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Practical Elements of Mechanical Engineering

2010

FANS 01276 Practical Elements of Mechanical Engineering CVS Application

Fanshawe College

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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 of Applied Arts & Technology
2. College contact person responsible for this proposal: Name: John Makaran Title: Chair, School of Applied Science & Technology Telephone: 519-452-4430 Ext. 4590 Electronic mail: JMakaran@fanshawec.ca
3. Proposed Program Title: Practical Elements of Mechanical Engineering (PEME)
4. Proposed Credential: (please indicate below) Local Board Approved Certificate <input type="checkbox"/> Ontario College Certificate <input type="checkbox"/> Ontario College Diploma <input type="checkbox"/> Ontario College Advanced Diploma <input type="checkbox"/> Ontario College Graduate Certificate <input checked="" type="checkbox"/>
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. Date of Submission: January 13, 2010

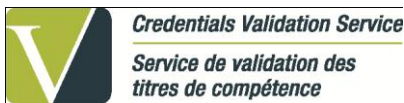
9. Date of CVS Response: January 14, 2010

10. Validation Decision:

Proposal Validated (APS Number: FANS 01276)

Signed on behalf of CVS: Tim Klassen

Send the completed form and required appendices to: klassen@collegecvcs.on.ca 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 400, Toronto, ON M5G 2K4; or by telephone at (416) 596-8799



**ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY
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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.

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.



**ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY
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APPENDIX A - PROGRAM MAPS

Form 1 - Vocational Program Outcomes

PROVINCIAL PROGRAM STANDARD VOCATIONAL LEARNING OUTCOMES / PROVINCIAL PROGRAM DESCRIPTION OUTCOMES	PROPOSED PROGRAM VOCATIONAL LEARNING OUTCOMES	COURSE TITLE / COURSE CODE (From Appendix C)
	1. Solve complex technical problems related to mechanical environments and evaluate solutions according to accepted engineering principles.	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; WELD-1047 Production Welding;

		<p>MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>
	<p>2. Design and analyze mechanical components, processes, and systems through the application of complex engineering principles and practices.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>

	<p>3. Create graphics and other technical documents and evaluate these documents against appropriate engineering standards.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>
	<p>4. Utilize current and relevant hardware and software to support the mechanical engineering environment.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro;</p>

		<p>MECH-1090 Tool Design I;</p> <p>MECH-3034 Hydraulics, Pneumatics & PLCs;</p> <p>MGMT-1007 Project Management;</p> <p>MECH-3035 Applied Project</p>
	<p>5. Design components using knowledge of manufacturing processes.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading;</p> <p>CADD-1055 CADD Fundamentals;</p> <p>MACH-1124 Machining 1;</p> <p>WELD-1040 Welding Technology 1;</p> <p>METH-1002 Technology in Industry;</p> <p>ENGR-1020 Engineering Design I;</p> <p>MECH-1072 SPC and Metrology;</p> <p>MATS-1021 Ferrous Metallurgy;</p> <p>WELD-1047 Production Welding;</p> <p>MACH-1144 CNC Processes – Intro;</p> <p>MECH-1090 Tool Design I;</p> <p>MECH-3034 Hydraulics, Pneumatics & PLCs;</p> <p>MGMT-1007 Project Management;</p> <p>MECH-3035 Applied Project</p>
	<p>6. Apply knowledge of materials and</p>	<p>CADD-1054 Engineering Drawing</p>

	<p>engineering principles to manufacturing operations and processes as required.</p>	<p>and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>
	<p>7. Select and utilize various machinery, tools, and other equipment used in manufacturing processes as required.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I;</p>

		<p>MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>
	<p>8. Coordinate, conduct and analyze quality control and quality assurance procedures.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3035 Applied Project</p>

	<p>9. Create a relevant project document including the creation of a risk management strategy, incorporating the environmental, economic, legal, safety, and ethical implications inherent in mechanical engineering projects.</p>	<p>CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project</p>
	<p>10. Produce, maintain and utilize documentation, and inventory and records systems.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; WELD-1047 Production Welding;</p>

		<p>MACH-1144 CNC Processes – Intro;</p> <p>MECH-1090 Tool Design I;</p> <p>MECH-3034 Hydraulics, Pneumatics & PLCs;</p> <p>MGMT-1007 Project Management;</p> <p>MECH-3035 Applied Project</p>
	<p>11. Participate in the management of an engineering product.</p>	<p>CADD-1054 Engineering Drawing and Blueprint Reading;</p> <p>CADD-1055 CADD Fundamentals;</p> <p>MACH-1124 Machining 1;</p> <p>WELD-1040 Welding Technology 1;</p> <p>ENGR-1020 Engineering Design I;</p> <p>WELD-1047 Production Welding;</p> <p>MACH-1144 CNC Processes – Intro;</p> <p>MECH-1090 Tool Design I;</p> <p>MECH-3034 Hydraulics, Pneumatics & PLCs;</p> <p>MGMT-1007 Project Management;</p> <p>MECH-3035 Applied Project</p>
	<p>12. Develop and implement strategies and plans to improve job performance and work relationships.</p>	<p>ENGR-1020 Engineering Design I;</p> <p>MGMT-1007 Project Management;</p> <p>MECH-3035 Applied Project</p>



**ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY
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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	<ul style="list-style-type: none"> • Reading • Writing • Speaking • Listening • Presenting • Visual Literacy 	<ul style="list-style-type: none"> ➤ communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy;

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)
			WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
		➤ respond to written, spoken, or visual messages in a manner that ensures effective communication	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro;

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)
			MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
NUMERACY	<ul style="list-style-type: none"> • Understanding and applying mathematical concepts and reasoning • Analysing and using numerical data • Conceptualizing 	<ul style="list-style-type: none"> ➤ execute mathematical operations accurately 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs;

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)
			MGMT-1007 Project Management; MECH-3035 Applied Project
CRITICAL THINKING & PROBLEM SOLVING	<ul style="list-style-type: none"> • Analysing • Synthesizing • Evaluating • Decision-making • Creative and innovative thinking 	<ul style="list-style-type: none"> ➤ apply a systematic approach to solve problems 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
		<ul style="list-style-type: none"> ➤ use a variety of thinking skills to 	CADD-1054 Engineering Drawing and Blueprint Reading;

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)
		anticipate and solve problems	CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
INFORMATION MANAGEMENT	<ul style="list-style-type: none"> • Gathering and managing information • Selecting and using appropriate tools and technology for a task or a project 	➤ locate, select, organize, and document information using appropriate technology and information systems	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; ENGR-1020 Engineering Design I;

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)
	<ul style="list-style-type: none"> • Computer literacy • Internet skills 		MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
		<ul style="list-style-type: none"> ➤ analyse, evaluate, and apply relevant information from a variety of sources 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy;

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)
			WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
INTER-PERSONAL	<ul style="list-style-type: none"> • Team work • Relationship management • Conflict resolution • Leadership • Networking 	<ul style="list-style-type: none"> ➤ show respect for the diverse opinions, values, belief systems, and contributions of others 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro;

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)
			MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
		➤ interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals	WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project
PERSONAL	<ul style="list-style-type: none"> • Managing self • Managing change and being flexible and adaptable • Engaging in reflective practices 	➤ manage the use of time and other resources to complete projects	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry;

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)
	<ul style="list-style-type: none"> • Demonstrating personal responsibility 		ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project

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)
		<ul style="list-style-type: none"> ➤ take responsibility for one's own actions, decisions, and consequences 	CADD-1054 Engineering Drawing and Blueprint Reading; CADD-1055 CADD Fundamentals; MACH-1124 Machining 1; WELD-1040 Welding Technology 1; METH-1002 Technology in Industry; ENGR-1020 Engineering Design I; MECH-1072 SPC and Metrology; MATS-1021 Ferrous Metallurgy; WELD-1047 Production Welding; MACH-1144 CNC Processes – Intro; MECH-1090 Tool Design I; MECH-3034 Hydraulics, Pneumatics & PLCs; MGMT-1007 Project Management; MECH-3035 Applied Project



ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY
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APPENDIX B - PROGRAM DESCRIPTION

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

The PEME program, is a program that has been designed to provide students who are presently enrolled in Canadian Engineering Approval Board (CEAB) approved engineering programs at Canadian Universities a year of intensive, hands-on training in various manufacturing technologies such as machining, welding, and machine controls. The proposed training shall be designed to complement the intense Science and Mathematical training that engineering students receive in their programs.

Along with the hands-on training, students shall also be instructed in the basics of project management and will be given the opportunity to participate in a hands-on project to reinforce the skills that they have obtained in the theoretical portion of the program.

The proposed program of study shall follow the established 15 week delivery model.

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. Solve complex technical problems related to mechanical environments and evaluate solutions according to accepted engineering principles.
2. Design and analyze mechanical components, processes, and systems through the application of complex engineering principles and practices.
3. Create graphics and other technical documents and evaluate these documents against appropriate engineering standards.
4. Utilize current and relevant hardware and software to support the mechanical engineering environment.
5. Design components using knowledge of manufacturing processes.
6. Apply knowledge of materials and engineering principles to manufacturing operations and

processes as required.

7. Select and utilize various machinery, tools, and other equipment used in manufacturing processes as required.
8. Coordinate, conduct and analyze quality control and quality assurance procedures.
9. Create a relevant project document including the creation of a risk management strategy, incorporating the environmental, economic, legal, safety, and ethical implications inherent in mechanical engineering projects.
10. Produce, maintain and utilize documentation, and inventory and records systems.
11. Participate in the management of an engineering product.
12. Develop and implement strategies and plans to improve job performance and work relationships.

