

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

FABRICATION AND LAYOUT - STRUCTURAL STEEL

Course Title:

MET109 -03

Code No.:

WELDING AND FABRICATING

Program:

TWO

Semester:

SEPTEMBER 1, 1987

DaTe:

GERRY MICHAUD

Author:

New XX Revision

APPROVED

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rperson

26/11/87  
Date

**Course Name****Course Number****HILOSOPHY/GOALS:**

In this course the student will learn to identify steel shapes as used in the fabrication trade- Acquire an understanding of the methods use to layout material and the tools involved. The student will learn to use shop equipment such as plate shears, press brake, iron worker and plate rolls. The student will develop patterns for various fittings, as well as develop safe work habits.

**METHODS OT ASSESSMENT (GRADING METHOD):**

- A+ - Consistently Outstanding
- A - Outstanding Achivement
- B - Consistently Above Average Achievement
- C - Satisfactory or Acceptable Achievement
- R - Repeat - Objectives of course not achieved and course must be repeated.

**TEXTBOOK(S):**

MODULE SSF: Fabrication and Layout Structural Steel

**OBJECTIVES:**

The basic objective is to develop an understanding of the methods used in the fabrication industry to fabricate various items as used in the industry.

## **: FABRICATION AND LAYOUT (STRUCTURAL STEEL)**

### **LEARNING TASK**

- 1) Describe the steel fabrication trade and skills required of a steel fabricator.
  
- 1) To recognise steel shapes and to list them in the proper order as used by the steel industry.
- 2) To read shop drawings and to know the method used to produce them.
  
- 1) To recognize the basic tools used in the steel fabrication trade and how they are used.
  
- 1) To identify power tools and equipment used in a steel fabricating shop and their safe use.
  
- 1) To acquire a knowledge of assembly methods used in a fabricating shop.
  
- 1) List and describe the various material handling devices and their safe operation.
  
- 1) Calculate bend allowances for 90 deg. bends.
- 2) Calculate mean diameter of cylinders.
- 3) Calculate bend allowance for varying degrees of bends using ratio and proportion.
  
- 1) Calculate dimensions of plate required to form angle as per sketch #1 and to shear and form angle.
- 2) Metre, cope and fit angle to dimensions as shown on sketch #1 and to weld unit as per welding symbols shown.
  
- 1) Calculate the dimensions of the plate required to form the channel as per sketch #1 and to shear and bend the plate to the required dimension.
- 2) To mitre, cope and fit channel to dimensions as shown on sketch #1 and to weld unit as per welding symbols shown.

## LEARNING TASK • "

- 1) Calculate the dimensions of the plate required to form the beam, and to shear and tack weld them together.
  - 2) To metre, cope and fit beam to dimensions as shown on sketch #1 and to weld unit as per welding symbols shown.
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- 1) Calculate the dimensions of the plate required to form the beam and clip angles, and to shear and tack weld the plates to form the beam section.
  - 2) Layout hole location, cut copes and tack weld clip angles to beam. Instructor will check unit before welding.
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- 1) Layout required pipe shape to full scale with and elevation and plan view, using parallel line development and transfer dimensions to pattern.
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- 1) Layout a cone to full scale with a elevation and plan view and draw the stretchout to complete the pattern using parallel line development.
  - 2) Layout a truncated cone to full scale with an elevation and plan view and draw the stretchout to complete the pattern using parallel line development.
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- 1) Layout a square transition piece using the triangulation method and develop the pattern.
  - 2) Layout a rectangle to round transition piece using the triangulation method and develop the pattern.
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- 1) Shear and form C8x11.5 from plate to required length and layout a set of stairs as per drawing supplied.
  - 2) Layout a handrail to fit the above stairs as per drawing supplied.