

QUEENSBOROUGH COMMUNITY COLLEGE
Department of Engineering Technology
Computer Engineering Technology

Criterion 3 - Student Outcomes (1-5)

Student outcomes describe what students are expected to know and be able to demonstrate by the time of graduation. They relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the Computer Engineering Technology Program at Queensborough Community College. The Engineering Technology Department conducts regular assessment of student achievement of these outcomes via Performance Indicators. The results of the assessment process are recorded in the **Assessment Database** and tracked in the attached **Continuous Improvement Plan**. The Continuous Improvement Plan itself provides evidence of the ongoing review process used to evaluate the effectiveness of the Computer Engineering Technology Program at Queensborough and summarizes the course of action in response to specific assessment results.

Measurement of student success in attaining each outcome is implemented in a set of supporting **Performance Indicators**. Each Performance Indicator is assigned to a set of courses selected by the department assessment committee and proposed to the department for review and approval. For each Performance Indicator, faculty then select assignments in each course, develop rubrics and collect the student data to be recorded on each rubric.

The performance indicators to be demonstrated in each course are listed in the table below.

Student Outcome (1) - an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;

- **Performance Indicator ETCT1-1** Apply engineering principles to analyze and design electrical, electronic, and computer circuits and systems including semiconductor devices, filters, and amplifiers.
- **Performance Indicator ETCT1-2** Solve applied problems by employing computer programming skills and associated software including circuit simulation software.
- **Performance Indicator ETCT1-3** Demonstrate knowledge of digital electronics theory and microcomputer architecture.
- **Performance Indicator ETCT1-4** Interpret relevant technical standards.
- **Performance Indicator ETCT1-5** Analyze systems in a mathematical environment at or above the level of algebra and trigonometry.
- **Performance Indicator CT1-6** Apply configuration, installation, and maintenance techniques to computer networks and operating systems.

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Student Outcome (2) - an ability to design solutions for well-defined technical problems and assist with engineering design of systems, components, or processes appropriate to the discipline;

- **Performance Indicator ETCT2-1** State and apply appropriate circuit laws to analyze and implement electrical and electronic systems.
- **Performance Indicator ETCT2-2** Produce printed circuit board layouts and circuit boards using application software.
- **Performance Indicator ETCT2-3** Apply principles of Boolean logic in the design and analysis of digital circuits.
- **Performance Indicator ETCT2-4** Utilize fabrication, assembly and troubleshooting techniques associated with the manufacture and maintenance of electronics and computer systems.

Student Outcome (3) -an ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

- **Performance Indicator ETCT3-1-** Produce effective written documents including lab reports and term papers.
- **Performance Indicator ETCT3-2** Deliver effective oral presentations.
- **Performance Indicator ETCT3-3** Interpret visual and graphical information and data.
- **Performance Indicator ETCT3-4** Identify and use appropriate technical resources.

Student Outcome (4) - an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results;

- **Performance Indicator ETCT4-1** Verify system performance by taking measurements and interpreting results.
- **Performance Indicator ETCT4-2** Effectively utilize instrumentation equipment and measurement techniques to test and validate the operation of electronic circuits and systems.
- **Performance Indicator ETCT4-3** Construct, test and validate electronic circuits from circuit schematics and logic diagrams.

Student Outcome (5) - an ability to function effectively as a member of a technical team;

- **Performance Indicator ETCT5-1** Assign and perform shared duties to accomplish a common task.
- **Performance Indicator ETCT5-2** Demonstrate an ability to communicate effectively with team members.

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**Computer Engineering Technology Course Assignments for
 Student Outcomes "1-5" and Supporting Performance Indicators "1-x to 5-x"**

COURSES	TITLE					
	Major Requirement (34 cr.)	1	2	3	4	5
TECH-100	Introduction to Engineering and Technology			<u>3-2</u> <u>3-3</u> <u>3-4</u>		
ET-110	Electric Circuit Analysis I	<u>1-4</u>	<u>2-1</u>		<u>4-1</u>	
ET-210	Electronics I	<u>1-1</u>	<u>2-1</u>	<u>3-3</u>	<u>4-2</u>	
ET-350	Computer Control Systems	<u>1-1</u> <u>1-5</u>			<u>4-1</u> <u>4-3</u>	
ET-420	Computer Project Lab		<u>2-2</u> <u>2-4</u>		<u>4-2</u>	
ET-502	Introduction to Computer Programming	<u>1-2</u>		<u>3-1</u>		
ET-504	Operating Systems & System Deployment	<u>1-6</u>		<u>3-1</u>		
ET-509	C++ Programming for Embedded Systems	<u>1-2</u>		<u>3-1</u> <u>3-2</u>		
ET-540	Digital Computer Theory I	<u>1-3</u>	<u>2-3</u>		<u>4-3</u>	
ET-542	Computer & Electrical Device Applications					<u>5-1</u> <u>5-2</u>
ET-560	Microprocessors	<u>1-3</u>	<u>2-3</u> <u>2-4</u>			
ET-575	Introduction to C++ Programming and Implementation	<u>1-2</u> <u>1-5</u>				
ET-704	Networking Fundamentals I	<u>1-4</u> <u>1-6</u>				<u>5-1</u> <u>5-2</u>
	CT-Electives (2 cr.)					
ET-140	Sinusoidal and Trans. Circuit Analysis	<u>1-5</u>		<u>3-1</u>		<u>5-1</u> <u>5-2</u>

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ET-220	Electronics II	<u>1-1</u>	<u>2-1</u>		<u>4-1</u> <u>4-3</u>	
ET-230	Telecommunication I	<u>1-4</u>				<u>5-1</u> <u>5-2</u>
ET-232	Wireless Mobile Communications	<u>1-4</u>				
ET-375	Introduction to Robotics	<u>1-2</u> <u>1-5</u>				
ET-481	Upgrade and Repair PCs	<u>1-6</u>	<u>2-4</u>			
ET-580	Object Oriented Programming	<u>1-2</u>				
ET-705	Networking Fundamentals II	<u>1-4</u> <u>1-6</u>				<u>5-1</u> <u>5-2</u>
ET-710	Web Technology I: Building and Maintaining Websites	<u>1-2</u>				
ET-725	Computer Network Security	<u>1-4</u>				
	General Education Requirements					
MA-114	College Algebra & Trig for Technical Students	<u>1-5</u>				
MA-128	Calculus for Technical & Bus Students	<u>1-5</u>				
PH-201	General Physics I	<u>1-5</u>				
PH-202	General Physics II	<u>1-5</u>				
EN-101	English Composition I			<u>3-1</u>		
EN-102	English Composition II			<u>3-1</u>		
SS or HI	Soc Sci or Hist. Elect			<u>3-1</u>		

For associate degree programs, these student outcomes must include, but are not limited to, the following learned capabilities:

- (1) An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;
- (2) An ability to design solutions for well-defined technical problems and assist with engineering design of systems, components, or processes appropriate to the discipline;
- (3) An ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

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- (4) An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results;
- (5) An ability to function effectively as a member of a technical team;