

Fanshawe College

## FIRST: Fanshawe Innovation, Research, Scholarship, Teaching

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Documentation (Approvals etc...)

Applied Mechanical Design

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2016

### **FANS-01335-Applied Mechanical Design CVS Application - funded**

Fanshawe College

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### APPLICATION FORM FOR PROGRAM PROPOSAL

<b>A. Funding Request:</b> This proposal will be sent to the MTCU for Approval for Funding. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								
<b>B. College Name:</b> Fanshawe College								
<b>C. College Contact(s):</b> Person responsible for this proposal.  <table border="0"> <tr> <td><b>Name:</b> Steve Torrens</td> <td><b>Name:</b> Dave Machacek</td> </tr> <tr> <td><b>Title:</b> Curriculum Consultant</td> <td><b>Title:</b> Chair</td> </tr> <tr> <td><b>Telephone:</b> 519 452-4430 ext. 4611</td> <td><b>Telephone:</b> 519 452-4430</td> </tr> <tr> <td><b>E-mail:</b> Storrens@fanshawec.ca</td> <td><b>E-mail:</b> DMachacek@fanshawec.ca</td> </tr> </table>	<b>Name:</b> Steve Torrens	<b>Name:</b> Dave Machacek	<b>Title:</b> Curriculum Consultant	<b>Title:</b> Chair	<b>Telephone:</b> 519 452-4430 ext. 4611	<b>Telephone:</b> 519 452-4430	<b>E-mail:</b> Storrens@fanshawec.ca	<b>E-mail:</b> DMachacek@fanshawec.ca
<b>Name:</b> Steve Torrens	<b>Name:</b> Dave Machacek							
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<b>E-mail:</b> Storrens@fanshawec.ca	<b>E-mail:</b> DMachacek@fanshawec.ca							
<b>D. Proposed Program Title:</b> <u>Applied Mechanical Design</u>								
<b>E. Proposed Credential:</b> Please select one (1). <input type="checkbox"/> Local Board Approved Certificate <input type="checkbox"/> Ontario College Certificate <input type="checkbox"/> Ontario College Diploma <input type="checkbox"/> Ontario College Advanced Diploma <input checked="" type="checkbox"/> Ontario College Graduate Certificate								
<b>F. SProgram Maps (Appendix A):</b> Please complete and attach the two (2) Program Maps. <u>Form 1-</u> Vocational Program Learning Outcomes <u>Form 2-</u> Essential Employability Skills Outcomes								
<b>G. Program Description (Appendix B):</b> Please complete and attach the Program Description Form.								
<b>H. Program Curriculum (Appendix C):</b> Please complete and attach the Program Curriculum Form.								
<b>I. Regulatory Status Form (Appendix D):</b> Please complete and attach the Regulatory Status Form.								
<b>J. Date of Submission to CVS:</b> <u>June 15, 2016</u>								
<b>FOR CVS USE ONLY</b>								
<b>K. Date of CVS Response:</b> <u>June 21, 2016</u>								
<b>L. CVS Validation Decision:</b> <input checked="" type="checkbox"/> Proposal Validated. APS Number: <u>FANS 01335</u> Reason: <u>Validated due to good program mapping</u> <input type="checkbox"/> Proposal not Validated. Reason:								
<b>M. CVS Signature:</b> <u>Karen Belfer</u>								

Send the completed form and required appendices to: [belfer@ocqas.org](mailto:belfer@ocqas.org). For detailed information on how to complete the Application Form for Program Proposal, please refer to the *Instructions for Submission of Program Proposal* document at [www.ocqas.org](http://www.ocqas.org).



## INTRODUCTION

The process established by the Credentials Validation Service (CVS) is designed to be a streamlined, seamless, effective, and efficient process that will allow colleges to submit and receive validation requests and decisions in a timely manner. The document with the instructions to complete this form (*CVS Instructions for Submission of Program Proposal*) is available to all colleges on the OCQAS website ([www.ocqas.org](http://www.ocqas.org)).



