SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	MATERIAL PROCESS QUALITY I		
CODE NO. :	MTF103	**SEMESTER:**	
PROGRAM:	METAL FABRICATOR TECHNICIAN		
AUTHOR:	NEAL MOSS neal.moss@saultcollege.ca		
DATE:	JAN 2010	**PREVIOUS OUTLINE DATED:**	JAN 2009
APPROVED:	"Corey Meunier" **CHAIR**		_____ **DATE**
TOTAL CREDITS:	2		
PREREQUISITE(S):	NONE		
HOURS/WEEK:	2		

I. COURSE DESCRIPTION:

The general objective of this course is to provide Welding students with a working knowledge of the theory behind the procedures that are used in the making and working with carbon steels, aluminum and alloys. We will look at the effects of heat acting upon metals and the distortions that may result. Labs are used to determine types of metals using various testing procedures. We will look at weld quality and understand the procedures to obtain consistent quality.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Define Metals and Alloys

Potential Elements of the Performance:

- Define and describe the Iron Making Process
- Define and describe the Steel Making Process

2. Define the following properties of metals and alloys:

Potential Elements of the Performance:

- Define and describe each of the following mechanical and physical .properties and / or terms:
  - Elasticity
  - Yield Point / Strength
  - Tensile ,Compressive, Shear, Bearing strength
  - Conductivity
  - Corrosion
  - Ductility
  - Malleability
  - Hardness
  - Impact Strength

3. MECHANICAL PROPERTIES AND TESTING OF STEEL

Potential Elements of the Performance:

- Explain the procedures and interpretation of harness testing for Rockwell hardness
- Explain how elevated temperatures affect strength.
- Explain the procedure and interpretation of toughness testing and how low temperature affect toughness.
- Explain the phenomena of fatigue and creep.

4. Distortion

Potential Elements of the Performance:

- Identify and describe the effects of temperature on metals and alloys.
- Identify and describe procedures to reduce or eliminate the distortion resulting from welding

5. Introduction To Steel Specifications Systems

Potential Elements of the Performance:

- Explain what a standard is.
- Explain what a specification is.
- Explain how the numbering system in the AISI/SAE steel specification systems relates to chemical content of steel alloys

6. Weld Quality

Potential Elements of the Performance:

- Define welding discontinuities and their effects on weld quality
- Indentify types and causes of Geometric and dimensional discontinuities.
- Explain Documenting, Procedures and other functions to assure weld quality.

III. TOPICS:

1. Iron making , Steel making
2. Properties of Metals and Alloys
3. Mechanical Properties and Testing of Materials
4. Distortion
5. Steel Specifications Systems
6. Weld Quality

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- **Course Bundle MTF 103**

The following personal protection equipment is required in the Lab or Shop.

- High Cut (8”) Safety Boots (CSA approved)
- Impact Resistant Safety Glasses (CSA approved)
- Coveralls or Shop Coat (not mandatory, but recommended to protect clothing)
- Hair net required when hair is below collar length (hair may also be put up underneath a ball cap)

V. EVALUATION PROCESS/GRADING SYSTEM:

Attitude, Attendance & Participation –	*20%*
Assignments	*15%*
Quizzes	*15%*
3 Tests	50%
	100 %

Attendance	*-1*% (per Hour) (late = 1 hour)
Safety Violations	-1% (per Occurrence, see notes below)

No Cell Phones are Permitted in The Classroom or Labs

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.

Safety;

Sault College recognizes that the Health and Safety of the Students and Staff is of the upmost importance. Recognizing that safety is everyone's responsibility and there is never a reason to compromise safety, is an important step in reducing accidents. To minimize potential hazards in the shop and various labs, safety rules will be strictly enforced.

Students must continuously wear all Sault College required **Personal Protective Equipment (PPE)** while working in the shop or lab as required by the Instructor. Students are required to wearing their required PPE prior to entering the lab. Failure to do this will result in the expulsion from the shop or lab activity and a zero attendance mark will be recorded. A student who repeatedly neglects to wear PPE as required is in violation of the Sault College Academic code of Conduct and may be sanctioned accordingly.(see Student Code of Conduct & Appeal Guidelines). For instance, first violation-verbal warning, second violation –written warning and the third violation-suspension from the Shop or Lab. For each infraction a 1% penalty is applied (as per the Evaluation/Grading System above.)