P1.54 ALVERNIA AND CABRINI COLLEGES: ADAPTATIONS OF EDUCATIONAL INITIATIVES

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1. INTRODUCTION

The American Meteorological Society has established a series of outstanding educational programs for enhancing the teaching of science at the undergraduate and in-service level for educators. These programs have evolved over time to the current state of the art online programs that teach concepts related to oceanography, meteorology and hydrology.

The newest programs utilize a published textbook and regularly updated study guide for each course, integrated with online resources and activities, all produced by the AMS Education Office. Students interact with the prepared materials and work with an instructor or mentor regularly through online or fax access and regular meetings at critical times in the program. These programs include three *DataStreme* courses titled *Atmosphere*, *Water in the Earth System* (which covers all three content areas) and *Ocean*, and the undergraduate course *Online Weather Studies*. The newest sibling, just released for pilot study this spring, is *Online Ocean Studies*, planned for the undergraduate community utilizing the same model as *Online Weather Studies*. *Online Ocean Studies* is the first text published in hardback.

DataStreme courses are funded by various agencies and provided to educators through Local Implementation Teams, trained and organized by AMS. *Online Weather Studies* is offered to interested collegiate organizations on a license basis and are taught by the college's own staff. *Online Ocean Studies* will be marketed in the same manner, with the current pilot semester being free of licensing fees. Students are charged fees based upon each institution's practices for such courses. DataStreme courses provide three graduate credits to successful participants through the State University of New York at Brockport. *Online Weather Studies* participants are provided credit by the offering institution with the course operating like nearly any other course at the school.

Online Weather Studies have been offered using a number of models and have been joined by adaptations of the DataStreme courses at the undergraduate level. The flexibility of the AMS Education Department has made it possible to offer *DataStreme* courses during regular semesters and other times through archived materials.

2. BACKGROUND

Alvernia College and Cabrini College are two liberal arts colleges in the Philadelphia, Pennsylvania, suburban area. They are similar in size (1500 to 2000 students) and based upon a Catholic heritage. Both have offered *Online Weather Studies*.

The science program at Alvernia was further enhanced with the offering of an adapted *DataStreme Weather in the Earth System* to undergraduates during the "Winterim" term in January, 2004, and as a full semester course during the fall, 2004, semester.

The *Online Weather* course at Cabrini, first offered during fall, 2003, was initially offered as a graduate level education course, but was

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ultimately approved as a science core course for the following year. The instructors for both Cabrini and Alvernia initially used the *DataStreme* model for the instructional process: online or fax access to the instructors with three or four periodic class meetings. The course at Cabrini was further revised upon approval as an undergraduate course to provide a weekly class meeting. Total meeting time would be approximately the same as the courses requiring less frequent meetings.

3. ONLINE WEATHER STUDIES

Online Weather Studies is the first of its kind from the AMS Educational initiatives: planned as an undergraduate course in meteorology.

Colleges license rights to offer the course from AMS and are free to utilize the materials as they desire.

Alvernia College introduced the program three years ago, after the Director of its Schuylkill Campus (Pottsville, Pennsylvania), Mary Sacavage, learned of it at a conference she attended. The author served as its second instructor and followed the model established for the DataStreme courses.

Three, then four, class meetings were held with all materials sent by fax to the instructor on a weekly basis by students. During each meeting following the first, an activity or presentation was involved, followed by an exam on the chapters covered to that time.

Each student presented a report on research focused on the impact of weather phenomenon on individuals or populations. Many emphasized personal experiences.

As regular undergraduate courses, all requirements of the colleges were followed at Alvernia College and Cabrini College.

At Cabrini, the second author started the program in the fall 2003 for two semesters. It was offered as an education graduate course due to the internal organization of the college. Participation was very limited as students discovered the rigor of the course and did not initially understand the level of science involved despite the efforts made to clearly provide that information.

For the fall of 2004, the course was approved, identified as a physics course and implemented as a core science course for undergraduates. It was to be established as a"hybrid" with class meetings once each week. Total classroom time is similar, although a little longer, to that at Alvernia, but dispersed throughout the semester.

Participation was near capacity with student progress finally established. A number of students required close advising to establish an understanding of the routine involved and the need to stay current. Once this was accomplished, most students did very well.

4. WATER IN THE EARTH SYSTEM AND ITS MODIFICATIONS AS AN UNDERGRADUATE COURSE

The three-week course at Alvernia, utilized archived *Water in the Earth System* web pages from the fall, 2003, semester. Bernard Blair of the AMS staff set up the page, providing all links and documents not provided in the text and study guide. Contained within the web pages were current (for the preceding semester) data and links. Nearly all links were still functional and the data was not sufficiently dated to have a negative impact. This page is shown in the Appendix.