**F. PROGRAM MAPS (APPENDIX A): Form 1 - Vocational Program Learning Outcomes**

<b><u>Provincial Vocational Program Outcomes</u></b> <input type="checkbox"/> Provincial Program Standard, <i>or</i> <input checked="" type="checkbox"/> Provincial Program Description <i>MTCU code: 71018</i>	<b>Proposed Program Vocational Learning Outcomes</b>	<b>Course Title / Course Code</b>
1. Solve complex technical problems related to mechanical environments and evaluate solutions according to accepted engineering principles	See #1	
2. Design and analyze mechanical components, processes, and systems through the application of complex engineering principles and practices.	1. Develop design solutions for mechanical problems utilizing complex engineering principles and practices.	MECH-XXXX, Design 1 MECH-XXXX, Design 2 MECH-XXXX SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Finite Element Analysis MECH-XXXX, Advanced Theory of Mechanical Design MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
3. Create graphics and other technical documents and evaluate these documents against appropriate engineering standards.	2. Analyze and synthesize technical data to develop graphics and related technical documents conforming to engineering standards.	MECH-XXXX, Design 1 MECH-XXXX, Design 2 MECH-XXXX, Advanced Modeling



		<p>MECH-XXXX SPC, Metrology &amp; GD&amp;T</p> <p>COMM-6027, Industrial Communications</p> <p>COMM-6028, Project Communications</p> <p>MGMT-XXXX, Capstone Project</p>
4. Utilize current and relevant hardware and software to support the mechanical engineering environment.	3. Select and manage appropriate hardware and software used in the creation of engineering designs.	<p>MECH-XXXX, Design 1</p> <p>MECH-XXXX, Design 2</p> <p>MECH-XXXX, Advanced Modeling</p> <p>MGMT-XXXX, Capstone Project</p>
5. Design components using knowledge of manufacturing processes.	4. Develop engineering designs utilizing a combination of principles and knowledge of manufacturing processes and engineering methods.	<p>MECH-XXXX, Design 1</p> <p>MECH-XXXX, Design 2</p> <p>MECH-XXXX, Advanced Modeling</p> <p>MECH-XXXX, SPC, Metrology &amp; GD&amp;T</p> <p>MECH-XXXX, Finite Element Analysis</p> <p>MATH-XXXX, Mathematics</p> <p>MGMT-XXXX, Capstone Project</p>
6. Apply knowledge of materials and engineering principles to manufacturing operations and processes as required.	See #4	



7. Select and utilize various machinery, tools, and other equipment used in manufacturing processes as required.	See #4	
8. Coordinate, conduct and analyze quality control and quality assurance procedures.	5. Determine reliability and quality control measures and procedures to evaluate and manage advanced manufacturing and mechanical design processes and systems.	MECH-XXXX, Design 1 MECH-XXXX, Design 2 MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
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.	6. Incorporate sustainable, economic, ergonomic, safe and ethical approaches into design projects.	MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
10. Produce, maintain and utilize documentation, and inventory and records systems.	See #2	
11. Participate in the management of an engineering product.	7. Plan, implement and manage mechanical engineering design projects in response to stakeholder and industry needs and requirements.	MECH-XXXX, Design 2 MECH-XXXX, Advanced Modeling MGMT-XXXX, Capstone Project
12. Develop and implement strategies and plans to improve job performance and work relationships.	See #7	



	8. Design experiments that evaluate fit, form and function of critical components utilizing principles of statistical process control and finite element analysis.	MECH-XXXX SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Finite Element Analysis MECH-XXXX, Advanced Theory of Mechanical Design MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
	9. Communicate clearly and concisely in written, graphic and spoken form using appropriate vocabulary and formats for professional engineering projects.	COMM-6027, Industrial Communications COMM-6028, Project Communications MECH-XXXX SPC, Metrology &GD&T MECH-XXXX, Finite Element Analysis MECH-XXXX, Advanced Quality Systems MECH-XXXX, Advanced Theory of Mechanical Design MGMT-XXXX, Capstone Project

