SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: **SKETCH @ BLUEPRINT READING**

CODE NO.: **WDF106** **SEMESTER:** **FALL**

PROGRAM: **WELDER/FITTER**

AUTHOR: **D.SOCCHIA**

DATE: **1994-06 24** **PREVIOUS OUTLINE DATED:** **1993-06-05**

APPROVED: **MAN** **BATE**

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Sketch @ Blueprint Reading **WDF106**

— C O M S E N A M E——————————————————————COM NO.

TOTAL CREDITS 3

PREREQUISITE(S): Students must be able to read, write and comprehend at a Grade 10 Level. Previous structural steel experience would be a deflnite asset

PHILOSOPHY/GOALS:

To provide students with an intermediate level of exposure to the concepts and principles of structural detailing as developed by CISC/AISC standards for dimensioning practices, abbreviations and orthographic projection. Ultimately, the student should be able to read typical site/erection drawings and/or structural (shop) drawings complete with dimensions, notes, welding symbols and bills of materiaL

n. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this coarse the student will:

1) Appreciate the differences between mechanical drafting and structural steel detailing.

2) Sketch structural steel members to show dimensions, details and attached parts.

3) Make up simple 'Bills of Material*.

4) Read structural shop prints

5) Read typical site/erection drawings.

m. TOPICS TO BE COVERED:		**Approximate Time Frames (Optional)**
1)	**Course Introduction and Orientation**	**2 hrs**
2)	**Structural Steel as Building Components**	**2 hrs**
3)	**Mill Tolerances on Stractural Steel**	**2 hrs**
4)	**Concepts of Orthographic Projection**	**10 hrs**
	Theory Test # 1 and Review	**2 hrs**
5)	**The Welding Symbol**	**10 hrs**
	Theory Test # 2 and Review	**2 hrs**
6)	**ReadinsStractaral (Shop) Prints**	**10 hrs**
	Theory Test #3 and Review	**2 hrs**
7)	**ReadingSite/Erectlon Drawings**	**10 hrs**
	Theory Test # 4 and Review	**2 hrs**

NOTE: Your professor reserves the right to modify the coarse in order to better serve the needs of each class.

IV. LEARNING ACTWrriES/REQUIRED RESOURCES

TopicAJnit - #1. Course Introduction and Orientation

Learning Activities;

1.1 > A lectare presentation of the following major course documents:
- **a. course outline**
- **b. course guidelines**
- **c course marking system including attendance requirements**

Rffsowrcw:

> printed handouts, overheads, chalkboard notes.

Topic/Unit - #2. Structural Steel as Building Components

Learning Activities;

2.1 > A lecture presentation and class discussion of the following major items;
- **a. commonly used structural shapes**
- **b. CISC / AlSC designations ana nominal size(s)**
- **c common CSA / AWS standards for material identification**
- **d. location and purpose of the following common building components (beams, columns, base plates, cross-bracing, stairs and OWSJ etc)**

2.2 > In class assignment on the above topic involving the use of manuals to locate and identify structural shap^ according to supplied list

> CISC manual. Construction Steel Handbook, overheads, chalkboard notes and printed handouts.

Topic/Unit - # 3. Mill Tolerances on Structural Steel

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3.1 > A lecture presentation and class diMUssion of the foUowing major items:
- **a. nominal vs actual depth, thickness and diameter**
- **b. acceptable variations in 'squareness'**
- **c acceptable variations in chemistry and mechanical properties**

d. acceptable variations in camber and sweep
e. possiole effects of the above on formability, weldability and layout practices.

3.2 > Class discussion of the above items to better facilitate student awareness of how these factors will have an impact upon them in the workplace.

3.3 > Class discussion of the above items using actual shop drawings to indicate how the detailer can accomodate these mill tolerances into the design of a project

RW9^rgW:

> CISC manual. Construction Steel Handbook, overheads, chalkboard notes and printed handouts.

Topic/Unit - #4. Concepts of Orthographic Projection

Learning Activities;

4.1 > A lecture presentation and class discussion of the following major items:
a. definition / description of orthographic projection
b. identification/selection of the front view
c placement and development of required views
d. right angle rotation of views

4.2 > Discussion and chalkboard development of an orthographic drawing using ratio and proportion.

4.3 > Independent study assignment based npon the following 'alphabet of lines' required for use with orthographic projection.
a. object and hidden lines
b. extension and dimension lines
c construction lines
d. centrelines

4.4 > Independent study assignment requiring the development of an orthographic sketch usmg ratio and proportion.

4.5 > A lecture presentation and class discussion of section views to include:
a. purpose and development
b. types and location
c identlflcation

4.6 > IMscnssion and chalkboard development of typical section views.

4.7 > A lecture presentation and class discussion of auxiliary views to include:
a. purpose and development
b. types and location
c identification

4.8 > Independent study assignment based upon the following 'alphabet of lines' required for use with auxiliary and section views.

a. cutting plane line
b. viewing plane line
c. leaders
d. break lines
e. cross-hatch lines

4.9 > Independent study assignment requiring the development of both auxiliary and section views using ratio and proportion.

