2010

FANS 01283 Aviation Technician - Avionics Maintenance CVS Application

Fanshawe College

Ontario College Quality Assurance Service
Service de l'assurance de la qualité des collèges de l'Ontario

ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY

CREDENTIALS VALIDATION SERVICE

APPLICATION FOR PROGRAM VALIDATION

This proposal will be sent to MTCU for Approval for Funding __X____Yes _____ No

1. College: Fanshawe College

2. College contact person responsible for this proposal:

   Name: Rob Gorrie

   Title: Chair, Motive Power

   Telephone: (519) 452-4196

   Electronic mail: rgorrie@fanshawec.ca

3. Proposed Program Title: Aviation Technician – Avionics Maintenance

4. Proposed Credential: (please indicate below)

   Local Board Approved Certificate ☐

   Ontario College Certificate ☐

   Ontario College Diploma XX

   Ontario College Advanced Diploma ☐

   Ontario College Graduate Certificate ☐

5. Proposed Program Outcomes:

   Please complete and attach the two Program Maps (Appendix A - Form 1 and Form 2)

6. Proposed Program Description:

   Please complete and attach the Program Description Form (Appendix B)

7. Proposed Program Curriculum:

   Please complete and attach the Program Curriculum Form (Appendix C)

8. Proposed Program Certification/Accreditation:

   Please complete and attach the Regulatory Status Form (Appendix D)

9. Date of Submission: November 9, 2010

10. Date of CVS Response: November 10, 2010

11. Validation Decision:

☐ Proposal Validated (APS Number: FANS 01283)

Signed on behalf of CVS: Tim Klassen

Send the completed form and required appendices to: klassen@ocqas.org . For detailed information on how to complete the Application for Program Validation, please refer to the Instructions for Submission document. For any additional information contact: College Credential Validation Service, 655 Bay Street, Suite 1010, Toronto, ON M5G 2K4; or by telephone at (416) 596-8799.

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APPENDIX A - PROGRAM MAPS

(Vocational Program Outcomes & Essential Employability Skills Outcomes)

Vocational Program Learning Outcomes:

Form 1 (attached) is provided to assist you in mapping your proposed program vocational learning outcomes against existing vocational outcomes found in either Provincial Program Standards or in Provincial Program Descriptions. When completing this form, please be sure to include the MTCU code (where applicable) for the program category being referenced.

Where there is a relevant Provincial Program Standard, the approved Vocational Learning Outcomes must appear in the first column, followed by your proposed program vocational learning outcomes.

Where there are no Provincial Program Standards, the first column will contain program outcomes from the Provincial Program Description. Again, your proposed program vocational learning outcomes will be added in the middle column.

NOTE: *Both these types of documents can be obtained from staff at the CVS or at the Colleges Branch, MTCU.*

The last column will contain a list of the relevant curriculum proposed in your program to address the outcome in a manner that ensures the graduate will have reliably demonstrated the required skill or ability. Course numbers or course codes, corresponding to those provided in your list of courses (Appendix C), are sufficient in this column.

Essential Employability Skills Outcomes:

A mapping of the Essential Employability Skills (EES) will be done on Form 2 (attached).

The instructions / requirements for this map are the same as for the Vocational Program Map. The first three columns contain the approved skill categories, the defining skills, and the EES learning outcomes. The last column will contain the proposed curriculum (as listed in Appendix C) that will ensure the meeting of these outcomes.

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APPENDIX A - PROGRAM MAPS

Form 1 - Vocational Program Outcomes

PROVINCIAL PROGRAM STANDARD VOCATIONAL LEARNING OUTCOMES / PROVINCIAL PROGRAM DESCRIPTION OUTCOMES (MTCU code 55211) Upon completion of the program the graduate will be able to:	PROPOSED PROGRAM VOCATIONAL LEARNING OUTCOMES: The graduate has reliably demonstrated the ability to:	COURSE TITLE / COURSE CODE (From Appendix C)
1. Regulations and certification procedures. The regulatory requirements relating to the safety and airworthiness of aircraft, in their entirety or in part	1. Apply the current regulatory requirements to the safety and airworthiness of aircraft.	#2, 14, 29, 30
2. General aircraft maintenance (handling replenishment and minor maintenance tasks on airframes and engines).	2. Perform major and minor maintenance tasks on airframes and engines.	#10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22
3. Removal/installation testing, calibration, servicing, maintenance and fault diagnosis	3. Install and maintain aircraft electrical systems.	#6, 7, 14, 15, 29, 30

