

SALTILT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

f: 1


COURSE TITLE: TEMPLATE DESIGN and LAYOUT

CODE NO: WLD114 **SEMESTER:** FALL

PROGRAM: WELDING and FABRICATING-Techniques
AVIATION WELDING

AUTHOR: D. SOCCHIA

DATE: **PREVIOUS OUTLINE DATED:**

APPROVED: 
DEAN

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DATE

COURSE NAME

CODE NO.

TOTAL CREDITS:

PREREQUISITE(S): Successful completion of the following semester 1 courses: Structural Blueprint Reading plus Fabrication and Layout I; <OR> A combination of education and previous trade experience equal to the above.

L PHILOSOPHY/GOALS:

To expand upon the knowledge base and practical skills developed in 'Structural Blueprint Reading' and 'Fabrication and Layout I' by introducing a more advanced list of topics that involve the calculation, design and layout of templates for plate and structural application.

n. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this course the student will:

1. Perform mathematical calculations appropriate to the trade.
2. Perform basic layout operations involving the use of geometric construction
3. Lay out templates for cones and transition pieces.
4. Select and use common layout tools according to the required degree of accuracy.

m. TOPICS TO BE COVERED:

Approximate Time

1. Course introduction and orientation.
2. General Layout Practices
Geometric Construction
Assignments
3. Transition Pieces and the Concept of Bending
Bends and Bend Allowances
*** Assignments***
- Theory Test # 1 and Review _____ @ 12 Hours
4. Cylinders, Cones and the Concept of Rolling/Bending
Mean Diameter, Mean Circumference and Right Triangles
*** Assignments***
^ Theory Test # 2 and Review _____ @ 12 Hours

COURSE NAME

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IV. LEARNING ACTIVITIES/REQUIRED RESOURCES:

Topic/Unit - # 1. Course Introduction and Orientation

Learning Activities:

1.1 > A lecture presentation of the following major course documents:

- a) course outline
- b) course guidelines
- c) course marking system including attendance requirements

Resources:

> printed handouts, overheads, chalkboard notes.

Topic/Unit - #2. Geometric Construction

Learning Activities:

2.1 > A lab demonstration with student participation and practice of the following:

- a) drawing straight, perpendicular and parallel lines
- b) subdividing lines
- c) drawing bevels and angles
- d) subdividing bevels and angles
- e) drawing supplementary / complimentary bevels and angles

2.2 > Independent study / practice assignment involving the above topics.

2.3 > A lab demonstration with student participation and practice of the following:

- a) drawing circles
- b) drawing lines tangent to a circle
- c) subdividing circles
- d) drawing polygons

2.4 > Independent study / practice assignment involving the above topics.

Topic/Unit - #3. Transition Pieces and the Technique of Bending

Learning Activities;

- 3.1 > A lecture presentation with classroom discussion of the concepts and formula required to calculate bend allowances under the following conditions:
 - a) sharp 90 degree bends (thin metal - 1/4 inch and less)
 - b) sharp 90 degree bends (thick metal - above 1/4 inch)
- 3.2 > Independent study / practice assignment involving the above topics.
- 3.3 > Independent study / practice assignment involving the above topics.
- 3.4 > A lab demonstration with student participation and practice of how to:
 - a) calculate the required 'finished sizes' for a template
 - b) lay out templates for various bends.
- 3.5 > Independent study / practice assignment involving the above topics.
- 3.6 > A lab demonstration with student participation and practice of how to:
 - a) calculate the required 'finished sizes' for a square transition piece
 - b) lay out the template for a given square transition piece.
- 3.7 > Independent study / practice assignment involving the above topics.

Resources;

- > Text: "Mathematics for Sheet Metal Fabrication"
Printed Handouts and Chalkboard Notes

Topic/Unit; TEST #2 AND REVIEW

Resources;

- > Test Booklets, Student Response Sheets, Grade and Answer Sheets

Topic/Unit - #4. Cylinders, Cones and the Technique of Rolling

Learning Activities:

- 4.1 > A lecture presentation with classroom discussion of the concepts and formula required to calculate mean diameter and mean circumference under the following conditions:
 - a) working from a known plate thickness and OUTSIDE diameter
 - b) working from a known plate thickness and INSIDE diameter.
- 4.2 > Independent study / practice assignment involving the above topics.
- 4.3 > A lab demonstration with student participation and practice of how to:
 - a) calculate the required 'finished sizes' for an open cylinder
 - b) calculate the required 'finished sizes' for a right cone
 - c) lay out the template for a given right cone.
- 4.4 > Independent study / practice assignment involving the above topics.
- 4.5 > A lecture presentation with classroom discussion of the concepts and formula behind:
 - a) the law of right angles
 - b) slant height for a right cone
 - c) angle of stretch-out
- 4.6 > Independent study / practice assignment involving the above topics.
- 4.7 > A second lab demonstration with student participation and practice of how to:
 - a) calculate and verify the 'finished sizes' of a right cone
 - c) lay out the template for a given right cone.
- 4.8 > Independent study / practice assignment involving the above topics.

Resources:

- > Text: "Mathematics for Sheet Metal Fabrication"
Printed Handouts and Chalkboard Notes

Topic / Unit:

TEST #3 AND REVIEW

Resources:

- > Test Booklets, Student Response Sheets, Grade and Answer Sheets

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IV. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

General Assessment

Final Mark*

A+ = 90 to 100%

A = 80 to 89%

B = 70 to 79%

C = 60 to 69%

F/R = 0 to 59%

Tests 75%

Assignments / Quiz(s) 25%

Attendance (**See Attached)

V. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in TEMPLATE DESIGN and LAYOUT should consult with their professor. Credit for prior learning will be given upon successful completion of the following:

1. The successful completion of a template design and layout course with student outcomes and course topics that are at least 80% compatible with this course outline... AND...
 2. The successful challenge of all assignments and theory tests identified by this course outline with a resulting average mark of at least 75 %.
- <OR>
3. Written proof of at least five (5) years of trade experience in a structural fabrication environment... AND...
 4. The successful challenge of all assignments and theory tests identified by this course outline with a resulting average mark of at least 75 %.

VL REQUIRED STUDENT RESOURCES:

Scientific Calculator (Basic Math Functions plus Trig Ratios)

3 Pens - (1 blue, 1 black, 1 red)

Binder c/w Paper

12 inch Clear Plastic Rule

Math Set (consisting of compass, divider, protractor, 30° / 45° squares)

Text: "Mathematics for Sheet Metal Fabrication"

Vn. SPECIAL NOTES:

Students with special needs (eg physical limitations, visual impairments, hearing impairments, learning disabilities etc.) are encouraged to discuss required accommodations confidentially with their professor.

Your professor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

*** Student evaluations concerning the 'Final Mark' are further affected by the conditions set forth in the printed handout, 'Welding Department Guidelines'.**

**** Special guidelines for class attendance are included in the above paper.**