BOARD OF HIGHER EDUCATION

REQUEST FOR COMMITTEE AND BOARD ACTION

COMMITTEE: Academic Affairs **NO**: AAC 15-24

COMMITTEE DATE: January 20, 2015

BOARD DATE: March 10, 2015

APPLICATION OF CAPE COD COMMUNITY COLLEGE TO AWARD THE CERTIFICATE IN AIRFRAME MECHANICS AND MAINTENANCE TECHNICIAN AND THE CERTIFICATE IN AIRCRAFT POWERPLANT TECHNICIAN

MOVED: The Board of Higher Education hereby approves the application of **Cape Cod Community College** to award the **Certificate in Airframe Mechanics and Maintenance** and the **Certificate in Aircraft Powerplant Technician.**

Upon graduating the first class for these programs, the College shall submit to the Board a status report addressing its success in reaching program goals as stated in the application and in the areas of enrollment, curriculum, faculty, resources, and program effectiveness.

Authority: Massachusetts General Laws Chapter 15A, Section 9(b)

Contact: Winifred M. Hagan, Ed.D., Assistant Commissioner for Academic and Educator Policy

BOARD OF HIGHER EDUCATION

January 2015

Cape Cod Community College
Certificate in Airframe Mechanics and Maintenance
Certificate in Aircraft Powerplant Technician

INTENT AND MISSION

The Cape Cod Community College (CCCC) mission is to provide opportunities and pathways that encourage students to achieve their goals, and to enrich the region through work, partnerships and students' achievements. The intent of the proposed Certificate in Airframe Mechanics and Maintenance (AMM) and Certificate in Aircraft Powerplant Technician (APT) program is to provide workforce opportunities in the aviation industry and to encourage pathways for students' future growth.

It is intended that program will be in compliance with recognized Federal Aviation Administration (FAA) industry certification programs and will provide the training required to fill Airframe and Powerplant mechanic job openings in the aviation industry. It is planned that CCCC's unique partnerships with the U.S. Coast Guard, Camp Edwards Army National Guard, and other industry and economic development entities, will inform and serve to accelerate pathways for jobs requiring a FAA certificate in aviation maintenance and avionics occupations.

The proposed program has obtained all necessary governance approvals on campus and was approved by the Cape Cod Community College Board of Trustees on September 16, 2014. The required letter of intent was circulated on October 9, 2014. A positive comment was received from the University of Massachusetts Dartmouth indicating support for the proposed program.

NEED AND DEMAND

National and State Labor Market Outlook

CCCC analyzed workforce information and conducted research with employers and industry associations in Massachusetts. This analysis and research provided occupational growth data, demonstrating a need for aviation industry education and training to fill available jobs and address skill gaps. Information gathered on available job opportunities in the Massachusetts aviation industry indicated that technician positions are expected to increase by 2%-8%, inspector positions by 20% and aircraft structure, rigging and assembly positions by 26%.[1]

Student Demand

CCCC is currently building a platform of cohort high school students that will comply with dual enrollment qualifications for the aviation program. It is expected that the high school students will attend the aviation program 4 hours per day at the college hangars. CCCC is working on recruitment efforts at each high school, including exploratory interviews with students and the establishment of a dual enrollment pathway for students.

[1] ***MA Dept. of Workforce Development, LMI and Wanted Analytics***

OVERVIEW OF PROPOSED PROGRAM

Cape Cod plans that the proposed APT and AMM program will be designed as a 12 month curriculum, including 1900 hours of instruction with both lecture and lab. It is expected that the program will prepare students to test for the FAA aviation maintenance certificate, and enable students to join the aviation workforce as qualified mechanics in the aviation industry. CCCC plans that the program will provide students with three courses of study, General Aviation, Airframe, and Powerplant. The entire course of study is expected to be developed into 1900 hours of curriculum as required by FAA.

Duplication

The proposed CCCC aviation training program is expected to be the only public, FAA-certified program offered in New England. Bridgewater State University offers a BS in Aviation Science with a concentration in Aviation Management. CCCC found one private school that offers a similar program at a cost of $30,000 over a period of 18 months.

ACADEMIC AND RELATED MATTERS

Admission

The admissions requirements for APT and AMM candidates are planned to be the same as the general admissions requirements. Students must be admitted to the College and possess a high school diploma or GED. Students must meet individual course requirements as outlined in the College catalog and complete assessments of basic skills in reading, writing, and mathematics.

Program Enrollment Projection

	# of Students Year 1	# of Students Year 2	# of Students Year 3	# of Students Year 4*
New Full Time	25	25	25	25
Continuing Full Time	0	25	25	25
New Part Time	15	20	25	30
Continuing Part Time	15	20	25	30
Totals	55	90	100	110

Curriculum (Attachment A)

It is planned that each of the three program areas, General Aviation, Airframe, Powerplant, will be made up of two modules, each comprised of 8 credits. The total amount of credits that a student can earn is 48 and it is expected there will be 36 total subjects for the entire program.