*Add additional rows as required to complete the mapping exercise.*



**F. PROGRAM MAPS (APPENDIX A): 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 Codes <i>(As indicated in Appendix A)</i>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Reading</li> <li>• Writing</li> <li>• Speaking</li> <li>• Listening</li> <li>• Presenting</li> <li>• Visual Literacy</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1 MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
		<ul style="list-style-type: none"> <li>• Respond to written, spoken, or visual messages in a manner that ensures effective communication</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX, SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1





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 Codes (As indicated in Appendix A)
			MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
<b>Numeracy</b>	<ul style="list-style-type: none"> <li>• Understanding and applying mathematical concepts and reasoning</li> <li>• Analysing and using numerical data</li> <li>• Conceptualizing</li> </ul>	<ul style="list-style-type: none"> <li>• Execute mathematical operations accurately</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX, SPC, Metrology & GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1 MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality



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 Codes (As indicated in Appendix A)
			Systems MGMT-XXXX, Capstone Project
<b>Critical Thinking &amp; Problem Solving</b>	<ul style="list-style-type: none"> <li>• Analysing</li> <li>• Synthesizing</li> <li>• Evaluating</li> <li>• Decision-making</li> <li>• Creative and innovative thinking</li> </ul>	<ul style="list-style-type: none"> <li>• Apply a systematic approach to solve problems</li> </ul>	MECH-XXXX, Design 1 MECH-XXXX, Design 2 MECH-XXXX, Finite Element Analysis MECH-XXXX, Advanced Quality Systems MECH-XXXX, Advanced Theory of Mechanical Design
		<ul style="list-style-type: none"> <li>• Use a variety of thinking skills to anticipate and solve problems</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX, Design 1 MECH-XXXX, Design 2 MECH-XXXX, SPC, Metrology & GD&T MATH-XXXX, Mathematics MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications



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 Codes (As indicated in Appendix A)
			MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
<b>Information Management</b>	<ul style="list-style-type: none"> <li>• Gathering and managing information</li> <li>• Selecting and using appropriate tools and technology for a task or a project</li> <li>• Computer literacy</li> <li>• Internet skills</li> </ul>	<ul style="list-style-type: none"> <li>• Locate, select, organize, and document information using appropriate technology and information systems</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1 MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
		<ul style="list-style-type: none"> <li>• Analyse, evaluate, and apply relevant information from a variety of sources</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX SPC, Metrology &GD&T MATH-XXXX, Mathematics



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 Codes (As indicated in Appendix A)
			MECH-XXXX, Design 1 MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX Advanced Quality Systems MGMT-XXXX, Capstone Project
<b>Inter-personal</b>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Relationship management</li> <li>• Conflict resolution</li> <li>• Leadership</li> <li>• Networking</li> </ul>	<ul style="list-style-type: none"> <li>• Show respect for the diverse opinions, values, belief systems, and contributions of others</li> </ul>	COMM-6028, Project Communications MGMT-XXXX, Capstone Project
		<ul style="list-style-type: none"> <li>• Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals</li> </ul>	MECH-XXXX, Design 1 MECH-XXXX, Design 2 COMM-6028, Project Communications MECH-XXXX, SPC, Metrology &GD&T MGMT-XXXX, Capstone Project
<b>Personal</b>	<ul style="list-style-type: none"> <li>• Managing self</li> <li>• Managing change and being flexible and adaptable</li> <li>• Engaging in reflective practice</li> </ul>	<ul style="list-style-type: none"> <li>• Manage the use of time and other resources to complete projects</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX, SPC, Metrology &GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1



