu>; Ayres, Jeffrey <jayres@smcvt.edu>; Tarnacki, Mark <mtarnacki@smcvt.edu>  
**Subject:** NASA Award

Robert,  
Congratulations on being chosen to participate in the first Mars flight. I'm sure it is a great honor for you, a relief for Sheila, and many will enjoy the new quiet, smoke free atmosphere of JeanMarie.

Serious congratulations!  
Jack

Burlington Technical Center (BTC): <http://www.burlingtontech.org/>

The screenshot shows a web browser window displaying the Burlington Technical Center website. The browser's address bar shows the URL [www.burlingtontech.org/](http://www.burlingtontech.org/). The website's header includes the logo for Burlington Technical Center and a navigation menu with links for About us, Programs, Resources, Continuing Education, Contact, and BSDVT. The main content area is titled "PROGRAMS" with the subtitle "Study what you love." Below this, there is a grid of eight program cards, each featuring an icon, a title, and a brief description.

Program	Description
<b>AUTO BODY</b>	Restore basic dents, resurrect a wreck, and explore custom mods. Build your chops on glass, metals, fiberglass, and painting. See a car as a blank canvas and bring it to life.
<b>AUTO SCIENCE &amp; TECH</b>	Experience learning in a whole new way by getting to know the inner workings of modern automobile. Skills that prepare you for work are taught and reinforced through setting goals and solving problems.
<b>AVIATION AND AEROSPACE TECHNOLOGY</b>	If it flies, we learn to fix it! Learn what it takes to keep small aircraft, helicopters, props, and jets in the sky. Did we mention we have a jet?
<b>COMPUTER SYSTEMS AND EMERGING TECHNOLOGY</b>	Want to learn more about computers and networks? Love to build things and take them apart? Curious about emerging tech like 3d printing, robotics, and mobile tech? This is your place! Learn IT support strategies and skills along the way, too!
<b>CRIMINAL JUSTICE</b>	What does it take to be a law enforcement officer? Customs? Security? Crime Scene Investigator? Special Agent? Game Warden? Detective? These are just a few of the careers in Law Enforcement. Build a foundation to prepare you for multiple career paths in this field.
<b>CULINARY ARTS</b>	Have you dreamed of owning your own restaurant or bakery? Do you love to cook or bake? Practice your skills and explore what it is like to work in and manage our student-operated restaurant. Our Culinary Arts program is a great place to explore what exciting opportunities await you.
<b>DESIGN &amp; ILLUSTRATION</b>	If you have creative talents, like to draw and want to explore careers that will help you use these skills, this course will give you the opportunity. You will learn about the many careers associated with the visual arts and get a chance to develop and improve your skills and portfolio.
<b>DIGITAL MEDIA LAB</b>	Learn the skills for work behind the scenes, on the cameras, in the sound studio, in the editing room, directing or producing. Media production on through cinematography is our business and passion.

The Windows taskbar at the bottom of the screenshot shows the system tray with the date and time set to 2:02 PM on 2/27/2017, and several application icons including Internet Explorer, Google Chrome, and Microsoft Word.

## **Part I: Foundation (Secondary)**

This portion of the program covers the foundation skills of Aviation Technology through theory and hands-on learning. High school Juniors and Seniors usually complete this portion by attending the program for half of their school day for those *two years*. Seniors and adults also have the option of attending all day and completing in one year.

## **Part II a: Airframe/Powerplant (Post-Secondary: July - June)**

**The Airframe portion consists of 750 hours of training. It is divided into 75% hands-on and 25% theory on small general aviation aircraft, helicopters and jets. The Powerplant portion also consists of 750 hours of training and is divided similarly.**

**Outcomes:** Federal Aviation Administration (F.A.A.) Mechanic Airman Certificate exams and obtain an Airframe and Powerplant certification/rating. (F.A.A. certification is required for individuals in the United States to legally repair, overhaul or modify aircraft which have been certified for flight.)