The General Aviation course is comprised of two modules and each module is worth 8 credits for a

total of 16 credits for the General Aviation course. This course contains information on mathematics, aircraft drawings, weight and balance, aircraft materials, processes and tools, physics, electricity, inspection, ground operations, and FAA regulations governing the certification and work of maintenance technicians.

The Airframe course is comprised of two modules and each module is worth 8 credits for a total of 16 credits for the Airframe course. This course contains information on airframe inspections, landing gear systems, hydraulics, pneumatics, cabin atmosphere control, communication & navigation systems, aircraft position, warning controls, ice & rain controls, metallic & non-metallic structures aircraft coverings, aircraft finishes, aircraft welding, and aircraft assembly & rigging. The Airframe course introduces simple and complex systems for aviation mechanics to perform their duties as required by the FAA.

The Powerplant course is comprised of two modules and each module is worth 8 credits for a total of 16 credits for the Powerplant course. This course contains information on propellers, reciprocating engines, turbine engines/un-ducted fans/auxiliary power units, Powerplant exhaust/reverser systems, lubricating systems, ignition systems; fuel metering, induction & airflow systems, Powerplant cooling systems, and Powerplant inspections. The Powerplant course provides theory and operation of engine systems including design, performance, subsystems, maintenance and service for all aircraft applications which allows a student to meet a defined level of proficiency for FAA completion.

This AMT program coupled with general education courses will enable students to achieve an Associate degree in Aviation Maintenance. The Airframe and Powerplant certification will prepare students for positions in the aviation industry as mechanics, managers, and directors of maintenance. This program design will balance the aviation workforce for future needs in the aviation industry. The Associate of Applied Science Degree option is expected to be developed later in FY2015.

RESOURCES AND BUDGET

Fiscal (Attachment B)

Cape Cod has received approximately $4.8M in funding for the proposed AMM/APT program. Sources of funding include $1.95M from MA Department of Capital Asset Management. Two hangars are in the process of being secured, representing 20,000 square feet of space. Four aircraft donations, engines, and assorted parts for training ground support equipment, and tools have been provided. Cape Cod plans that all staff and instructor positions will be covered by this funding, during years 1, 2, and 3. In year 4, it is planned that the Project Director and faculty salaries will be absorbed by the college's operating budget.

Faculty and Administration (Attachment C)

CCCC has dedicated resources for three full time professionals for the aviation program, and plans to employ additional part time faculty members with expertise commensurate to the courses being offered.

Facilities, Library and Information Technologies

It is expected that the program will consist of lecture and lab areas to perform hands-on training on aviation simulators. Cape Cod plans that the equipment will be funded under the grant awarded by the U.S. Department of Labor's Trade Adjustment Assistance Community College Career and Training program.

Internships and Field Work

The program curriculum is designed to meet the minimum FAA standards for certification and does not include capstone or fieldwork learning experiences. The core program and courses include substantial training experiences using aircraft, engines, and simulators in addition to didactic classroom learning.

Advisory and Partnerships

CCCC reports that it will be the lead institution in the state for developing a skilled workforce in aviation repair and maintenance to meet employer needs in Massachusetts. Partnerships with regional employers, such as the U.S. Coast Guard and Camp Edwards Army National Guard, contribute to a strong field of partners and advisors to the proposed program. CCCC indicated that local airports, such as Chatham, Marston Mills, and Barnstable Municipal, are strongly supportive of the proposed program to enable new and incumbent workers to reach their professional goals and to help military veterans to complete their Airframe and Powerplant licensure and plan for credentials. In addition, CCCC is developing partnerships with regional high schools toward dual enrollment in the program. BHCC has engaged K-12 principal and guidance counselor leaders from approximately 6 high schools in the region, as partner advisors to the program. An advisory board has been established to consult on aviation strategies and attain performance outcomes for the program. This advisory board is made up of local airport managers, airline industry personnel and aviation manufacturers. A detailed list of advisory board members and their affiliations was provided during the application process.

PROGRAM EFFECTIVENESS

Goal	Measurable Objective	Strategy for Achievement	Timetable
Completion of students in program	85%	Qualified faculty, mentorships, internships, equipment, employee engagement, advisory board	12 Months
Recruitment of students	25 students per class	Recruiting, advertising, faculty	Yearly
Job Placement	Internships, Mentorships	Career Services, networking, partnerships, aviation association memberships	6 Months
Faculty Professional Development	Certifications achieved, annual training	Professional conferences and training	Yearly
Real work simulations with employers	Students demonstrate the ability to use tools and industry equipment	Learning objects are implemented into the lab projects	During yearly program
Resource library & lab equipment	All students will have access to computer files for books, projects and lab assignments	Access to online information and library	During yearly program

EXTERNAL REVIEW AND INSTITUTIONAL RESPONSE

The proposed program was reviewed by Raymond Thompson, Associate Dean of the College of Aviation at Western Michigan University and Charles Horning Department Chairman, Aviation Maintenance Science at Embry-Riddle Aeronautical University. The review team found the program to be reasonable in length structure and goals. They expressed concern that the program is designed to meet only the minimum FAA standards and suggested that employers may prefer qualified graduates with higher than required levels of learning. As well, there was the suggestion that the predicted workforce demand may be more variable than that reported by the federal bureau of labor statistics.