of aircraft electrical systems.		
4. Removal/installation testing, calibration, servicing, maintenance and fault diagnosis of aircraft instrument systems	4. Install and maintain aircraft instrument systems.	#23, 24, 25, 29, 30
5. Removal/installation testing, calibration, servicing, maintenance, minor repair and alteration, modification, design and installation of radio communication, radio navigation, electronic instrumentation and flight control system installations.	5. Install and maintain aircraft avionic and flight control systems.	#2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30
6. Understanding and application of rules and standards required by Transport Canada in the avionics area.	6. Apply the principles and practices of aircraft maintenance engineer category "E" to all work situations.	#1, 14, 29, 30

Add additional rows as required to complete the mapping exercise.

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APPENDIX A - PROGRAM MAPS

Form 2 - Essential Employability Skills Outcomes

SKILL CATEGORIES	DEFINING SKILLS Skill areas to be demonstrated by the graduates	ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES The graduate has reliably demonstrated the ability to:	COURSE TITLE / COURSE CODE (From Appendix C)
COMMUNICATION	• Reading • Writing • Speaking • Listening • Presenting • Visual Literacy	➢ communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience	#5, 9, 27, 28, 29, 30
		➢ respond to written, spoken, or visual messages in a manner that ensures effective communication	#2, 5, 9, 27, 28, 29, 30
NUMERACY	• Understanding and applying mathematical	➢ execute mathematical operations accurately	#3, 4, 10,11, 12, 15, 16, 19, 20, 21, 23, 24, 26, 29

SKILL CATEGORIES	DEFINING SKILLS Skill areas to be demonstrated by the graduates	ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES The graduate has reliably demonstrated the ability to:	COURSE TITLE / COURSE CODE (From Appendix C)
	concepts and reasoning • Analysing and using numerical data • Conceptualizing		
CRITICAL THINKING & PROBLEM SOLVING	• Analysing • Synthesizing • Evaluating • Decision-making • Creative and innovative thinking	➢ apply a systematic approach to solve problems	#15, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30
		➢ use a variety of thinking skills to anticipate and solve problems	#3, 4, 13, 14, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30

SKILL CATEGORIES	DEFINING SKILLS Skill areas to be demonstrated by the graduates	ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES The graduate has reliably demonstrated the ability to:	COURSE TITLE / COURSE CODE (From Appendix C)
INFORMATION MANAGEMENT	• Gathering and managing information • Selecting and using appropriate tools and technology for a task or a project • Computer literacy • Internet skills	➢ locate, select, organize, and document information using appropriate technology and information systems	Integrated in all courses
		➢ analyse, evaluate, and apply relevant information from a variety of sources	#11, 13, 14, 23, 27, 29, 30
INTER-PERSONAL	• Team work • Relationship management • Conflict resolution • Leadership • Networking	➢ show respect for the diverse opinions, values, belief systems, and contributions of others	Integrated in all courses
		➢ interact with others in groups or teams in ways that contribute to effective working	Integrated in all courses

SKILL CATEGORIES	DEFINING SKILLS Skill areas to be demonstrated by the graduates	ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES The graduate has reliably demonstrated the ability to:	COURSE TITLE / COURSE CODE (From Appendix C)
		relationships and the achievement of goals	
PERSONAL	• Managing self • Managing change and being flexible and adaptable • Engaging in reflective practices • Demonstrating personal responsibility	➢ manage the use of time and other resources to complete projects	Integrated in all courses
		➢ take responsibility for one's own actions, decisions, and consequences	Integrated in all courses

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APPENDIX B - PROGRAM DESCRIPTION

PROGRAM DESCRIPTION: (including occupational areas where it is anticipated graduates will find employment)

The Aviation Maintenance - Avionics Technician program provides the knowledge and skills required to start a career as an aircraft maintenance engineer (AME) "E". An "E" licensed AME is responsible for the servicing, repair and maintenance of aircraft electrical and electronic systems such as communication, navigation and data systems. This program covers all aspects of aircraft avionics systems used in general aviation, corporate, charter, transport category aircraft, and helicopters.

The **Aviation Technician - Avionics Maintenance** program is also designed to prepare students for careers with avionics-approved shops and aircraft manufacturing companies.

