

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON



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OF APPLIED ARTS AND TECHNOLOGY

MACHINE SHOP

**COURSE TITLE:** Aviation Blueprint Interpretation

**CODE NO:** DRF 103 - 5 **SEMESTER:** One

**PROGRAM:** Aviation Machining. Sault College Program Code 4064

**AUTHOR:** Greg White

**DATE:** January, 1986 **PREVIOUS OUTLINE DATED:** \_\_\_\_\_

**APPROVED:** *L.P. Crauth* 96-02-12  
Dean, School of Engineering Date

**TOTAL CREDITS:** 2

**PREREQUISITES:** Admission into the program

**LENGTH OF COURSE:** 2 HOURS/WEEK for 18 Weeks

*Note: This course was designed around the CAMC (Canadian Aviation Maintenance Council) standards developed for Aviation machining.*

**COURSE NAME****COURSE CODE**

**I. COURSE DESCRIPTION :** This course helps the student to develop the necessary skills for interpreting various types of blueprints, sketches, drawings and electronic ( CAD ) representations of various component and assembly drawings common to industry, both aviation and related. Based around CAMC's ( Canadian Aviation Maintenance Council ) occupational analysis. The course also allows the student the opportunity to develop sketching skills necessary to communicate via industry standards. This course will also allow the student the opportunity to learn, practice and demonstrate a number of the generic skill requirements as outlined in the provincial generic skill learning outcomes documents.

**II. LEARNING OUTCOMES AND ELEMENTS OF PERFORMANCE :**  
( Generic Skills elements of performance, teachings, experiences are so indicated *G.S.#* )

**A. Learning Outcomes:**

1. Demonstrates sufficient knowledge to interpret common manuals and charts.
2. Demonstrates the ability to interpret drawing nomenclature.
3. Demonstrates the ability to identify various tolerances and finishes and the machining practices to manufacture component parts to specifications.
4. Demonstrate the ability to visualize three dimensional objects to be produced or assembled from two dimensional drawings.
5. Demonstrates proficiency in sketching mechanical components and assemblies accurately to industry standards.
6. Demonstrates ability to interpret Bills of Materials, in regards to purchased hardware, ordering stock by calculating size and shape requirements.
7. Demonstrates knowledge of geometric dimensioning and tolerancing symbols.

**B. Learning Outcomes and Elements of the Performance:**

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

1. Demonstrates sufficient knowledge to interpret common manuals and charts.  
( *Corresponds to CAMC Task 2* )

- taught in conjunction with ASR -100
- determine various material types from ANSI and ISO symbols and conventions
- determines finishes, heat treats etc. from title blocks
- converts metric to imperial and imperial to metric as required

2. Demonstrates the ability to interpret drawing nomenclature

- determine and interpret drawing symbols and abbreviations
- determine and identify dimensions.
- determine the currency and type of drawing
- determine various lines, points, features and planes in various views
- determine drawing scale and proportion

3. **Demonstrates the ability to identify various tolerances and finishes and the machining practices to manufacture component parts to specifications.**
- **demonstrates knowledge of ANSI and ISO tolerance and finish symbols and conventions**
  - **determines general and feature specific tolerances and finishes**
  - **interprets fits and tolerances and machining sequencing based on part requirements and call outs**
4. **Demonstrate the ability to visualize three dimensional objects to be produced or assembled from two dimensional drawings.**
- **demonstrate knowledge of views and projections.**
  - **demonstrate the ability to correctly read first and third angle projections.**
  - **demonstrates the ability to determine spatial relationships.**
5. **Demonstrates proficiency in sketching mechanical components and assemblies accurately to industry standards.**
- **demonstrates the ability to prepare free-hand sketches of mechanical components and assemblies.**
  - **utilizes compasses, protractors, squares and scales to accurately represent mechanical components in orthographic drawings.**
  - **demonstrates the ability to accurately measure and subsequently draw components and assemblies.**
  - **demonstrates the ability to determine and place on a drawing; material types, finishes, requirements and produce a Bill of Materials.**
6. **Demonstrates ability to interpret Bills of Materials, in regards to purchased hardware, ordering stock by calculating size and shape requirements.**
- **ability to interpret various types of hardware ( nuts, bolts, springs, seals, bearings, etc. )**
  - **ability to determine size and weight calculations from drawings.**
  - **demonstrates knowledge of various material types and their utilization to meet the requirements of manufacture components.**
7. **Demonstrates knowledge of geometric dimensioning and tolerancing symbols.**
- **demonstrates knowledge of ISO and ANSI symbols and their interpretation.**
  - **demonstrates the ability to identify the various drawing symbols for positioning, such as squareness, surface features, critical dimensions, concentricity, perpendicularity, and parallelism.**
- demonstrates knowledge of various workholding setups as determine by geometric dimension and critical features and planes.**

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**III. TOPICS :**

The topics and topic areas will vary depending on the needs of the student and the work that is being done in the shop. These topic as listed above sometimes overlap several areas of skill development and are not necessarily intended to be explored in isolated units or in a particular area.

**IV. REQUIRED STUDENT RESOURCES :**

**Text:** Elementary Blueprint Reading for Machinists by David Taylor, Delmar Publishing  
 Students are expected to attend class with notebooks, text and a calculator

**V. GRADING :**

A final grade will be given as a letter in accordance with the following percentage equivalent:

<b>A+</b>	Consistently Outstanding	( 90 - 100% )
<b>A</b>	Outstanding Achievement	( 80- 89 % )
<b>B</b>	Consistently above average achievement	( 70 - 79 % )
<b>C</b>	Satisfactory or acceptable achievement in all areas subject to assessment	( 60 - 69 % )
<b>R</b>	Repeat : The student has not achieved the objectives of the course and the course must be repeated.	( Less than 60 % )
<b>CR</b>	Credit exemption	
<b>X</b>	a temporary grade to carry over into next semester given only for extreme circumstances	
<b>R</b>	= did not meet course requirements at this time	

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

A final grade will be derived as follows:

Various Assignments ( interpretation and sketches )	= 35%
Test 2 ( mid term )	= 15%
Test 3 (final)	= 15%
5 mini-quiz random throughout semester	= 15%
Written Assignment (s) from text	= 10%
Attendance including homework **	= 10%

\*\* Note : Attendance is not only a measure of physical presence at a certain hour but also the students cooperation and initiative. As attendance is expected the student will be will lose 1% for every hour missed or late without a justified excuse

**TIME FRAME:**

Aviation Machine Shop Blueprint Interpretation MCH - 103 involves 2 periods per week for the entire semester as well as one self directed hour in which the student is expected to complete particular assignments. Students are expected to attend class and participate in class activities.

**VI. SPECIAL NOTES:**

**Special Needs**

If you are a student with special needs ( e.g.. physical limitations, visual impairments, hearing impairments, learning disabilities ), you are encouraged to discuss required accommodations with your instructor and/or councilor so that support services may be arranged.

**Academic Dishonesty**

Students should refer to the definition of "academic dishonesty" in the "Statement of Student Rights and Responsibilities".

Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or other such penalty, up to and including expulsion from the course as may be decided by the professor.

**Advanced Standing**

Students who have completed an equivalent post-secondary course should bring relevant documents to the coordinator, Machine Shop programs, School of Engineering

**Retention of Course Outlines**

It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions

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**VII. 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:**

- 1) Documentation that they have successfully completed another post secondary or equivalent course.
- 2) Successful completion of a challenge exam administered by the professor of the course.

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

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