Basic Electronic Assembly

Mechanical and Transportation Technology

Course Number:	**Contribution to Program:**		**Normative Hours:**
ELN8613	Vocational		30
Applicable Program(s):	**AAL:**	**Core/Elective:**	**Approval Date:**
0550X01FWO EME Technician - Robotics	1	Core	04/09/2012
1438T01FWO GAS - One Year - Pre-Technology	2	Core	

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Approved by:
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Co-Requisites
N/A

Approved for Academic Year:
2012-2013

Pre-Requisites
N/A

COURSE DESCRIPTION

Students are exposed to soldering techniques. Brief lecture sessions provide the theoretical background followed by practical skills demonstration by the instructor. Students do practical labs based on the theory/demo to develop various skills, such as Printed Circuit Board component soldering (and de-soldering) for both traditional Through-Hole and Surface Mount Technology. They build their own set of meter leads and a functional project, (such as a Logic Probe) which they retain for use in other electronic courses.

RELATIONSHIP TO VOCATIONAL LEARNING OUTCOMES

This course contributes to your program by helping you achieve the following Vocational Learning Outcomes:

EME Technician - Robotics 0550X01FWO

1	Fabricate mechanical components and assemblies, and assemble electrical components and electronic assemblies by applying workshop skills and knowledge of basic shop practices in accordance with applicable codes and safety practices.(T,A)
14	Perform all work in accordance with relevant law, policies, codes, regulations, safety procedures, and standard shop practices.(T,A)

GAS - One Year - Pre-Technology 1438T01FWO

1	Develop, through general knowledge gained in a wide range of subjects, insight into both self and society.(T,A)

T: Teach **A:** Assess **CP:** Culminating Performance

ESSENTIAL EMPLOYABILITY SKILLS

The course contributes to your program by helping you achieve the following Essential Employability Skills:

6	Locate, select, organize and document information using appropriate technology and information systems.(A)
10	Manage the use of time and other resources to complete projects.(T,A)

T: Teach **A:** Assess **CP:** Culminating Performance

COURSE LEARNING REQUIREMENTS/EMBEDDED KNOWLEDGE AND SKILLS

COURSE LEARNING REQUIREMENTS **When you have earned credit for this course, you will have demonstrated the ability to:**	**EMBEDDED KNOWLEDGE AND SKILLS**
1. demonstrate acceptable safety practices at all times in a lab environment	ı Students acquire knowledge of safety practices for the individual, for their co-worker, and the proper care and use of hand tools
2. understand and carry out the soldering process	ı Recognize the importance of: proper solder alloy, cleanliness and heat control used through out the soldering process. ı Recognize the importance of ROHs compliance in the workplace.
3. interpret and apply basic blueprint and documentation knowledge, as it pertains to electronic assembly.	ı Interpret documentation provided to carry out soldering assignments.

4. perform basic soldering/de-soldering skills following specified industry approved standards of workmanship.	ı Carry out assignments that involve working to industry standards for projects involving stranded wire preparation and termination.
5. perform soldering/de-soldering skills on Printed Circuit Boards.	ı Employ techniques to install, terminate, solder/de-solder electronic components to a Through-Hole Printed Circuit Board (PCB). ı Build a functional unit that the student will retain possession of. ı Employ techniques to handle and hand solder Surface Mount Devices to a Printed Circuit Board. ı Basic modifications will be done on both types of technology boards.

LEARNING RESOURCES

Course notes will be posted on blackboard for students.

Precision Hand Tools - **see (or contact) instructor prior to purchasing**. Tools include diagonal wire cutters (narrow jaw width), needle-nose pliers (narrow jaw width), and wire strippers (adjustable)

LEARNING ACTIVITIES

During this course, you are likely to experience the following learning activities:
Practical assignments will be carried out, based on: reading material in the manual, a brief lecture and a practical demonstration by the professor at the start of class.