Successful completion of the program will result in a work experience credit of 18 months (of the 48 months) required by Transport Canada to obtain an Aircraft Maintenance Engineer Category E license.

VOCATIONAL PROGRAM LEARNING OUTCOMES: (vocational program learning outcomes must be consistent with the requirements of the Credentials Framework for the proposed credential)

The graduate has reliably demonstrated the ability to:

1. Apply the current regulatory requirements to the safety and airworthiness of aircraft.
2. Perform major and minor maintenance tasks on airframes and engines.
3. Install and maintain aircraft electrical systems.
4. Install and maintain aircraft instrument systems.
5. Install and maintain aircraft avionic and flight control systems.
6. Apply the principles and practices of aircraft maintenance engineer category "E" to all work situations.

ADMISSION REQUIREMENTS:

Required Courses:

- Grade 12 Compulsory English (ENG 4C or ENG 4U)
- Grade 12 Mathematics (C) or (U).

Recommended Courses:

- Grade 12 (C) Transportation Technology, (TTJ 4C)
- Grade 11 or 12 Physics

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APPENDIX C - PROGRAM CURRICULUM

Semester	Course Code*	Course Title (and brief course description)
1	#1	Aircraft Maintenance Engineer Category E Introduction This course is an introduction to the Aircraft Maintenance Engineer Category E License. It outlines the requirements and processes as well as the roles and responsibilities of the AME
1	#2	W.H.M.I.S.
1	#3	Technical Math for the AME This course is the study of basic technical math in the areas of arithmetic, algebra, and geometry used in the field of aircraft maintenance.
1	#4	Physics for the AME This course is the study of basic technical physics in the areas of matter, mechanics, thermodynamics, optics, waves, motion and sound as they apply to aircraft maintenance.
1	#5	Technical Writing/Communications This course will teach students the established basics for effective written composition in the technical world and introduce them to such types of communication as processes, description of mechanisms, proposals, and reports.
1	#6	Avionics Electrical Fundamentals This course is a comprehensive introduction to basic electrical theory and components. Students will gain a familiarity with electrical equipment construction and operation, and its application in industry. The program contains a good balance of theory and practical considerations.
1	#7	Avionics Electronic Fundamentals This course is an introduction to the technical concepts of electronic

		components, circuits and theory; principles of current and voltage control devices; basic circuits including amplifiers, oscillators, and filters as well as the use of basic test instruments used in the aircraft maintenance industry.
1	#8	Avionics Digital Fundamentals This course is the study of basic digital concepts and techniques used in aircraft avionic, instrument and entertainment systems.
2	#9	Avionics Radio Theory This course is a study of the basic principles of radio transmission, reception and radio coverage techniques used in aircraft radio systems.
2	#10	Basic Aerodynamics This course is the study of the atmosphere and its effects on aerodynamics, theory of flight and stability and dynamics
2	#11	Aircraft Aerodynamics This course is the study of aerodynamic principles used in aircraft. Designed for a better understanding of the devices and component used for aircraft control and performance.
2	#12	Aircraft Structures This course is the study of basic concepts of aircraft structure and materials maintenance. It includes hands on practice in minor structural repair and modification as it applies to the AME Cat. E job scope.
2	#13	Aircraft Materials and Hardware This course is the study of industry standards in the classification and use of common aircraft wire, connectors, control and protection devices, and hardware.
2	#14	Avionics Maintenance Practices This course is the study of basic maintenance workshop safety and practices. It includes hands on practice with the identification and safe and proper use of common industry tools.
2	#15	Aircraft Electrical Power This course is the study of basic aircraft power distribution concepts

		and maintenance practices.
3	#16	Aircraft Propulsion Systems This course is the study of basic aircraft propulsion systems as well as the accompanying indicating systems that fall under the Avionics maintenance category.
3	#17	Aircraft Fuel Systems This course is the study of basic aircraft fuel control, holding and indicating systems.
3	#18	Aircraft Hydraulic Systems This course is the study of basic aircraft hydraulic systems with emphasis on the electrical and electronic system components.
3	#19	Aircraft Landing Gear This course is the study of basic aircraft landing gear systems with emphasis on the electrical and electronic system components.
3	#20	Aircraft Pneumatic Systems This course is the study of basic aircraft pneumatic systems with emphasis on the electrical and electronic system components.
3	#21	Aircraft Environmental Control Systems This course is the study of basic aircraft environmental control systems with emphasis on the electrical and electronic system components.
3	#22	Aircraft Safety Systems This course is the study of basic aircraft safety systems with emphasis on the electrical and electronic system components.
4	#23	Aircraft Flight Instruments This course is an in depth study of common aircraft flight instruments and their system configurations. It includes system testing and maintenance procedures and practices.
4	#24	Aircraft Radio Navigation Systems This course is an in depth study of common aircraft radio navigation systems and their aircraft configurations. It includes system testing and maintenance procedures and practices.