## **Part II b: Avionics (Post –Secondary)**

The Avionics program teaches basic navigation, communications and advanced electronics leading to The Federal Communications Commission (FCC) General Radio Operators License (GROL) and Radar Endorsement. Each course is 300 hours in length.

## OPPORTUNITIES

### COMPUTERAIDED TESTING SYSTEM (CATS)

We have all FCC and FAA written tests available. This service is provided on an appointment basis only.

Employment upon licensure as an air frame and powerplant (A&P) technician with starting salaries from \$33,000 in general aviation to \$45,000 in corporate or commercial aviation.

Completion of avionics program in addition to A&P for a starting salary from \$35,000 in general aviation to \$45,000 in corporate or commercial aviation.

Enter college with advance placement.

VISIT US ON THE WEB AT:  
[www.burlingtonaviationtech.org](http://www.burlingtonaviationtech.org)



The Beech Sundowner

## COLLEGE CREDIT

The American Council of Education (ACE) will award up to sixty-seven college credits for holding an Airframe and Powerplant License (A&P). Depending on which college you decide to go to and what your major is will govern how much credit can be applied. At many colleges, this amount of credit is equal to an Associate Degree.

Note: The minimum passing grade for all portions is 85.



The Aviation Mobile

Burlington Technical Center  
52 Institute Road  
Burlington, Vermont 05408  
Phone: 802-864-8447/1799  
Fax: 802-864-8521  
Email: [rsylvest@bsdvt.org](mailto:rsylvest@bsdvt.org)

Applicants for admission and employment, students, parents, employees, sources of referral of applicants for admission and employment, and all unions or professional organizations holding collective bargaining or professional agreements with the Burlington School District are hereby notified that it is the intent of the Burlington Board of School Commissioners that the District will not discriminate against employees and/or applicants for employment, students or other designated beneficiaries of the statutes listed below on the basis of race, sex, gender (including but not limited to pregnancy and parental status), color, age, creed, religion, disability, handicap, ancestry, place of birth, national origin, marital status, political affiliation, sexual orientation, gender identity or gender expression in any of its employment and education practices, policies, procedures or decisions or in the operation of, access to, participation in, benefit of or admission to its programs, activities, services and facilities and that it will provide equal access to the Boy Scouts of America and other designated youth groups in compliance with and to the extent provided by the laws listed below. The District's Title V Coordinator, the Age Discrimination Act Coordinator and Americans with Disabilities Act Coordinator for employees and others: Nikki Fuller, Human Resources Director, Burlington School District; 802-864-2159; 1-800-253-0191 TDD. The District's Title IX Coordinator for employees, students, parents and other such relatives, friends, guest speakers or visitors: Denise Bailey, Esq. Human Resources Compliance Manager, Burlington School District; 802-864-0214; 1-800-253-0191 TDD. The District's Americans with Disabilities Act Coordinator for students and 504 Coordinator: Director of Special Services of the Burlington School District; 802-864-2159; 1-800-253-0191 TDD.



BURLINGTON  
TECHNICAL CENTER

Reaching for the Skies  
with Aviation Technology



FAA Certification # VMQT049K

*With our program a high school Junior can be licensed to repair any type of aircraft that flies within three years.*

*There are Three Parts of this training for an A&P certification:*

### GENERAL PORTION

This portion is usually completed in high school during the Junior and Senior years. This portion is also available to adults on a case by case basis. Seniors and adults may take both A.M. and P.M. classes and complete this requirement in one school year. This portion is 50% theory, 50% hands-on and is also taught as an advanced level which completes the program in 5 months.

### AIRFRAME and/or POWERPLANT

The Airframe Portion consists of 750 hours of training. It is divided into 75% hands-on and 25% theory on small general aviation aircraft, helicopters and jets.

The Powerplant Portion also consists of 750 hours of training and divided the same as the airframe program. These are stand-alone certifications and are trained and taught as such.

*Prerequisite: Completion of General Portion or passing entrance exams.*

### AVIONICS (Optional)

The Avionics program teaches basic navigation, communications and advance electronics leading to The Federal Communications Commission (FCC) General Radio Operators License (GROL) and Radar Endorsement. Each Class is 300 hours in length. Call for details, class dates and times.