> WIC Modules #2 and # 3, chalkboard notes, overheads, models and assignment sheets.

TopicAJnit - THEORY TEST # 1 and REVIEW

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> Test Booklets, Student Response Sheets and Grade/Answer Sheet

Topic/Unit - #5 The Welding Symbol

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5.1 > A lecture presentation and class discussion of the following major items:

a. basic joint designs and weld types
b. components of a welding symbol
c functions of welding symbol components
d. arrow side vs other side significance
e. typical (fillet and groove weld) symbol information

5.2 > Independent modole reading assignment c/w review questions based upon the above materiaL

5.3 > Review ofmaterial to date usins actual structural shop drawinm to demonstrate the efltectlve use ofwelding symbols and orthographic projection.

5.4 > A lecture presentation and class, discussion of the following weld symbols to include:

a. fillet welds
b. plug and slot welds
c square, bevel and vee groove welds
d. J and U groove welds
e. field weld and weld all-around
f. melt thru and bum thru

5.5 > **Independent module reading assignment c/w review questions based upon the above material.**

5.6 > **Review of material to date using actual structural shop drawings to demonstrate the elTective use of welding symbols.**

5.7 > **A lecture presentation and class discussion on the use of dimensions to indicate weld size, depth of joint preparation, effective throat, weld length and contour.**

5.8 > **Independent module reading assignment c/w review questions based upon the above material.**

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> **WIC Modules # 2 and # 3, chalkboard notes, overheads, shop drawings and assignment sheets.**

TopicAJnit - THEORY TEST # 2 and REVIEW

Resources;

> **test booklets, student response sheets and grade/answer sheet**

Topic/Unit - #6 Reading Structural (Shop) Prints

Leaminy Activities;

6.1 > **A lecture presentation and class discussion of the proper format and page layout of a structural drawing to include:**
- **a. title and revision block**
- **b. structural notes**
- **c specified codes and standards**
- **d. general shop notes**
- **e. Dill of material**
- **f. types ofviews used by the detailer**

6.2 > **Review ofmaterlal using actual shop drawings to demonstrate the effective use of drawing format and page layout**

6.3 > **A lecture presentation and class discussion of MAJOR and Minor piece marks as used on a structural drawing to include:**
- **a. reference to page number and order of drawing**
- **b. piecemark standards currently in use**
- **c. relationship between drawing components, piece marks and the bill of materiaL**
- **d. purpose of piece marks as related to the reading prints and the identification of structural members.**

6.4 > Review of material usingactual structural shop drawings to demonstrate the effective use of MA,K>R and Minor piece marks.

6.5 > A lecture presentation and class discussion on the use of both standard dimensioning practices as well as standard abbreviations.

6.6 > Review of material using actual structural shop drawings to demonstrate the efTecttve use of stan&rd abbreviations and standard dimensioning practices.

6.7 > Independent study assignment requiring students to 'read' a selected drawing and answer the supplied set ofquestions.

Resources;

> chalkboard notes, overheads, printed handouts, structural drawings and assignment sheets.

TopicAJnit - THEORY TEST #3 and REVIEW

Resources;

> test booklets, student response sheets, assignment sheets, 8.5 x 11 in blank drawing paper, selected shop drawing and grade/answer sheet

Topic/Unit - #7 Reading Site and Erection Drawings

I^^ming ActMtiw;

7.1 > A lecture presentation and class discussion of the nine (9) possible sources of information on a typical site/erection drawing to include;

a. title and revision block
b. structural notes
c shop notes
d. protect north
e. grid system
f. structural numbers
g. floor and wall elevations
h. column, lintel and base plate schedules

7.2 > Independent study assignment requiring students to 'read' a selected drawing and answer the supplied set ofquestions.

7.3 > A lecture presratation and c1a^ discussion of the relationship between structural shop drawfaigs and the accompanying set of site/erection drawings to include:

a. identification of building components via the piece mark system
b. location of building components via floor and wall elevations plus the use of typical T/S designations

c. identification of connection details and dimension
d. location and detail of components on shop drawings
e. location of component and sub-assemblies in the 'BUI of Material'

7.4 > Independent study assignment requiring students to 'read' a selected drawing and create the specified wall elevation(s) according to the supplied set of instructions.

7.5 > Review of material to date using a complete set of shop and site/erection drawings.

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> chalkboard notes, overheads, printed handouts, site/erection drawings, shop drawings and assignment sheets.

TopicAJnit - THEORY TEST # 4 and REVIEW

Resources;

> test booklets, student response sheets, ass^ment sheets, 8.5 x 11 in blank drawing papier, selected site/erection and shop drawings and assignment sheets.