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 Codes (As indicated in Appendix A)
	<ul style="list-style-type: none"> <li>Demonstrating personal responsibility</li> </ul>		MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality Systems MGMT-XXXX, Capstone Project
		<ul style="list-style-type: none"> <li>Take responsibility for one's own actions, decisions, and consequences</li> </ul>	COMM-6027, Industrial Communications MECH-XXXX, SPC, Metrology & GD&T MATH-XXXX, Mathematics MECH-XXXX, Design 1 MECH-XXXX, Advanced Modeling MECH-XXXX, Finite Element Analysis MECH-XXXX, Design 2 MECH-XXXX, Advanced Theory of Mechanical Design COMM-6028, Project Communications MECH-XXXX, Advanced Quality



Ontario College Quality Assurance Service

Service de l'assurance de la qualité des  
collèges de l'Ontario

<b>Skill Categories</b>	<b>Defining Skills</b> Skill areas to be demonstrated by the graduates	<b>Essential Employability Skills Outcomes</b> The graduate has reliably demonstrated the ability to:	<b>Course Title / Course Codes</b> <i>(As indicated in Appendix A)</i>
			Systems MGMT-XXXX, Capstone Project



## G. PROGRAM DESCRIPTION (APPENDIX B)

### **Program Description**

*Provide a brief description of the program, similar to what might be used as, or found in, advertising or a calendar description.*

This graduate certificate program provides engineering students with expertise in the design of machines and products, production planning and quality control in the advanced engineering sector with special consideration towards sustainable design. Graduates gain the necessary experience and knowledge to conduct the analysis and design of mechanical systems within an advanced manufacturing environment.

The program includes two terms of course work, the second of which involves a capstone project. The curriculum includes courses on Mechanical Design, Manufacturing processes, Material Sciences and Advanced Quality Systems management. Topics concerning the business and economics of manufacturing will be explored to provide a framework for the design of safe and sustainable mechanical components, devices and systems.

### **Laddering Opportunities**

*Provide a brief description of known laddering into and from the proposed program, e.g. certificate to diploma, diploma to degree, apprenticeship to college, diploma to apprenticeship, college to college, diploma to college degree, etc.*

Graduates from a diploma or degree related to Mechanical Engineering or Mechanical Design would be eligible to apply the proposed "Advanced Mechanical Design" program. Students who have successfully completed first, second or third Year of Mechanical Engineering at a Canadian Engineering Accreditation Board approved Canadian University or equivalent international credentials may also apply.

### **Occupational Areas**

*Provide a brief description of where it is anticipated graduates will find employment.*

Graduates are prepared for employment in the field of mechanical design, research and development, CAD operations, equipment installation and testing, production-related areas in roles such as:

- Mechanical designer
- Tool designer
- Product development and testing
- Process planner/co-ordinator
- Quality assurance/control specialist
- Technical sales and support representative
- CAD specialist
- Co-ordinate measuring machine (CMM) programmer/operator



### **Proposed Program Vocational Learning Outcomes**

*Provide the list of the proposed program vocational learning outcomes. These outcomes should be listed, verbatim as they appear in Appendix A- Form 1.*

#### ***The graduate has reliably demonstrated the ability to:***

1. Develop design solutions for mechanical problems utilizing complex engineering principles and practices.
2. Analyze and synthesize technical data to develop graphics and related technical documents conforming to engineering standards.
3. Select and manage appropriate hardware and software used in the creation of engineering designs.
4. Develop engineering designs utilizing a combination of principles and knowledge of manufacturing processes and engineering methods.
5. Determine reliability and quality control measures and procedures to evaluate and manage advanced manufacturing and mechanical design processes and systems.
6. Incorporate sustainable, economic, ergonomic, safe and ethical approaches into design projects.
7. Plan, implement and manage mechanical engineering design projects in response to stakeholder and industry needs and requirements.
8. Design experiments that evaluate fit, form and function of critical components utilizing principles of statistical process control and finite element analysis.
9. Communicate clearly and concisely in written, graphic and spoken form using appropriate vocabulary and formats for professional engineering projects.