*OH-6A/ Hughes 500*



*Two Beech Sundowners and the OV-10D+*



# Hands-on Learning at BTC A&P



## Bureau of Labor Statistics: Occupational Employment and Wages, May 2015

### 49-3011 Aircraft Mechanics and Service Technicians

Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems. Includes helicopter and aircraft engine specialists. Excludes "Avionics Technician" (49-2091).

<b>Industry</b>	<b>Employment <a href="#">(1)</a></b>	<b>Percent of industry employment</b>	<b>Hourly mean wage</b>	<b>Annual mean wage <a href="#">(2)</a></b>
<a href="#">Support Activities for Air Transportation</a>	37,660	20.41	\$25.70	\$53,460
<a href="#">Scheduled Air Transportation</a>	27,850	6.72	\$32.29	\$67,170
<a href="#">Aerospace Product and Parts Manufacturing</a>	20,260	4.15	\$29.98	\$62,360
<a href="#">Federal Executive Branch (OES Designation)</a>	15,940	0.80	\$27.72	\$57,650
<a href="#">Nonscheduled Air Transportation</a>	5,630	14.34	\$31.54	\$65,600



February 2014

# AVIATION WORKFORCE

## Current and Future Availability of Aviation Engineering and Maintenance Professionals

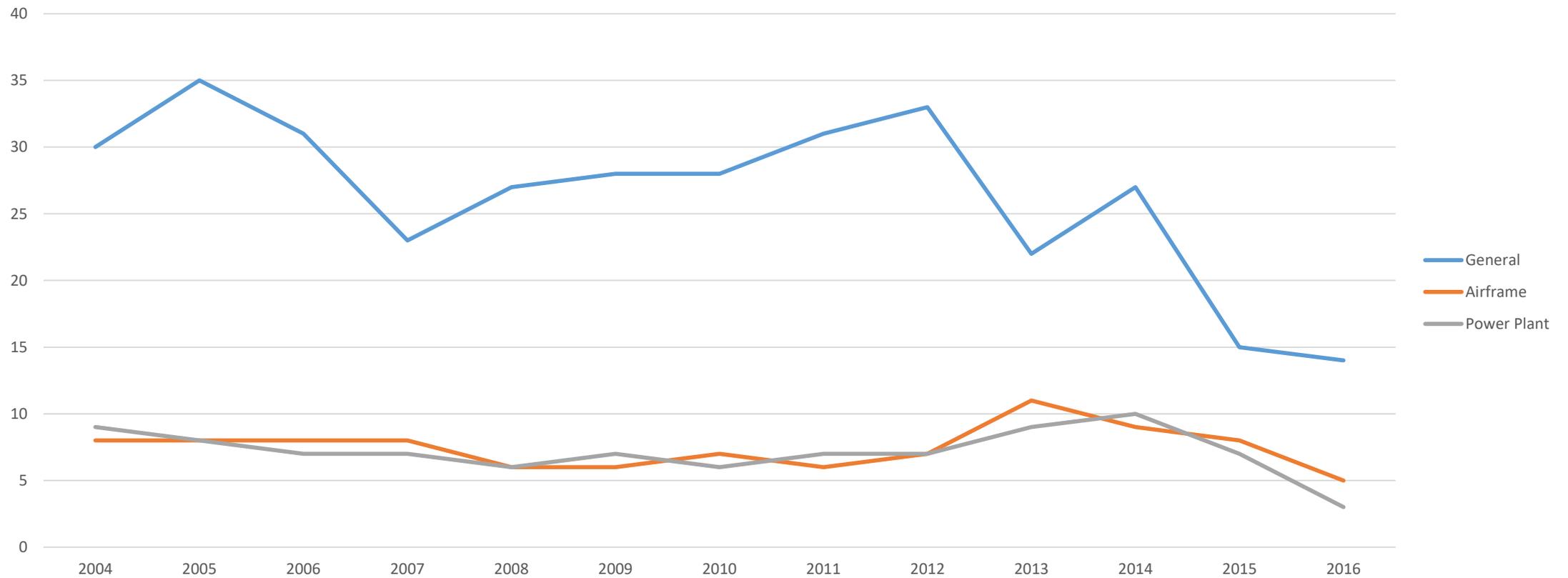
## Excerpt from GAO report re: future demand for aircraft maintenance professionals

