

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: Meteorology

Code No.: AVT 100-6

Program: 4060

Semester: ONE

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Author: B.J. McComiskey

New: \_\_\_\_\_ Revision: x

APPROVED: *R.P. Crozetta* \_\_\_\_\_  
 Chairperson Date

METEOROLOGY

AVT 100-6

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Course Name

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Course Number

**PHILOSOPHY/GOALS:**

The objective of this course is to provide aviation students with a basic knowledge of the science of weather (meteorology) to enable them to make intelligent use of the weather information provided by the meteorological service in planning and conducting aircraft operations.

**METHOD OF ASSESSMENT (GRADING METHOD):**

<u>TOPIC</u>	<u>PERIODS</u>	<u>TOPIC DESCRIPTION</u>	<u>REFERENCES</u>
1, 2, 3	1	Met Organization & Services Atmosphere Clouds	A.I.P. Canada - Met Wx-FCST and Observing Guide-DND CFP 294 Weather Ways-CH II and III From the Ground Up-p. 60-61
4	1	Pressure	Weather Ways - CH IV From the Ground Up-p. 63-64
5	1	Wind	Weather Ways - CH V From the Ground Up-p. 64-65
6	1	Moisture and Temperature	Weather Ways - CH VI From the Ground Up-p. 66-67
7, 8	1	Stability and Instability Air Masses	Weather Ways - CH VII, VIII From the Ground Up-p. 66-69
Test	1	Progress Test on Material Covered	
Review	1	Review Test and areas of Concern	
9	1	Fronts	Weather Ways - CH IX

10, 11, 12	1	The Cold Front The Warm Front Trowals and Upper Fronts	Weather Ways - CH X, XI, XII
Test	1	Mid Term Exam	
13, 14	1	Clouds, Precipitation, Fog Visibility	Weather Ways - CH XIII, XIV
15	1	Ice Accretion	Weather Ways - CH XV
16	1	Thunderstorms	Weather Ways - CH XVI
17, 18, 19	1	Turbulence Precipitation Static Mountain Waves	Weather Ways - CH XVII XVIII XIX
Test	1	Progress Test on Material Covered	
Review	1	Review test and areas of concern	
20	1	Weather Maps	A.I.P. Canada - Met Weather - Forecasting and Observing Guide- CH 3 (Handout)
21, 22	1	Aviation Weather Reports Terminal Forecasts	A.I.P. Canada - Met Weather-Forecasting and Observing Guide- CH 4 (Handout)
23, 24	1	Area Forecasts Upper Wind Forecasts	A.I.P. Canada - Met Weather-Forecasting and Observing Guide - CH 4 (Handout)
Test	1	Progress Test on Material Covered	
Review	2	Review major points of all material covered.	Weather Ways From the Ground Up Weather-Forecasting and Observer's Guide A.I.P. Canada - Met
Test	1	Final Exam	

SPECIFIC OBJECTIVES:

1 Meteorological Organization and Services in Canada

The student is expected to know:

- (a) the organization of the meteorological service
- (b) the services provided to aviators

2 Atmosphere

The student is required to know:

- (a) the composition of the atmosphere
- (b) the properties of the atmosphere
- (c) divisions and characteristics of the atmosphere
- (d) ICAO standard atmosphere

3 Clouds

The student is required to know:

- (a) the classification and description of clouds

4 Pressure

The student is required to know:

- (a) the nature of atmospheric pressure
- (b) the units in which it is expressed
- (c) the vertical and horizontal variations under different conditions
- (d) how altimeters are set
- (e) how wind and weather are related to pressure distribution as displayed on a weather map

5 Wind

The student is required to know:

- (a) the forces which cause and influence air motion both at the surface and in the upper levels of the atmosphere

6 Moisture and Temperature

The student is required to know:

- (a) the scales used to express temperature
- (b) how the moisture content of the air affects weather
- (c) how the atmosphere is heated
- (d) how the atmosphere is cooled

7            Stability and Instability (Vertical Motion)

The student is required to know:

- (a) the meaning and significance of the term "stability"
- (b) the relationship between lapse rate and stability
- (c) modification of stability
- (d) characteristics of weather in stable and unstable air
- (e) agencies which give rise to vertical motion

8            Air Masses

The student is required to know:

- (a) the meaning of the term "Air Mass"
- (b) the formation and classification of Air Masses
- (c) factors determining the weather in an air mass
- (d) modification of air masses
- (e) air mass weather in Canada

9            Fronts

The student is required to know:

- (a) the symbols for fronts on weather charts
- (b) the structure of fronts
- (c) types of fronts
- (d) Norwegian Theory of Cyclones (Stages I-VI)

10           The Cold Front

The student is required to know:

- (a) the structure of a cold front
- (b) surface weather changes
- (c) flight problems associated with the cold front

11           The Warm Front

The student is required to know:

- (a) the structure of the warm front
- (b) surface weather changes
- (c) flight problems associated with the warm front

12           Trowals and Upper Fronts

The student is required to know:

- (a) weather associated with trowals and upper fronts

13           Clouds, Precipitation and Fog

The student is required to know:

- (a) physical processes of cloud formation
- (b) physical process of precipitation formation
- (c) physical process of fog formation

14            Visibility

The student is required to know:

- (a) the meaning of the term "visibility"
- (b) restrictions to visibility

15            Ice Accretion

The student is required to know:

- (a) the effects of ice on aircraft performance
- (b) how ice forms
- (c) types of icing
- (d) icing protection techniques

16            Thunderstorms

The student is required to know:

- (a) the main features of thunderstorms
- (b) effects on flight operations

17            Turbulence

The student is required to know:

- (a) the causes of turbulence

18            Precipitation Static

The student is required to know:

- (a) weather conditions which favour precipitation static

19            Mountain Waves

The student is required to know:

- (a) the features of mountain waves
- (b) effects on flight operations

20            Weather Maps

The student is required to know:

- (a) how to identify and interpret the significant features of surface and upper level weather charts

21            Aviation Weather Reports (SA)

The student is required to know:

- (a) how to decode and interpret all information provided on hourly reports

22            Terminal Forecasts (FT)

The student is required to know:

- (a) how to decode and interpret all information provided in terminal forecasts

23            Area Forecasts (FA)

The student is required to know:

- (a) how to decode and interpret all information provided in area forecasts

24            Upper Wind Forecasts (FD)

The student is required to know:

- (a) how to decode upper wind forecasts
- (b) how to interpolate forecast winds to apply to flight operations

TEXTBOOKS:

Weather Ways - Cat. #T56-464 - Information Canada

From the Ground Up - Sandy A. F. MacDonald - Aviation Publishers Co. Ltd.

Weather - Forecasting and Observing Guide Handout - DND - CPP 295

Aeronautical Information Publication (A.I.P.) - Canada

STUDY AND REFERENCE GUIDES:

Transport Canada - Study and Reference Guide

- Study Questions for Private Pilots

- Sample Examination for Private Pilots

Weather - Forecasting and Observing Guide - DND - CFP 295