### **Admission Requirements**

*Identify the Admission Requirements for the program.*

A two- or three-year diploma or a degree in mechanical or manufacturing engineering from a recognized college or university or equivalent work experience in a related field. Or an equivalent qualification from another institution as judged by the College. Or a combination of relevant education and work experience in a related field as judged by the College to be equivalent to the above

### **English Language Requirements**

Applicants whose first language is not English will be required to demonstrate proficiency in English by one of the following methods:

- A Grade 12 College Stream or University Stream English credit from an Ontario Secondary School, or equivalent, depending on the program's Admission Requirements
- Test of English as a Foreign Language (TOEFL) test with a minimum score of 570 for the paper-based test (PBT), or 88 for the Internet-based test (iBT), with test results within the last two years
- International English Language Testing System (IELTS) test with an overall score of 6.5 with no score less than 6.0 in any of the four bands, with test results within the last two years OR an IELTS test with an overall score of 6.0 with no score less than 5.5 in any of the four bands, with test results within the last two years, may be considered when the applicant has an overall average of 60% or above in the qualifying diploma or degree





- Canadian Academic English Language (CAEL) test with an overall score of 70 with no score less than 60 in any of the four bands, with test results within the last two years
- An English Language Evaluation (ELE) at Fanshawe College with a minimum score of 75% in all sections of the test, with test results within the last two years



### H. PROGRAM CURRICULUM (APPENDIX C)

Semester	Course Code/ Course Title <i>(As indicated in Appendix A)</i>	General Education Course <i>(indicate with an X)</i>	Total Course Hours	Course Description
1	<b>COMM-6027 Industrial Communications</b>		<b>45</b>	This course focuses on written and verbal communication skills. Students learn to prepare a variety of professional documents. In addition, students learn about research methods and documentation formats. The principles of effective writing – organization, grammar, style, clarity, and tone – are reinforced throughout the course. Students will also practice oral communication skills in a variety of situations. The goal of the course is to prepare students for the communication tasks and considerations they will encounter in the workplace and/or future education in order to meet the needs of employers and/or the communities they will serve.
1	<b>MECH-XXXX SPC, Metrology &amp;GD&amp;T</b>		<b>90</b>	This course concentrates on advanced Statistical Quality Control, the collection of data using advance technologies through metrology for reverse engineering and advance application of geometric dimensioning and tolerances (GD&T) on engineering drawings. Non-Destructive Testing methods will be examined in theory and implemented through practical experiments.
1	<b>MATH-XXXX Mathematics</b>		<b>45</b>	This course introduces the student to the concepts and methods of design of experiments. Statistical methods applicable to the engineering analysis of process control are taught. This course also provides the foundation for <b>Finite Element Analysis</b> and advanced quality systems courses in the later



				semester.
1	<b>MECH-XXXX Design 1</b>		60	The analysis of physical properties of components including Machine Components (pulleys, belts, gears, bearings, bushings), bolts, fasteners, and fits & clearances used in Manufacturing. Students will make design decisions with considerations of engineering economics, ergonomics, ethics, sustainability, construction and safety.
1	<b>MECH-XXXX Advanced Modeling</b>		60	An advanced modeling course using state-of-the-art parametric modeling software. Students will develop and troubleshoot complex 3D solid and surface models, assemblies and drawings. Students will be introduced to surface modeling and design sheet metal and parts development with real life designs. Advance parametric modeling, configuration management, troubleshooting model history, parent/child relationships, parametric constraints & relations, use of modeling, surfacing and assembly tools.
2	<b>MECH-XXXX Finite Element Analysis</b>		45	The course introduces the fundamentals of finite element method for the analysis of engineering problems with emphasis on solid mechanics and stress analysis. Finite element methods and solution procedures for linear (static) finite element analysis are presented with emphasis on real life problems. The importance of proper mathematical model, discretization techniques, derivation of stiffness matrix, and element selection criteria is emphasized. Students will learn how to apply and understand boundary conditions, applied loads and proper interpretation of the results. Commercial finite element software is used to perform stress analyses on two and three dimensional structures or components.