“Most of the employers we interviewed reported some challenges hiring individuals in the selected professions; often this was not an issue of an insufficient number of candidates seeking employment, but rather an insufficient number of candidates with the experience and skills employers sought available to work at the wage being offered... Almost all employers we spoke with reported taking some actions that economists associate with responding to a labor shortage, but few were raising wages to attract workers...employers of all sizes, including those that are not currently experiencing hiring challenges, were concerned that young people are losing interest in aviation careers and that future employment needs may go unmet.”

- *United States Government Accountability Office (GAO)(2014, Feb.) Aviation Workforce: Current and Future Availability of Aviation Engineering and Maintenance Professionals. GAO-14-237. P. 23.*

# Enrollment Trends at Burlington Technical Center Aviation Program incl. Secondary & Post-Secondary Programs

Enrollment BTC Aviation Program: General, Airframe and Power Plant 2004-2016



## Headwinds 1: Accreditation/Financial Aid



Since the A&P program is the sole such standalone program in the region, its former accrediting body, the New England Association of Schools and Colleges, ceased accreditation visits to the program. NEASC officials informed BTC that it had become uneconomic for the group to send a team to Burlington on reaccreditation inspections or even to form a reaccreditation review team. *The loss of NEASC certification means that students cannot apply for federal student aid.* This is a serious barrier to future recruitment, particularly of traditional college-age students.

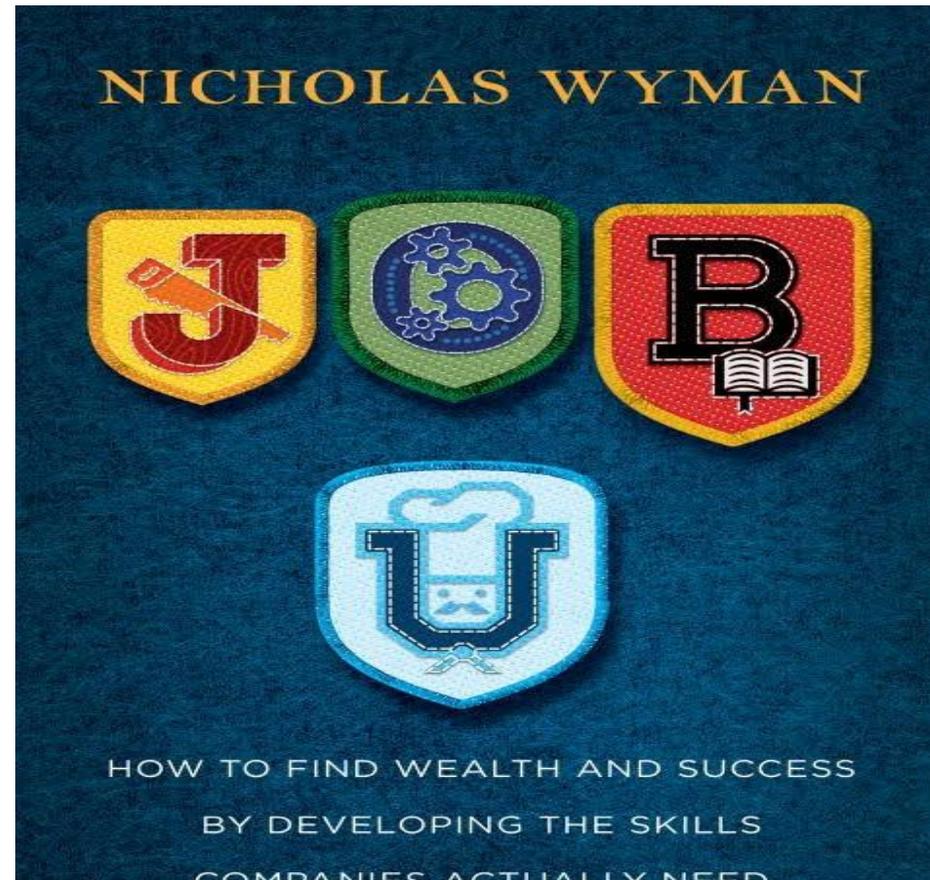
## **Headwinds 2: Perceptions among students, parents, guidance counselors re vocational training vs. 2 or 4-year degree**