Sketch (^ Blueprint Reading **WPFIQ^**

COURSE NAME **CODE NO.**

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

General Assessment	Final Mark *	
A = 8S -100%	Theory Tests	75%
B = 7S- 84%	Independent Assignments	25%
C = 60- 74%		
D = 50 - 59%	Attendance (**See Attached)	
F = 0- 49%		

V. PRIOR LEARNING ASSESSMENT:
Students who wish to apply for advanced credit in the course should consult the instructor. Credit for pnor learning will be given upon successful completion of the following:

1. **The snccessAil completion of a structural blueprint reading course with student outcomes and course topics that are at least 80% compatible with WDF106.**
2. **The successful challenge of all four WDF106 theory tests and a resulting average mark of at least 75%.**
3. **Written proof of at least five (5) years of trade experience involving the competent use of structural shop and site/erection drawings.**

Vn. REQUIRED STUDENT RESOURCES

12" Clear PUsUc Desk Rule
2 - IH Pencils
2 - HB Pencils
1 - Eraser
1 - Binder c/w standard lined paper and quad-ruled paper
1 - WIC Module # 2 Basic Joints and BP Reading
1 - WIC Module #3 Symbols for Welding

Vin. SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations conflidentiaily with the instructor.

Your instructor reserves the right to modify the coarse as he/she deems necessary to meet the needs of each class.

*** Student evaluations concerning the 'Final Mark' are farther affected by the conditions set forth in the printed handont, 'G^delines for Structural Blueprint Reading'.**
**** Special guidelines for class attendance are included in the atrave paper.**

GUroELINES
FOR
SKETCH @ BLUEPRINT READING

The following gnidelines apply to all full time students who undertake this course of study at Sault College.

ATTENDANCE

1.1 Students are required to:

a) Be present for each class
b) Be in the shop or classroom within 5 minutes of the scheduled starting time
c) Be present for the taking of attendance at the beginning and at the end of each class.

1.2 If you are absent from class at the time of attendance, you will be marked absent for that hour.

1.3 Students are required to leave a telephone message with their instructor(s) whenever they must be atraent from class. The message should clearly indicate both the reason for the absence as well as the anticipated duration.
TEL: 705-759-2554 Ext 602

1.4 If you are marked 'absent' and no reasonable excuse is given (ie. illness, accident, personal emergency, employment reasons) your absence will be termed 'UNEXCUSED'.

1.5 Students will lose 1% from their final course grade for each hour of UNEXCUSED absence.

1.6 Make i\> lessons are **not** possible.

1.7 If you are absent from class, the lesson material is your responsibility. Printed handouts and / or reading assignments may be obtained fix)m your instructor if so requested. Chalkboard notes must be obtained from your fellow students.

1.8 Students who accumulate 10 or more hours of unexcused absence shall be deemed to have quit the course.

1.9 Students wishing to return to class after 10 or more hours of unexcused absence will be required to make a written request to the Dean's Office explaining the circumstance of his / her absence.

1.10 If the request is denied, the student shall **not** return to class.

BEHAVIOUR / ATTITUDE

2.1 Students are required to:

a) Properly care for and maintain all classroom equipment.
b) Properly clean the classroom facility and equipment at the end of each class.

2.2 Students are expected to conduct themselves in a manner that does not interfere with or obstruct the overall learning environment.

2.3 The following activities are not allowed in the classroom.

a) horseplay
b) swearing
c) abusive behaviour
d) smoking, eating, drinking, sleeping
e) doing homework or assignments from another class.

ASSIGNMENTS **and** THEORY TESTS

3.1 Students are required to hand in assignments or write theory tests on the day and at the time specified.

3.2 Students who do not hand in assignments or write theory tests on the day and at the time specified must request a rescheduling of the event **in writing** within 7 calendar dajns of the specified due date,... or,... the student's return to class.

3.3 Assignments and theory tests will be rescheduled at the instructor's discression.

3.4 Where no reasonable excuse is given (ie. car accident, death in the family, serious illness, employment reasons etc...) rescheduled assignments and theory tests will be graded as follows:

a) One day after the original due date - 70% Maximum
b) Two or more days after the original due date - 50% Maximum.

3.5 Any person caught cheating or substituting aiK>ther person's work in place of their own for the purpose of grading or evaluation, will automatically fail the said assignment or theory test. College policy also dictates that such persons may be subject to immediate dismissal.

RE-WRITES

There are no re-writes. All evaluations are permanent and will affect your final course grade.

RETURN **OF GRADED PAPERS**

It shall be the normal expectation that all assignments and theory tests will be returned to students after gradii^. Whenever this practice cannot be followed, notice will be provided.

COURSE CREDITS

Credit may be granted for this course based upon the submission of written proof that the student has successfully completed a structural blueprint reading course having student outcomes and course topics that are at least 80% compatible with the present course of instruction.

Credit must have School approval prior to the published add/drop deadline dates for each semester.

It is the responsibility of the student to apply for credit with the appropriate documentation which shall include all of the following:

a) the student's full name
b) the course number (or numbers)
c) a verified course description outlining student outcomes and course topics
d) the final grade received
e) the date of successful completion.

DISCIPLINE

Failure to comply with any of the guidelines relating to 'Behaviour / Attitude' may result in the student being ejected from class/shop and marked with an UNEXCUSED absence. Repeated violations shall result in the student(s) being placed on a Behavioral Contract.