SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	ELECTRONICS LEVEL II		
CODE NO. :	ELR721	**SEMESTER:**	FOUR
PROGRAM:	CONSTRUCTION & MAINTENANCE/INDUSTRIAL ELECTRICIAN APPRENTICESHIP		
AUTHOR:	R. McTaggart		
DATE:	DEC. 2008	**PREVIOUS OUTLINE DATED:**	OCT. 2005
APPROVED:	**"Corey Meunier"** **CHAIR**		_____ **DATE**
TOTAL CREDITS:	3		
PREREQUISITE(S):	NONE		
HOURS/WEEK:	3		

I. COURSE DESCRIPTION:

A course in the applications of diodes in rectifier circuits and power supplies. Other topics include Zener diodes, Field Effect Transistors, op-amps and thyristors including the SCR, DIAC and TRIAC

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Use an oscilloscope to test circuits.
2. Explain the importance of isolation as applied to test equipment.
3. Describe and demonstrate full-wave rectification.
4. Connect capacitors and inductors to filter a power supply output.
5. Explain and demonstrate the use of a Zener diode as a regulator.
6. Describe and demonstrate the operation of an SCR.
7. Describe and demonstrate the operation of a DIAC.
8. Describe and demonstrate the use of a TRIAC.
9. Describe and demonstrate how a DIAC and RC network can be used to phase shift a TRIAC.
10. Describe the operation and applications of a Pulse Transformer and the theory of pulse triggering thyristors.
11. Explain the operation of a Field Effect Transistor (FET).
12. Explain the operation of an Operational Amplifier (Op. Amp).
13. Calculate the expected gain of inverting and non-inverting Op-Amp circuits.
14. Demonstrate the operation of an Op-Amp used as a Comparator.
15. Demonstrate the operation of an Op-Amp used as an amplifier.

III. TOPICS:

1. The Oscilloscope
2. Single-Phase Rectifiers
3. Filters
4. Zener Diodes
5. Thyristors
6. Phase Shifting SCRs and TRIACs
7. Pulse triggering thyristors
8. Field Effect Transistors
9. The Operational Amplifier (Op-Amp)

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Electronics for Electricians, 5th Edition
by Stephen L. Herman

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory 50%
Lab 50%

The following semester grades will be assigned to students:

Grade	Definition	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. SPECIAL NOTES:

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of Course Outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Communication:
The College considers ***WebCT/LMS*** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the ***Learning Management System*** communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:
The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Class/Lab Conduct:
Attendance to scheduled lab activities is compulsory, unless permission has been granted by the instructor. Lab attendance and final grade are directly related. **Students must continuously wear all Sault College required personal protective equipment (PPE) during lab activities. Failure to do this will result in expulsion from the lab activity and a grade of zero being assigned. Students are expected to be wearing their required PPE prior to entering the lab. The instructor will advise what specific PPE is required (safety glasses will definitely be required).** Unsafe conduct in the lab will not be tolerated.

If a student arrives late for, or is not continuously present and actively participating at (scheduled breaks excepted), a scheduled lab class he/she will be considered absent for the entire class and will not be permitted to submit the associated lab report.

Use of cell phones/PDAs for any form of communication (voice, text…) during class or lab time is strictly prohibited. Cell phones/PDAs must be silenced during regular class and lab times and *must be turned off and kept out of sight during test sittings. Failure to follow the latter requirement during a test sitting will result in a grade of 0 being assigned.*

Students may not wear earphones of any kind (i.e. for play back of recorded music/voice) during lab activities or test sittings. This does not include hearing aids required for hearing impaired.

Students are expected to maintain an active Sault College email account. They are required to check this email account daily. The instructor may announce details of lab and test requirements and scheduling through the Sault College email system (as well as sharing other important information).

Any request to deviate from the aforementioned course outline requirements must be made to the instructor in writing or via Sault College email. If permission is granted it must also be granted in writing or via Sault College email. Verbal requests/permissions are not acceptable. It is the student's responsibility to maintain a copy of all such requests and associated permissions.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.