Most employers and stakeholders we interviewed told us that maintaining a qualified aviation professional workforce will be more difficult in the future due to changes in K-12 education, a perceived emphasis on earning a 4-year degree, and the perceived decreased desirability for working in aviation, particularly aviation maintenance. Several employers cited the absence of vocational and “shop” classes in high school as a reason interest and critical knowledge in maintenance are waning. Several employers and stakeholders we interviewed also said that with parents and counselors insisting that a college degree is needed for every job, *students may not be aware that there are well-paying professions that do not require a 4-year degree. . . . .* To combat this perception, according to stakeholders, AVSED and industry must find a means to *convince parents and guidance counselors that not all well-paying careers require a bachelor’s degree.*

(GAO (2014): Aviation Workforce: Current and Future Availability of Aviation Engineering & Maintenance Professionals, p. 37.)

## Headwinds 2 (cont'd): Perceptions among students, parents, guidance counselors re vocational training vs. 2 or 4-year degree

- The BTC program can lead to a student acquiring FAA certification. However, many students and their parents are expecting *some type of formal, academic certification at the end of a defined program of study*. The certification could be an *associate's degree* or a *full undergraduate degree*, either of which opens the door to acquiring further academic certification down the road (i.e. a full undergraduate degree or a graduate degree, respectively).
- *The current BTC completion certificate, even with the associated FAA certification, does not address this expectation.* Moreover, while there is increasing acceptance among employers, prospective students and their families for various non-traditional paths towards employment, the expectation of having some type of “degree”, including an associate’s degree, is still very strong in these same constituencies (Wyman, 2015).



## **Headwinds 2 (cont'd):** Perceptions among students, parents, guidance counselors re vocational training vs. 2 or 4-year degree: Interesting data re: 2 year Associate's Degrees

Data from Colorado's Department of Higher Education on graduates from all public colleges and universities and from three not-for-profit ones show that in 2014 the median earnings of someone with an associate of applied science degree (\$54,146) 10 years after graduation is neck-and-neck with that of a bachelor's-degree holder (\$55,287).

For Colorado students with associate of applied science degrees in computer-engineering technologies, building construction, nursing or allied health, the news is even better: Their median earnings in 2014 were more than \$60,000.

***A Bachelor's Degree Isn't the Only Path to Good Pay : Evidence shows that associate degrees and specialized-training certificates can also lift workers into the middle class.***

Mark Schneider, The Wall Street Journal June 3, 2015

[http://www.wsj.com/article\\_email/a-bachelors-degree-isnt-the-only-path-to-good-pay-1433372775-1MyQjAxMTE1NDA2OTYwMzkxWj](http://www.wsj.com/article_email/a-bachelors-degree-isnt-the-only-path-to-good-pay-1433372775-1MyQjAxMTE1NDA2OTYwMzkxWj)

# Responding to Headwinds 2: Open House tours of BTC A&P facilities for area high-school guidance counselors (Jan., Feb. and Aug., 2016)



# Responding to Headwinds 2: Example of Outreach to High School Juniors/Seniors and Guidance Counselors

## MOUNT MANSFIELD UNION HIGH SCHOOL "HOME OF THE COUGARS"

Michael F. Weston, Principal  
Richard Wright, Assistant Principal  
David Marlow, Director of Student Activities



Kristen Barker, Director of Student Services  
Christian Adams, Counselor  
Toni Chandler, Counselor  
Meghan Sweet, Counselor

Dear Presenter,

Thank you so much for agreeing to join us for our annual Career Day to speak to our sophomores about your career. This event will take place at Mount Mansfield High School, on Wednesday, October 19. You will see two groups of students for two consecutive 50 minute workshops. The first workshop will begin at 8:30 and there will be a 10 minute break before your next workshop. The event will end at 10:20. Attached are some tips and potential questions to think about as you plan your presentation.

