SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: TRADE CALCULATIONS

CODE NO.: ASR 105   SEMESTER: 1

PROGRAM: AIRCRAFT STRUCTURAL REPAIR

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DATE: MARCH 1995   PREVIOUS OUTLINE DATED:

APPROVED: _____   _____95-03-26_____
                    DEAN   DATE

<u>TRADE CALCULATIONS</u>   <u>ASR 105</u>
COURSE NAME   CODE NO.

TOTAL CREDITS: 36 (3 CREDITS)

PREREQUISITE(S): GRADE 12 GENERAL MATH

I. **PHILOSOPHY/GOALS:** This course studies the rules and procedures
   needed to obtain a complete understanding of modern technical
   mathematics as it applies to aircraft structural repair work.
   The participants will solve practical applied problems after
   studying and learning the fundamental concepts involved.

II. **STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):**

Upon successful completion of this course the student will:

1) Develop the knowledge and ability to solved the practical
   applied problems related to the topics listed in section III
   of this outline.

III. **TOPICS TO BE COVERED:**   **Approximate Time**
                                           Frames (Optional)

1) Introduction to Arithmetic
2) Common Fractions
3) Decimal Fractions
4) Ratio and Proportion
5) Measurement
6) Basic Algebra
7) Geometry
8) Trigonometry

IV.   LEARNING ACTIVITIES/REQUIRED RESOURCES

Topic/Unit - INTRODUCTION TO ARITHMETIC

Learning Activities:

1.1   Listen to teacher presentation on the definitions
      of terms, sequence of operations and applying the
      rules and procedures to problem solving.

1.2   Complete assignment in Chapter 1 (exercise section)
      for discussion in class.

1.3   Participate in a hands-on demonstration on the use
      of hand held scientific calculators.

Resources:

Scientific Calculator (to be used as needed throughout
    ASR 105)
Blackboard
Math Textbook

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Topic/Unit - COMMON FRACTIONS

Learning Activities:

2.1   Listen to teacher presentation on the following
      principles of common fractions: mixed numbers,
      proper and improper fractions, reducing a common
      fraction to its lowest terms, reducing an
      improper fraction, changing a whole or mixed
      number to an improper fraction, finding the lowest
      common denominator for two or more fractions.

2.2   Complete assignment 1 in Chapter 2 for discussion
      in class.

2.3   Listen to teacher presentation on the addition,
      subtraction, multiplication and division of
      fractions, cancellation and complex fractions.

2.4   Complete assignment 2 in Chapter 2 for discussion
      in class.

2.5   Participate in a class discussion on a review of
      arithmetic and common fractions.

Resources:

Math Textbook
Blackboard
Handout - Quiz #1

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Topic/Unit - DECIMAL FRACTIONS

Learning Activities:

3.1 Listen to teacher presentation on the following
     principles of decimal fractions: reading numbers,
     changing a common fraction to a decimal fraction and
     vice versa, using a table of decimal equivalents,
     adding, subtracting, multiplying, and dividing
     decimals and round off numbers.

3.2 Complete assignment in Chapter 3 for discussion in
     class.

Resources:

Overhead - Table of Decimal Equivalents
Blackboard

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Topic/Unit - RATIO AND PROPORTION

Learning Activities:

4.1 Listen to teacher presentation on the principles
     of ratio and proportion.

4.2 Complete assignment 1 in Chapter 5 for discussion in
     class.

4.3 Listen to teacher presentation on the applications of
     density, specific gravity and the conversion of units.

4.4 Complete assignment 2 in Chapter 5 for discussion in
     class.

4.5 Participate in class discussion on a review of decimal
     fractions and ratio and proportion.

Resources:

Math textbook
Blackboard
Handout - Quiz #2

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Topic/Unit - MEASUREMENT

Learning Activities:

5.1 Listen to teacher presentation on the various units of measurement and conversions between English and Metric systems, using conversion tables.

5.2 Practice using conversion tables as needed to aid in problem solving throughout ASR 105.

Resources:

Overhead - (English/Metric) Conversion Table
Math Textbook

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Topic/Unit - BASIC ALGEBRA

Learning Activities:

6.1 Listen to teacher presentation on the addition, subtraction, multiplication and division of signed numbers and how to solve and check simple equations.

6.2 Apply the algebra skills learned to problem solve throughout ASR 105.

Resources:

Blackboard

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Topic/Unit – GEOMETRY

Learning Activities:

7.1 Observe teacher demonstration on how to construct the various geometric surfaces that are used for layout exercises related to aircraft structural repair work.

7.2 Work individually on constructing the layout exercises mentioned in 7.1.

7.3 Listen to teacher presentation on perimeter, circumference, bend layout terms and bend allowance calculations.

7.4 Complete assignments on perimeter, circumference and bend allowance exercises for discussion in class.

7.5 Listen to teacher presentation on area and volume.

7.6 Complete assignment in Chapters 22 & 24 for discussion in class.

Resources:

Overheads – Layout Exercises
Handout – Geometry Assignment 1
Math Set (Geometry Set)
Handout – Formula Sheet
Blackboard
Handout – Perimeter and Circumference
Handout – Bend Allowance Exercises
Math Textbook

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Topic/Unit – TRIGONOMETRY

Learning Activities:

8.1 Listen to teacher presentation on the introduction to trigonometry, the trigonometric functions and the applications to right triangles.

8.2 Complete assignment in Chapters 27, 28 and 29 for discussion in class.

Resources:

Blackboard
Math Textbook

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

        Written Tests (5) -- submitted by the instructor
            Each test accounts for 20% of the final grade.

        A+   94% - 100%
        A   86% - 93%
        B   78% - 85%
        C   70% - 77%
        I   Incomplete

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

VII.   **REQUIRED STUDENT RESOURCES**

        1) Math Textbook -- Practical Mathematics (7th ed.)
                        Palmer - Mrachek

        2) Scientific Calculator -- available in Sault College
                        Bookstore for $17.30

        3) Math Set -- available in Sault College Bookstore
                        or $8.15

VIII.   **ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE
        COLLEGE LIBRARY:**

        Book Section (TITLE, PUBLISHER, EDITION, DATE, LIBRARY
        CALL NUMBER IF APPLICABLE - SEE ATTACHED
        EXAMPLE)

        1) Essentials of Mathematics - 5th edition
           Publisher - Wiley
           Library Call Number - QA 39.2.P473

IX.   **SPECIAL NOTES**

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

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