ADMISSION REQUIREMENTS:

- **Successful completion* of 2nd or 3rd year Mechanical Engineering Program from a Canadian University that is approved to deliver undergraduate education in Mechanical Engineering by the Canadian Engineering Accreditation Board (CEAB).**

*** Successful completion means that applicants are academically complete and possess an overall cumulative average of 60%.**

APPLICANT SELECTION CRITERIA

Individuals wishing to apply to the program must indicate their interest to the academic chair of their respective engineering school no later than January 15th of the year they intend to participate in PEME. Due to the limited number of spaces in the program, selection shall be made on the basis of overall cumulative average. In the event that the program is oversubscribed, admissions to the program shall be predicated on the outcome of an interview performed by the Undergraduate Academic Chair of the University engineering undergraduate program, and the Chair of Applied Science and Technology at Fanshawe College.

Successful applicants will formally apply to the program OCAS by February 2nd of the year they intend to participate in PEME.

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APPENDIX C - PROGRAM CURRICULUM

Semester	Course Code*	Course Title (and brief course description)
1	CADD-1054	Engineering Drawing and Blueprint Reading Basic Engineering Sketching and Blueprint Reading. This course is designed to develop basic skills required for Mechanical Engineering Technician.
1	CADD-1055	CADD Fundamentals This course is designed to develop basic skills in using AutoCad (2D) and Solidworks (3D) software to produce engineering drawings for both design and manufacture of mechanical components.
1	MACH-1124	Machining 1 This course will provide an outline of the basic machining processes with an emphasis on machine setup & tooling. Calculations for speed, feed rate, machining times & production cost will present an overall view of production machining.
1	WELD-1040	Welding Technology 1 This course is designed to provide both theoretical and practical knowledge in: welding shop safety, shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, oxy-fuel and plasma cutting.
1	METH-1002	Technology in Industry Significant manufacturing processes-both conventional and new are studied in this course; foundry processes, hard mould casting, powder metallurgy, primary and secondary metalworking processes and manufacturing with plastics, ceramics and composite materials. It is intended to give an overview of manufacturing methods and explain the behaviour of materials and the mechanisms involved in their fabrication.
1	ENGR-1020	Engineering Design I This course is an introduction to assembly drawings, weldment drawings, casting drawings and auxiliary views. Dimensioning

		and tolerancing, threads and fasteners and product modification will also be included. Ferrous metals and plastics is a research taught module.
1	MECH-1072	<p>SPC and Metrology</p> <p>This introductory course covers both conventional measuring systems and co-ordinate measuring machines using STATISTICAL PROCESS CONTROL (SPC) tools. Through theory and practice, statistical analysis and measurement techniques will further develop correct judgment in quality control. Emphasis is given to reliable inspection reports/recommendations either orally or in written form.</p>
1	MATS-1021	<p>Ferrous Metallurgy</p> <p>This course is an introductory course in Engineering Materials. The basic nature of metals, is explained. Steel is covered as is steel terminology and specifications. The heat treatment of steel is explained. Laboratory work is an important part of the course and will cover introductory metallography, tensile testing, hardness testing, impact testing, heat treating and collection of data. Writing of laboratory reports is an integral part of this course.</p>
2	WELD-1047	<p>Production Welding</p> <p>Program, set-up and safely operate the robotic welding cells; Set-up & operate GMAW equipment for spray transfer; Set-up & operate GTAW equipment for welding of aluminum; Perform material preparation for cutting, beveling and cleaning; Apply Jigs & Fixture design and QC inspection techniques; Specify codes, requirements, procedures and costs for welding processes; Understand ultrasonic welding and electronic soldering techniques.</p>
2	MACH-1144	<p>CNC Processes – Intro</p> <p>This course will provide the student with manual part programming skills and practical experience on CNC Turning Center and Vertical Machining Center machine tools. Students will be expected to write, edit, trouble shoot and prove out their own programs. The practical aspect of the course will prove an opportunity to demonstrate initiative and good time management in addition to working safely and cooperating with fellow students.</p>
2	MECH-1090	<p>Tool Design I</p> <p>Fundamental Principles of the Design of Fixtures, Cutting tools, and Gauges for Conventional, CNC and Die-Block production. Only one of the three topics will be selected by the professor for physical design. The lecture period will cover all topics as they are applied in today's manufacturing industry. An introduction to Rapid Prototyping will be applied.</p>
2	MECH-3034	<p>Industrial Hydraulics, Pneumatics & PLCs</p> <p>Students will be introduced to the basic principles of hydraulics and pneumatics including power, pressure, and flow. The operational characteristics of pumps, valves, and actuators will be</p>

		described and explained. Students will design, build, and test simple hydraulic/pneumatic circuits. The student will become familiar with different methods of circuit control including direct control, electrical control and programmable logic controllers (PLC).
2	MGMT-1007	<p>Project Management</p> <p>This course is an introduction to Project Management. It introduces the basic principles of the wide range of activities a project manager has to accomplish. The course teaches the most important aspects of project management through the initiation, development, execution and closure phases of the project. In detail the concepts of scheduling, budgeting, risk estimation and scope management are discussed amongst others.</p>
2	MECH-3035	<p>Applied Project</p> <p>This course teaches the application of project management skills as applied to practical hands on projects. The students will work in teams to construct assigned projects and prepare reports.</p>

Add additional rows as required to complete the curriculum chart.

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