2	<b>MECH-XXXX Design 2</b>		<b>90</b>	Continuing from Design 1 students will create advance CAD models and assemblies incorporating surface modeling, solids, drawings and assembly animation including safety requirements. Students will utilize 3D scanning/printing, library components and reverse engineering practices as it relates to system design. (Lecture 2 hr. + 4 Lab)
	<b>MECH-XXXX Advanced Theory of Mechanical Design</b>		<b>45</b>	This course covers mechanical design of members that are subjected to a variety of load types (axial, torsional and bending) using appropriate failure theories. Static and dynamic loads (fatigue) are considered. Welded and threaded fasteners are included. In addition, there is a descriptive introduction to finite element analysis. Design projects are included.
2	<b>COMM-6028 Project Communications</b>		<b>45</b>	Students will prepare interim reports, submit final project documentation and present the results of their practical field project to peers using effective written and oral communication strategies. Students will examine the values, customs and communication styles of cultural groups, with an emphasis on implications for business. An understanding of different cultures and cross-cultural challenges will provide students with a framework for professional conduct and international business communications.
2	<b>MECH-XXXX Advanced Quality Systems</b>		<b>45</b>	This course provides advanced coverage of quality control concepts. Reliability of both cycle-dependant and time-dependent operations are introduced and the parameters such as failure-rate, mean time to failure, mean downtime, availability etc. used in reliability evaluation are defined.



				Reliability for systems of components in both active in both active and redundant configuration is determined. Availability is determined for restorable systems. Techniques of risk assessment such as FMEA, Fault-Tree Analysis, Ishikawa Diagrams, and Minimum-cut Sets are introduced.
<b>2</b>	<b>MGMT-XXXX Capstone Project</b>		<b>30</b>	In this course, students will work in teams to plan, implement and evaluate industry related projects that integrate key concepts of mechanical design development. Working collaboratively, students will conduct background research and explore engineering concepts to develop a fully detailed functional design. The project will include documentation of results according to industry accepted standards and ethical principles. Problem solving, communication and time management skills will be emphasized.

*Add additional rows as required to complete the curriculum chart.*



## I. REGULATORY STATUS FORM (APPENDIX D)

Please complete the following:

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

- Mandatory recognition of a regulatory authority exists and is being sought.**  
(Please refer to Section A below- *Mandatory Regulatory Requirements*)

*There IS or IS NOT a voluntary (i.e., not required by legislation) licensing or certification for entry to practice in the profession or trade.*

- YES  
 NO

- Voluntary recognition of a regulatory authority IS being sought.**  
(Please refer to Section B below- *Recognition by Voluntary Association*)

- Voluntary recognition is NOT being sought\*.**  
Please explain why: [Click here to enter text.](#)

*\*Note: There may be titling implications for programs that are not seeking recognition in an area where existing programs have secured recognition.*



#### A. 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.

Name of regulatory authority:

**Status** (please select ALL that apply)

Accreditation or approval by the regulatory authority / designated third party received.

Date of recogn: on:



- The college is working toward accreditation with the regulatory authority/ designated third party.

Describe current status of application:

Expected date of recognition:

- The regulatory authority does not accredit educational programs directly or through designated third party. Formal acknowledgement (e.g. in its published or legislated registration requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

**Please submit an acknowledgement and/or evidence from the regulatory authority regarding the status of the recognition.**





## B. RECOGNITION BY VOLUNTARY ASSOCIATION

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 ***a recommendation and not a requirement*** for program funding approval by the Ministry of Training, Colleges and Universities.

Name of voluntary association:

**Status** (please select ALL that apply)

The college is working toward recognition.

Describe current status of application:

Expected date of recognition:

Recognition has been received.

Date of recognition:

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

The association does not recognize educational programs directly or through designated third party. Formal recognition (e.g. in its published requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

**Please submit an acknowledgement and/or evidence from the regulatory authority or**



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**voluntary association regarding the status of the recognition.**