EVALUATION/EARNING CREDIT

The following will provide evidence of your learning achievements:	**This activity validates the following Course Learning Requirements and/or Essential Employability Skills:**
Work habits 10%	ı demonstrate acceptable safety practices at all times in a lab environment - [CLR 1] ı Locate, select, organize and document information using appropriate technology and information systems. - [EES 6]
Projects 40% There are approximately 12 individually weighted projects; as outlined in the CSI.	ı perform soldering/de-soldering skills on Printed Circuit Boards. - [CLR 5] ı demonstrate acceptable safety practices at all times in a lab environment - [CLR 1] ı understand and carry out the soldering process - [CLR 2] ı interpret and apply basic blueprint and documentation knowledge, as it pertains to electronic assembly. - [CLR 3] ı perform basic soldering/de-soldering skills following specified industry approved standards of workmanship. - [CLR 4] ı Manage the use of time and other resources to complete projects. - [EES 10] ı Locate, select, organize and document information using appropriate technology and information systems. - [EES 6]
Final written test 20%	ı demonstrate acceptable safety practices at all times in a lab environment - [CLR 1] ı understand and carry out the soldering process - [CLR 2] ı interpret and apply basic blueprint and documentation knowledge, as it pertains to electronic assembly. - [CLR 3]
Logic Probe Project -- 30%	ı demonstrate acceptable safety practices at all times in a lab environment - [CLR 1] ı understand and carry out the soldering process - [CLR 2] ı perform basic soldering/de-soldering skills following specified industry approved standards of workmanship. - [CLR 4] ı Manage the use of time and other resources to complete projects. - [EES 10]

COLLEGE GRADING NUMERICAL EQUIVALENT TABLE

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90-100%	4.0	C+	67-69%	2.3
A	85-89%	3.8	C	63-66%	2.0
A-	80-84%	3.6	C-	60-62%	1.7
B+	77-79%	3.3	D+	57-59%	1.4
B	73-76%	3.0	D	53-56%	1.2
B-	70-72%	2.7	D-	50-52%	1.0
			F	0-49%	0
			FSP	0	0

OTHER COURSE INFORMATION

Students are required to respect the confidentiality of employer, client and/or patient information, interactions, and practices that occur either on Algonquin College premises, or at an affiliated clinical/field/co-op placement site. Concerns regarding clients, patients, and/or employer practices are to be brought to the attention of the program coordinator, or designated field/clinical/co-op placement supervisor so that they may be resolved collaboratively. Such concerns are not to be raised publically either verbally, in writing, or in electronic forums. These matters are to be addressed through established program communication pathways.

PRIOR LEARNING ASSESSMENT AND RECOGNITION

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Performance Test

RELATED INFORMATION

The following information is course-specific:

Required Equipment:

Safety Glasses
Closed-toed shoes
Electronics toolkit consisting of cutters, wire strippers, needlenose pliers, protoboard, small electronic screwdriver kit.

Refer to your CSI under Course Information on Blackboard for the updated Lab and Testing Policy.

Respect for Confidentiality

Students are required to respect the confidentiality of employer, client and/or patient information, interactions, and practices that occur either on AlgonquinCollege premises, or at an affiliated clinical/field/co-op placement site. Concerns regarding clients, patients, and/or employer practices are to be brought to the attention of the program coordinator, or designated field/clinical/co-op placement supervisor so that they may be resolved collaboratively. Such concerns are not to be raised publically either verbally, in writing, or in electronic forums. These matters are to be addressed through established program communication pathways

The following information is school/department-specific:

GENERAL CLAUSES - School of Advanced Technology

Harassment/Discrimination/Violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability-related), discrimination (direct or indirect), or violence, whether towards a professor or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College Policy - HR22.

Harassment means one or a series of vexatious comment(s) or conduct related to one or more of the prohibited grounds that is known or ought reasonably to be known to be unwelcome/ unwanted, offensive, intimidating, derogatory or hostile.

This may include, but is not limited to: gestures, remarks, jokes, taunting, innuendo, display of offensive materials, offensive graffiti, threats, verbal or physical assault, academic penalties, stalking, slurs, shunning or exclusion related to the prohibited grounds.

For further information, a copy of the official policy statement can be obtained from the Student Association.

The Use of Electronic Devices , with the sound turned on, during classes is strictly prohibited. In particular, cell phones are not to be used to communicate during a class. The use of any electronic devices during exams and mid-term tests, other than those sanctioned by the faculty in charge of the examination, is strictly prohibited.