4	#25	Aircraft Inertial Navigation Systems This course is a study of common aircraft inertial navigation systems and their aircraft configurations. It includes system testing and maintenance procedures and practices.
4	#26	Aircraft Auto-Flight Systems This course is an in depth study of basic aircraft autopilot systems and their aircraft configurations. It includes system testing and maintenance procedures and practices.
4	#27	Aircraft Hard Wired Communication Systems This course is an in depth study of common aircraft hard wired communication systems and their aircraft configurations. It includes system testing and maintenance procedures and practices.
4	#28	Aircraft Wireless Communication Systems This course is an in depth study of common aircraft wireless communication systems and their aircraft configurations. It includes system testing and maintenance procedures and practices.
4	#29	Avionics Installations & Standard Practices This course is an in depth study of avionics system installation procedures and practices and regulations.
4	#30	Avionic Systems Testing, Trouble Shooting & Repair This course is an in depth study of common aircraft avionic systems testing, trouble shooting and repair procedures, standards and regulations.
2	#31	General Education Elective
3	#32	General Education Elective
4	#33	General Education Elective

Add additional rows as required to complete the curriculum chart.

* **(be sure to identify those courses designed to deliver General Education)**

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APPENDIX D – REGULATORY STATUS FORM

MANDATORY REGULATORY REQUIREMENTS

Where licensing or certification is *required by legislation* for entry to practice in the profession or trade, the Ministry of Training, Colleges and Universities requires that colleges ensure that their programs will meet the requirements of the regulatory body in order to be approved for funding.

X There is a legislative requirement that program graduates must be certified or licensed by a regulatory authority to practice or work in the occupation.

Name of regulatory authority: Transport Canada

☐ (A*) The program has been accredited or approved by the regulatory authority or its identified third party?

OR

X (B*) The college is working toward accreditation with the regulatory authority.

Status of application and expected date of achievement:
Please refer to the attached letter from Sault College. Transport Canada both approves and accredits aviation programs. Approval means that the program meets Transport Canada's minimum requirements. We anticipate Transport Canada approval being given prior to September 2011. Fanshawe College will not offer the program until such time as this approval has been granted.

When the program is accredited, then the time that students spend in school is eligible to be counted towards their Aircraft Maintenance Engineer (AME)

apprenticeship. We will be collaborating with Sault College under their Transport Canada Approved Training Organization (ATO) certificate to get Transport Canada approval for this program. Once this program is approved then Transport Canada follows a process whereby they do site audits during program operation prior to giving accreditation. Once accreditation is given for the program, the students are retroactively given credit for their time in school. Fanshawe College anticipates the accreditation to be granted within the first year of the program offering, e.g., sometime during the 2011/2012 academic year.

☐ (C*) If the regulatory authority does not accredit educational programs directly or by an identified third party, has it formally acknowledged (e.g. in its published or legislated registration requirements) that the program graduates will be eligible to write any required certifying or registration exam or that the program is otherwise recognized for the purposes of certifying or registering a graduate?

***Please submit an acknowledgement and/or evidence from the regulatory authority to support (a) or (b) or (c) above.**

VOLUNTARY REQUIREMENTS

Colleges may choose to have a program accredited or recognized by a voluntary membership organization or association. Graduate eligibility for association recognition or adherence to standards imposed by the body is *not a requirement* for program funding approval by the Ministry of Training, Colleges and Universities.

Recognition of the program by a voluntary professional body:

☐ Is being sought: Name of professional body:

_____

☐ The college is working toward recognition.

Status of application and expected date of achievement:

_____

☐ Recognition has been received.

Type of recognition (e.g. accreditation, graduates eligible to write membership exams, etc.):_____

★ **Please submit an acknowledgement and/or evidence from the voluntary association that recognition has been received.**

☐ Recognition is not being sought *(please note there may be titling implications for programs that are not compliant in an area where other existing programs are*).