

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** APPLIED BLUEPRINT READING

**CODE NO. :** MTF101 **SEMESTER:**

**PROGRAM:** METAL FABRICATOR TECHNICIAN/WELDING  
TECHNIQUES

**AUTHOR:** STEVE WITTY

**DATE:** JAN 2010 **PREVIOUS OUTLINE DATED:** JAN 2009

**APPROVED:** \_\_\_\_\_  
*“Corey Meunier”*  
CHAIR DATE

**TOTAL CREDITS:** THREE

**PREREQUISITE(S):** N/A

**HOURS/WEEK:** THREE

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**I. COURSE DESCRIPTION:**

Perform drawings, common views and basic drafting and sketching operations as applied to the welder/fabricator programs and explain the features of joint types, positions, and welding symbols as applied to welder/fabricator programs.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

**1. *Applied Blueprint Reading***

Potential Elements of the Performance:

- Describe the content and organization of drawings
- Define the purpose and function of the common types of lines found on drawings
- Describe the purpose and function of the common views and presentations found on drawings
- Describe the commonly available structural steel shapes
- Perform assigned drafting and sketching operations
- Perform assigned shop projects – layout and fitting techniques

**Learning Content:**

**Describe the content of organization of drawings**

- Purpose of drawing
- Components of the drawing (lines, views, symbols, title block, list of materials, notes and specifications)
- Types of working drawings (engineering, erection drawings, erection diagrams, architectural drawings, assembly prints, sub-assembly prints, overview of CAD drawings, blueprints, shop details or working drawings, sketches, common scales, imperial and metric measurements, third angle projection and first angle projection)

**Define the purpose and function of the common types of lines found on drawings**

- Object, hidden, centre, dimension and extension, leader, break, cutting plane, hatch, and phantom lines

**Describe the purpose and function of the common views and presentations found on drawings**

- Orthographic projection (front, back, top and side views – revolved views, selecting the appropriate “front” or most descriptive view)
- Isometric drawing (three-dimensional sketching, oblique and perspective views)
- Pictorial drawing (“true” perspective, vanishing point, not to be scaled)
- Section views (full and partial sections, revolved section, and half section)

**Describe the commonly available structural steel shapes**

- Shapes available
- Sheet (common sizes and gauge measurement system)
- Plate (commonly available sizes, thickness, width, and length)
- Pipe (schedules available, nominal size and common lengths, hollow structural sections (HSS), and round)
- Flat (bar, square, rectangular, round, hexagonal)
- Angle (common types and sizes)
- Channel (common types and sizes, dimensioning standards)
- Beams (common types and sizes)

**Perform assigned drafting and sketching operations**

- Use appropriate drafting tools to complete drawing (compass, protractor, rule, divider)
- Complete orthographic drawing of a designated object showing various views (front, back, side, top or bottom, lines, dimensioning)
- Complete three dimensional drawing or sketch of a designated object (isometric, oblique, pictorial)

**Perform assigned shop projects – layout and fitting techniques**

- Layout tools (imperial and metric rulers, squares, levels, compass, protractor)
- Marking lines – soap stone line (chalk line, paint stick, centre punch line, and scribing)
- Layout math skills (fractions, addition, subtraction, angle measurement)
- 5 basic joints (butt, tee, lap, corners-edge)
- Structural shapes intersections (angles, channels – beams – HSS, miter, cope)
- Layout projects (material preparation, plate, structural shapes,

layout and mark cut lines, shapes – corners, 90 degree miter, cope corner

- Manual flame cutting (dimensioning material and edge preparation)
- Semi-automatic flame cutting (dimensioning material and edge preparation)
- Saws (hacksaw, cut-off abrasive wheel saw, band saws)
- Hand grinders
- Edge and surface preparation
- Fitting and assembly of parts
- Corners – miter (lapped – coped, dimensional accuracy, squareness, diagonal measurement, 3-4-5 triangle, and tack weld assembly with prescribed process)

## 2. ***Joint Design and Welding Symbols***

### Potential Elements of the Performance:

- Define fundamental joint types and positions
- Explain the purpose and use of different joints
- Explain the components of welding symbols
- Explain the design and application of welding symbols

### **Define fundamental joint types and position**

- Five basic joints (butt, tee, lap, corner, edge, geometry of joint preparation, terminology of joints, positions, plate, and pipe)
- flat , (1F), (3G)
- horizontal, (2F), (2G)
- vertical, (3F), (3G)
- progression up and progression down
- over head, (4F), (4G)
- (5F), (5G), (6G)

### **Explain the purpose and use of different joints**

- Application of each basic joint
- Introduction to joint limitations
- Thickness
- Economy
- Process and position
- Accessibility and distortion
- Complete and partial joint penetration
- Beveling/chamfering methods

### **Explain the components of welding symbols**

- Reference line

- Arrow side and other side significance
- Multiple reference lines
- Arrows and broken arrows
- Tail
- Specifications and notes

**III. TOPICS:**

1. Applied Blueprint Reading
2. Joint Design and Welding Symbols

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- Impact Resistant Safety Glasses (CSA Approved)
- High Cut (6 inch) Safety Work Boot (CSA Approved)
- Weld Gloves (CSA Approved)
- Modules: Course Pack MTF101 + Drafting Kit

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Part 1 NOTES:

1. Re-writes are NOT allowed for any written assignment, quiz or test.
2. Repeats are NOT allowed for any shop test
3. Course attendance is mandatory. One percent (1 %) per hour will be Deducted per unexcused hour.

[ Any absence without a written, valid reason will be deemed unexcused.]

Valid reasons would include:

- Doctor's note
- Family Death or Serious Illness supported by a written note.

Part 2 Final Course Grades:

The final course grade will be determined by means of the following list of weighted factors:

<b>Factor</b>	<b>Value</b>
Theory Quiz & Test	60 %
Assignments	40 %
Attendance	-1% per Unexcused Hour
Shop Clean-up	-1% per Incident

The following semester grades will be assigned to students:

<b>Grade</b>	<b>Definition</b>	<b>Grade Point Equivalent</b>
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. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. 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.