Again, thank you for your willingness to participate in our Career Day. The students will benefit greatly from being able to learn about your career and hear about your unique experiences. We will be in touch as we get closer to the event to give you more details about check-in procedures. In the mean time, please contact us at your convenience to discuss ideas for your presentation or anything else you may need. You can phone us directly at (802)858-1757, or email us at [toni.chandler@cesuvt.org](mailto:toni.chandler@cesuvt.org), or [Rebecca.sullivan@cesuvt.org](mailto:Rebecca.sullivan@cesuvt.org)

Sincerely,

Toni Chandler  
Rebecca Sullivan  
School Counselors

# Responding to Headwinds 1 and 2: Vermont Technical College, Professional Pilot Technology program (4 year degree):

<http://www.vtc.edu/academics/program/professional-pilot-technology>

The screenshot shows a web browser window displaying the Vermont Technical College website. The browser's address bar shows the URL [www.vtc.edu/academics/program/professional-pilot-technology](http://www.vtc.edu/academics/program/professional-pilot-technology). The website features a green navigation bar with the text "VERMONT TECH" and menu items for "MEET VTC", "ADMISSIONS & AID", "ACADEMICS", "ATHLETICS", and "ALUMNI". A large banner image shows a pilot's perspective from the cockpit, with the word "MAJORS" overlaid in large white letters. On the left side of the banner, there are three yellow buttons: "APPLY NOW", "REQUEST INFO", and "VISIT". Below the banner, the heading "PROFESSIONAL PILOT TECHNOLOGY" is displayed in orange. The main content area includes a paragraph: "Our Professional Pilot Technology program is the first collegiate program:" followed by a bulleted list of program features. To the right, there are two blue buttons: "VIEW CURRICULUM" and "REQUEST INFORMATION". Below these buttons, the following information is provided: "Type of Degree: Bachelor of Science (BS)", "Location: Williston Campus", "Credit Requirements: 121", and "Related Programs: There are no additional programs." The Windows taskbar at the bottom shows various application icons and the system clock indicating 12:43 PM on 3/1/2017.

Professional Pilot Techno x Robert

www.vtc.edu/academics/program/professional-pilot-technology

## VERMONT TECH

MEET VTC ADMISSIONS & AID ACADEMICS ATHLETICS ALUMNI

APPLY NOW  
REQUEST INFO  
VISIT

# MAJORS

### PROFESSIONAL PILOT TECHNOLOGY

Our Professional Pilot Technology program is the first collegiate program:

- To offer a bachelor's Aviation degree program in the state of Vermont, starting in 2012
- To incorporate pre-solo spin training for all students
- To include seaplane training and ratings in the BS degree
- To incorporate conventional landing gear (tail draggers) in the Commercial pilot training syllabus
- To include aerobatic instructional options during Commercial pilot training syllabus as an option
- To have a multi-engine amphibian for Multi-Engine Land and Sea training & ratings
- To offer all 9 available FAA certificates & ratings, including 3 flight instructor ratings

[VIEW CURRICULUM](#)

[REQUEST INFORMATION](#)

Type of Degree:  
Bachelor of Science (BS)

Location:  
Williston Campus

Credit Requirements:  
121

Related Programs:  
There are no additional programs.

12:43 PM  
3/1/2017

## **The Proposed A.A.S. in Aviation Maintenance Technology will:**

- ✓ Through an articulation agreement with the Burlington Technical Center, Aviation and Aerospace program, include the 1,992 hours of training necessary to qualify for the Federal Aviation Administration (F.A.A.) Mechanic Airman Certificate exams and obtain an Airframe and Powerplant certification/rating. F.A.A. certification is required for individuals in the United States to legally repair, overhaul or modify aircraft which have been certified for flight.
- ✓ Provide hands-on training in rapidly expanding aviation maintenance fields such as composites, sheet metal and avionics.
- ✓ Provide a preliminary education in management with the opportunity to continue with a proposed four-year bachelor's degree in Aviation Management.

