|  |
| --- |
|  **SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY** **SAULT STE. MARIE, ONTARIO**Sault CollegeCOURSE OUTLINE |
| **COURSE TITLE:**  | Basic Electricity |
| **CODE NO. :**  | MPF100 | **SEMESTER:** | 1 |
| **PROGRAM:** | Motive Power Fundamentals and Advanced Repair |
| **AUTHOR:** | Jamie Schmidt |
| **DATE:** | October 2009 | **PREVIOUS** **OUTLINE DATED:** |  |
| **APPROVED:** |  |  |
|  | *“Corey Meunier”*CHAIR | \_\_\_\_\_\_\_DATE |
| **TOTAL CREDITS:**  | 4 |
| **PREREQUISITE(S):** |  |
| **HOURS/WEEK:**  | 7 |
| Copyright ©2009 The Sault College of Applied Arts & Technology*Reproduction of this document by any means, in whole or in part, without prior**written permission of Sault College of Applied Arts & Technology is prohibited.* |
| *For additional information, please contact Corey Meunier, Chair* |
| *School of The Natural Environment, Technology & Skilled Trades* |
| *(705) 759-2554, Ext. 2610* |

|  |  |
| --- | --- |
| **I.** | **COURSE DESCRIPTION:**In this course, you will be introduced to the basics of electricity and how it can be applied to Heavy Equipment, Truck Coach and Automotive industry. You will be able to identify, inspect and test basic electrical circuits as well as inspect, test, service and replace batteries. You will learn to use digital multi-meters to perform basic electrical measurements and perform basic electrical repairs such as soldering, heat shrink installation and terminal installation. |

|  |  |
| --- | --- |
| **II.** | **LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:** |
|  | Upon successful completion of this course, the student will demonstrate the ability to: |
|  | ***1.*** | ***Define the purpose, fundamentals and principles of electricity*** |
|  |  | Potential Elements of the Performance:Describe:* Atomic structure
* Conductors and insulators
* Magnetism
* Electron and conventional theories
* Sources of electricity
* Ohm’s Law, Kirchhoff’s Law, Watts Law
* Current flow, heat and resistance
* Magnetism
* Systems International (S.I.) System
* Voltage
* Amperage
* resistance
* Wattage
* Series, Parallel and series parallel circuit
 |
|  | ***2.*** | ***Perform basic electrical repairs***  |
|  |  | Potential Elements of the Performance:* Cleaning
* Splicing
* Crimping
* Soldering
* Corrosion protection
* Weather proofing
* Terminal repair
 |
|  | ***3.*** | ***Identify, inspect, and test basic electrical components and systems in compliance with manufacturers' recommendations.*** |
|  |  | Potential Elements of the Performance:* Inspect , test, service and replace batteries adhering to safe working procedures
* Identify circuit components and test circuit protection devices
* Demonstrate the ability to measure voltage, current and resistance using a DVOM (digital volt ohm meter)
* Perform maintenance on a DVOM including testing and replacing internal circuit protection and batteries
 |
|  | ***4.*** | **Describe the construction, operation, types, styles and application of electromagnetic devices.** |
|  |  | Potential Elements of the Performance:Describe the fundamentals of:* power generation

 - alternators - generators* electric motors
* solenoids
* relays
* coils
* stepper motors switches
 |

|  |  |
| --- | --- |
| **III.** | **TOPICS:** |
|  | 1. | Basic Electricity |
|  | 2. | Diagnostic test equipment |
|  | 3. | Electromagnetic devices and circuit components |
|  | 4. | Battery Fundamentals |
|  | 5. | Circuit repair and protection |

|  |  |
| --- | --- |
| **IV.** | **REQUIRED RESOURCES/TEXTS/MATERIALS:**Heavy Duty Truck Systems, 4th edition, Automotive Technology, Canadian edition. |

|  |  |
| --- | --- |
| **V.** | **EVALUATION PROCESS/GRADING SYSTEM:***Tests 50%**Practical evaluation 30%**Assignments and classroom exercises 20%* |
|  | 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:** |
| 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. |
| 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. |
| 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. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.Substitute course information is available in the Registrar's office. |
| 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. |
| 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*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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. |
| Student Portal:The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>. |
| Electronic Devices in the Classroom:Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction.  With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.  |
| Attendance:Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.  ***It is the departmental policy that once the classroom door has enclosed, the learning process has begun. Late arrivers will not be granted admission to the room.*** |
| Testing:If a student misses a test he/she must have a valid reason (i.e. medical or family emergency – documentation may be required). In addition, the instructor **must** be notified **prior** to the test sitting. If this procedure is not followed the student will receive a mark of zero on the test with no make-up option. Test “rewrites” will not be offered. |
| Eye, Face and Foot Personal Protection Equipment (P Eye, Face and Foot Personal Protection Equipment (PPE):Students are required to wear appropriate Personal Protection Equipment (PPE) in designated areas at all times. The designated areas for eye and foot protection in the Motive Power areas are: C1073 (Automotive), C1000, C1010, and C1040 (Truck/Coach and Heavy Equipment) and C1120 (Marine and Small Engines). Appropriate PPE must also be worn when facing hazards outside of these designated areas.Eye Protection:All protective eye wear shall meet the requirements of:C.S.A. - Z94.3 or A.N.S.I. - Z87.1 +.Approved safety glasses (lens and frames) shall have side protection such as wrap around design or fixed side shields. Foot Protection:1. Boot height- minimum 5 ½” uppers, measured from the top of the sole.
2. CSA Green Patch rating.
 |
|  |