Earth Science 120 **Fall 2008** **Dr. Gerencher**

METEOROLOGY LECTURE SYLLABUS

(subject to revision)

DATE	CLASS NO.	TOPIC	ASSIGNMENTS	
			Text	**CD-ROM Tutorials**
Aug 25	1	Introduction to Meteorology	1-15	
27	2	History of Meteorology	23-26	
29	3	The Upper Atmosphere I	16-19	Radiation
Sept 3	4	The Upper Atmosphere II	26-29	
5	5	Origin of the Atmosphere	20-23	Doppler Radar
8	6	The Seasons	30-42	Earth-Sun Geometry
10	7	Diurnal Changes	43-53	
12	8	Heat Budget and Energy Balance	54-91	
15	9	Water Vapor Content of Air	120-142	
17	10	**(TEST 1* [classes 1-8]; Origin, Upper Atm. & Radiation)**		
19	11	Adiabatic Processes I	142-146	
22	12	Adiabatic Processes II	415-416	
24	13	Dew and Frost	146-147	
26	14	Fogs	148-155	
29	15	Cloud Development	156-160	
Oct. 1	16	Stability/Instability I	160-165	Stability
3	17	Stability/Instability II	165-168	
8	18	Cloud Types	169-187	
10	19	Precipitation Processes I	188-202	Precipitation
13	20	Precipitation Processes II	202-209	
15	21	**(Test 2* [9-20]; Water Vapor and Stability)**		
17	22	Forces Which Produce Winds	92-104	Pressure Gradients
20	23	Wind Directions and Speeds	105-119	Coriolis
22	24	Global Circulation Patterns	210-220	Forces and Winds
24	25	Upper Air Flow	220-225	Upper Level Winds
27	26	Second Order Circulations	226-233	El Nino-S. Oscillation
29	27	Third Order Circulations	233-253	
31	28	Air Masses	254-264	
Nov.3	29	Fronts	264-275	
5	30	Mid-Latitude Cyclones	276-284	Mid-Latitude Cyclone
7	31	Surface and Upper Air Flow	284-305	
10	32	Weather Forecasting	386-427	Forecasting
12	33	**(Test 3 * [22-32]; Winds, Jets and Fronts)**		
14	34	Atmosphere Electricity	306-314	
17	35	Thunderstorms I	314-326	
19	36	Thunderstorms II	327-329	
21	37	Tornadoes I	330-344	
24	38	Tornadoes II	344-351	
Dec 1	39	Hurricanes I	352-364	
3	40	Hurricanes II	364-385	
5	41	Air Pollution I	428-449	Orbit Var.& Climate Change
8	42	Air Pollution II	486-509	
10	43	Atmospheric Optics	512-522	

* Copies of recent exams are kept on reserve in the Library.

Final examination when scheduled by the Registrar. The final examination is comprehensive, although it emphasizes the last part of the course.

Texts: Understanding Weather and Climate, 4th ed., Aguado and Burt, 2007.
Web Site for Text: http://www.prenhall.com/aguado
Programs from Riverside Scientific used in this course: Seasons, Winds, Clouds, Cyclones and Storm Systems
Other programs used in this course: McIDAS and ArcView 3.2

METEOROLOGY LABORATORY SYLLABUS **Fall, 2008**

(subject to revision)

DATE	CLASS	TOPIC	ASSIGNMENT from Text
Aug. 26	1	Computer Resources	
Sept. 2	2	Weather Instruments	
		temperature	78-86
		pressure	98-100
		wind	114-115
		moisture	138-140
		clouds	169-179
		precipitation	202-206
9	3	Station Plotting	525-529
16	4	Contouring Weather Maps	
23	5	Analysis of Weather Maps I	
30	6	Analysis of Weather Maps II	
Oct. 14	7	Pseudoadiabatic Diagrams	86-87; 168-169
21	8	Balloon launch	
28	9	Balloon launch	
Nov. 4	10	Balloon launch	
11	11	ArcGIS: Hurricanes I	
18	12	ArcGIS: Hurricanes II	
25	13	McIDAS: Soundings and Meteograms	
Dec. 2	14	Weather Map Analysis I	
Dec. 9	15	Weather Map Analysis II	

Web sites for viewing the current weather at Moravian College:
www.physics.moravian.edu/weather
www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KPABETHL10
www.findu.com/cgi-bin/wxpage.cgi?CW2112

Final Grade composed of:

Lecture Test # 1…….. 13%
Lecture Test # 2…….. 13%
Lecture test # 3…… 13%
Lab and Homework Average……..…… 40%
Final Examination……21%

Attendance Policy: Attendance will be taken in each class period. Absences in excess of four will reduce a student's grade by one percentage point for each class period missed. Students have the responsibility to secure and present evidence of the nature of an excused absence.

Equipment necessary: A set of colored pencils and a pencil with an eraser. Bring them to every laboratory. The use of colored pencils in lecture is also recommended.

Cell phones and beepers should be turned off in the Earth Science classroom.

BlackBoard: All meteorology students should enroll themselves in the EASC 120 BlackBoard site.

Plagiarism: Matters of plagiarism in this course are governed by the definitions, policies, and procedures given on the appropriate pages of the latest edition of the *Moravian College Student Handbook*.

Objectives: Students will understand the following:

- composition and properties of the permanent and variable constituents of the atmosphere.
- role of geometry, radiation, and water vapor in the Earth's energy balance.
- methods by which atmospheric properties are measured, portrayed, analyzed, and predicted.
- forces that affect air flow near the surface and aloft, and the weather systems that result.
- effects of the atmosphere on humans, and vice versa.
- dynamics of the atmosphere at various temporal and spatial scales.

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