Anyone caught using a prohibited device will be considered to have plagiarized, and will be treated as such in accordance with College Plagiarism Policy. For further details on this directive, consult the Algonquin College Policy AA32 on the use of Electronic Devices in Class and Exams.

The School of Advanced Technology' s Standard Operating Procedure on Plagiarism and Academic Honesty defines plagiarism as an attempt to use or pass off as one's own idea or product, work of another without giving credit. Plagiarism has occurred in instances where a student either directly copies another person's work without acknowledgement; or, closely paraphrases the equivalent of a short paragraph or more without acknowledgement; or, borrows, without acknowledgement, any ideas in a clear and recognizable form in such a way as to present them as one's own thought, where such ideas, if they were the student's own would contribute to the merit of his or her own work.

Plagiarism is one of the most serious academic offenses a student can commit. Anyone found guilty will, on the first offense, be given a written warning and an F on the plagiarized work. If the student commits a second offense, an F will be given for the course along with a written warning. A third offense will result in suspension from the program and/or the college.

For further details on this directive, consult the Algonquin College Policy - AA20 and the School of Advanced Technology' s Standard Operating Procedure on Plagiarism and Academic Dishonesty.

Respect for Confidentiality

Students are required to respect the confidentiality of employer, client and/or patient information, interactions, and practices that occur either on AlgonquinCollege premises, or at an affiliated clinical/field/co-op placement site. Concerns regarding clients, patients, and/or employer practices are to be brought to the attention of the program coordinator, or designated field/clinical/co-op placement supervisor so that they may be resolved collaboratively. Such concerns are not to be raised publically either verbally, in writing, or in electronic forums. These matters are to be addressed through established program communication pathways

Disruptive Behaviour is any conduct, or threatened conduct, that is disruptive to the learning process or that interferes with the well-being of other members of the College community. It will not be tolerated.

Members of the College community, both students and staff, have the right to learn and work in a secure and productive environment. The College will make very effort to protect that right.

Incidents of disruptive behaviour must be reported in writing to the departmental Chair as quickly as possible. The Chair will hold hearings to review available information and determine any sanctions that will be imposed. Disciplinary hearings can result in penalties ranging from a written warning to expulsion.

For further details consult the Algonquin College Policy - SA07.

June 15, 2012

The following information is College-wide:

Email
Algonquin College provides all full-time students with an e-mail account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course events. It is your responsibility to ensure that you know how to send and receive e-mail using your Algonquin account and to check it regularly.

Centre for Students with Disabilities (CSD)
If you are a student with a disability, it is strongly recommended that you identify your needs to the professor and the Centre for Students with Disabilities (CSD) by the end of the first month of the semester in order that any necessary support services can be arranged for you.

Academic Integrity* & Plagiarism*
Adherence to acceptable standards of academic honesty is an important aspect of the learning process at Algonquin College. Academic work submitted by a student is evaluated on the assumption that the work presented by the student is his or her own, unless designated otherwise. For further details consult Algonquin College Policies AA18 **http://www2.algonquincollege.com/directives/files/2012/04/AA18.pdf** and AA20 **http://www2.algonquincollege.com/directives/files/2011/08/AA20.pdf**

Student Course Feedback*
It is Algonquin College's policy to give students the opportunity to complete a course assessment survey in each course that they take which solicits their views regarding the curriculum, the professor and the facilities. For further details consult Algonquin College Policy AA25 **http://www2.algonquincollege.com/directives/files/2011/10/AA25.pdf**

Use of Electronic Devices in Class*
With the proliferation of small, personal electronic devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of such devices is disruptive and disrespectful to others. During examinations, the use of such devices may facilitate cheating. For further details consult Algonquin College Policy AA32

http://www2.algonquincollege.com/directives/files/2011/11/AA32.pdf

Transfer of Credit
Students, it is your responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

***** College policies (previously called directives) are under review and redesign. The term *directives* is being retired. As such, the policy classification nomenclature is in transition. Students, it is your responsibility to refer to the Algonquin College Directives/Policies website for the most current information available at**:(http://www2.algonquincollege.com/directives/)**