## Proposed A.A.S. in Aviation Maintenance Technology: Degree Path/Credit Weights

- Aviation Maintenance Technology AAS will be a two year degree using *one semester* at VTC to complete the degree **after** the completion of 1,992 hours taken through Burlington Technical Center A&P program and obtaining FAA certification as A&P Mechanic;
- The American Council on Education (ACE), through its College Credit Recommendation Service (CREDIT) (<http://www2.acenet.edu/credit>) has deemed that A&P certification by the FAA is equivalent to 67 credit hours which can be accepted by colleges and universities. CREDIT conducts ongoing reviews of training programs offered by a range of organizations (e.g. vocational schools, corporation, trade unions, nonprofit organizations and the military). CREDIT has a formal relationship with the Federal Aviation Administration Academy, the unit of the FAA charged with administered and overseeing its technical training programs.,
- **Note:** IHL's already accept ACE evaluation of 1,992 hours of all FAA- approved A&P programs as equivalent to up to 67 credits of post-secondary education.
- Students would, upon completion of the A&P program and F.A.A. certification, take *one semester* at VTC to complete the proposed AAS two year degree.

# Listing of Courses to be taken at Vermont Technical College to complete Applied Associate's Degree in Aviation Maintenance Technology

Note: Green shade = common to existing VTC Professional Pilot Technology BS

<u>#</u>	Credits	Subject	Recommended VTC Course for AMT AAS	Semester
1	3	English	ENG 2080 Technical Communications	F
2	3	English	Any 1000 level ENG course	F
3	4	Physics	PHY 1041 Physics I OR new Aviation Physics course	F
4	6	AH/SS	BUS 2020 Principles of Management	F

**AND one** of the following:

BUS 3080 Airline Operations & Management

BUS 2210 Small Business Management

BUS 1010 Introduction to Business

BUS 1021 Creativity & Innovation

BUS 3410 Business Ethics

BUS 3250 Organizational Behavior & Management

# Sustainability re: Scholarship Funds for A&P students: Grant Proposals to Date

<b>Date Application Submitted</b>	<b>Company</b>	<b>Amount Requested</b>	<b>Status</b>	<b>Comments</b>
April 4, 2016	JetBlue Foundation	\$12,500	rejected	
April 6, 2016	Delta Airlines	\$25,000	rejected	
April 14, 2014	UPS	\$37,500 (\$12,500/y r. 3 yrs.)	rejected	
April 14, 2014	Lockheed-Martin	\$25,000	rejected – “our internal guidelines preclude us from supporting contributions when we are funding similar commitments with organizations serving the same mission”	Email requesting clarification sent June 23 requesting clarification – guidelines on website do not say this.
April 20, 2014	United Airlines	\$35,000	Rejected – guidelines state no funding for public or private schools.	Clarification requested re: classification of BAT – no response

# Sustainability re: Scholarship Funds for A&P students: Grant Proposals to be re-submitted

Date of Contact	Company	Nature of Contact	Comments
May 11, 2016	Boeing, University Relations Office	Phone conversation	<p>Initially emailed Boeing on March 15, 2016. After extensive calling to find out how to reach University Relations office by phone (no number on web site), was connected with Mr. Casey Keenan, Boeing's contact person with technical schools. He advised that Boeing's funding cycle had passed for this year, but that he would do what he could to ensure BAT was in the pipeline for next cycle.</p> <p>Email sent July 15/16 asking if any further information to achieve this was needed.</p>
April 14, 2014	Lockheed-Martin	Grant application submitted, rejected (see above).	<p>Email requesting clarification sent June 23 requesting clarification – guidelines on website do not say this.</p> <p>Mar 1/17: Phone conversation with Tom Torti, President, Lake Champlain Regional Chamber of Commerce re: coordinating new approach to LM with possible support of other stakeholders.</p>