Regarding the minimum standards, CCCC responded that it is also developing an Associate in Applied Science program in which AMM/APT students completing an additional 21 general education credits in English Composition/Writing, Humanities and Fine Arts, Behavioral and Social Sciences, Natural/Physical Sciences, or Mathematics/Quantitative Reasoning, will earn the degree. The minimum standard certificate starts students along this pathway. In addition to this, an articulation agreement is underway with Bridgewater State University, which is planned to extend the pathway further, to a Bachelor of Science in Aviation Management.

STAFF ANALYSIS AND RECOMMENDATION

Staff thoroughly reviewed all documentation submitted by **Cape Cod Community College** and external reviewers. Staff recommendation is for approval of the proposed **Certificate in Airframe Mechanics and Maintenance** and the **Certificate in Aircraft Powerplant Technician** programs.

ATTACHMENT A: CURRICULUM OUTLINE

Required (Core) Courses in the Major		
Course Number	Course Title	Credit Hours
AMT 101	Aviation Maintenance Technology General Module 1	8
AMT 102	Aviation Maintenance Technology General Module 2	8
AMT 201	Aviation Maintenance Technology Airframe Module 1	8
AMT 202	Aviation Maintenance Technology Airframe Module 2	8
AMT 203	Aviation Maintenance Technology Powerplant Module 1	8
AMT 204	Aviation Maintenance Technology Powerplant Module 2	8
	Sub Total Required Credits	48
Elective Courses (Total # courses required =) *(attach list of choices if needed)*		
	Not applicable	
	Sub Total Elective Credits	
Distribution of General Education Requirements Attach List of General Education Offerings (Course Numbers, Titles, and Credits)		# of Gen Ed Credits
Arts and Humanities, including Literature and Foreign Languages		3
Mathematics and the Natural and Physical Sciences		3
Social Sciences		3
	Sub Total General Education Credits	9

Curriculum Summary	
Total number of courses required for the certificate	7
Total credit hours required for certificate	41

Prerequisite, Concentration or Other Requirements: Both certificates require the AMT101 and AMT102 General and nine general elective credits.

ATTACHMENT B: BUDGET

One Time Start-Up Costs		Annual Expenses			
	Cost Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**
	Full Time Faculty	222,283.50	272,087.89	277,662.37	368,529.61
	Part Time/Adjunct Faculty	12,000.00	12,000.00	12,000.00	12,000.00
	Staff	86,748.55	88,874.74	91,064.72	93,796.66
	General Administrative Costs	25,682.56	29,837.01	30,458.17	37,946.10
	Facilities/Space Requirement	2,187,000.00			
	Marketing	30,000.00	30,000.00	30,000.00	30,000.00
	Supplies, Materials	25,000.00	25,000.00	25,000.00	25,000.00
	Other (online course development, software)	194,000.00	188,000.00	188,000.00	188,000.00
	TOTALS	2,782,714.62	645,799.64	654,185.26	755,272.37

One Time Start-Up Support		Annual Income			
	Revenue Sources	**Year 1**	**Year 2**	**Year 3**	**Year 4**
	Grants	1,154,072.00	824,928.00	753,000.00	
	Tuition		300,105.00	350,122.50	400,140.00
	Fees (estimated)		150,000.00	175,000.00	200,000.00
	Other (State allocation)	1,950,000.00			
	TOTALS	3,104,072.00	1,275,033.00	1,278,122.50	600,140.00

ATTACHMENT C: FACULTY FORM

Summary of Faculty Who Will Teach in Proposed Program							
Please list full-time faculty first, alphabetically by last name. Add additional rows as necessary.							
Name of faculty member (Name, Degree and Field, Title)	**Check if Tenured**	**Courses Taught Put (C) to indicate core course. Put (OL) next to any course currently taught online.**	**Number of sections**	**Division of College of Employment**	**Full- or Part- time in Program**	**Full- or part-time in other department or program (Please specify)**	**Sites where individual will teach program courses**
Wahlers, Michael MBA Director of Aviation Program		• TBA	TBA	Day	Full time	No	• Hangar Site
Not hired		• TBA	TBA	Day	Full time	No	• Hangar Site
Not Hired		• TBA	TBA	Day	Full time	No	• Hangar Site
Adjunct		• TBA	TBA	Day	Part time	No	• Hangar Site
Adjunct		• TBA	TBA	Day	Part time	No	• Hangar Site