Students were very satisfied with the adaptations and the courses. Since this was an undergraduate science course and not a course for educators, the pedagogical component was not implemented.

The course was subsequently offered during the regular fall semester of 2004. The organization was essentially the same as that for the Winterim course, but extended to match the online publication of WES materials.

For both courses, students completed all activities and questions, took three exams and completed a research paper.

5. ONLINE OCEAN STUDIES PILOT

Developed from *DataStreme Ocean*, the *Online Ocean Studies* course was placed into pilot implementation for the spring of 2005. Alvernia College agreed to participate in the pilot, offering the course as a physics option for its students.

At the time of writing of this article, the course has just been approved and efforts are moving forward to promote it to Alvernia's students. A syllabus has not yet been developed but will be patterned after the Online Weather Studies course taught earlier

at the college. Course requirements will also be the same.

6. COMMON COMPONENTS

All of the undergraduate courses required periodic examinations and at least one long-term research study and report.

Similar to the three DataStreme courses, each course consists of text assignments, a study guide with initial investigation components, and online components providing additional resources and the online completion portion of the investigations.

Resources are comprehensive and include links and text materials. Expanded discussions of appropriate concepts as well as related news topics are provided.

Emphasis in the DataStreme courses is in the communication with the assigned mentor and the pedagogical applications. For these courses, communication with the instructor is maintained through class meetings and online consultation. At times, when additional guidance is required, telephone or conference consultation may be arranged.

7. DIFFERENCES IN COURSE DESIGN

Course variations, as reflected in the syllabi, demonstrate a degree of evolution as the instructors gain experience, both with the courses themselves and with the student populations of the schools involved.

Working with undergraduates is a different situation than working with in-service teachers at the graduate level. The nature of the science instructed is appropriate for both, but motivation and background become significant.

Professional educators are taking the course to enhance their backgrounds, frequently for instruction they are already involved in offering at their schools. Undergraduates in these courses are usually taking them as a college requirement for graduation with most involved in non-science majors. A few take them as an introduction to determine their level of interest or to provide a base for additional study.

At both Alvernia and Cabrini, the courses are the only ones offering concepts in meteorology, oceanography or hydrology. Elements may appear in other courses, such as Ecology or Geology, but no others deal with them in detail.

The biggest element of design difference is in the nature of the meetings: four sessions versus weekly sessions during the semester. Both have been successful within their scope and within the population of students involved.

A good solid start to the semester in either case is necessary to assure students that they understand the procedures and the routine that needs to be established.

Many are accustomed to planning around assignments and exams, often delaying time spent on the tasks at hand. This is not an option in these programs. This is due to the extent of study involved and the timing of online publication of that portion of the resource materials and investigations.

In all of the courses, the model established for DataStreme courses has been continued regarding investigations during meetings. At each of the class meetings at Alvernia, specific investigations are completed with the instructor. Investigations are also completed at Cabrini within the time frame established.

8. SUGGESTIONS FOR CONSIDERATION

When organizing the courses, no matter what model is to be considered, developers should look at the needs of the institution.

Student interest and demographics should be determined to identify need and likely requirements for the course. So far the experience continues to be one of enthusiastic acceptance by students, particularly when the nature of the course and expectations are clearly identified.

Assignments should be expected to be completed on time with a method identified for verifying such completion. Not all need to be “corrected,” but there needs to be a mean of ascertaining completion rates.

Opportunities must be available to meet with students for discussion and performance of some of the investigations. Several investigations are best completed with the students to be certain of their success.

8. CONCLUSION — THE FUTURE

Additional details of the courses and their adaptations, syllabi, samples of student work and discussion with the authors can provide assistance, guidance and ideas on how to set up similar courses, utilizing any of the online programs available through the American Meteorological Society.

The programs and their adaptations, with creative implementation further expand the vision of the American Meteorological Society at providing quality, accurate science instruction in the atmospheric, oceanic and hydrologic sciences.

9. WORLD WIDE WEB LINKS

American Metrological Society Educational Initiatives: http://64.55.87.13/amsedu/

This link allows access to the other links and information provided by AMS about their courses and initiatives.

Specific course links for the online series are password protected, but sample lessons through the link above are not protected. DataStreme course pages and resources are not password protected.

10. SOURCES

Blair, Bernard. "Water in the Earth System…An AMS Course offered by Alvernia College," http://64.55.87.13/amsedu/alvernia/index.html, January, 2004.

DataStreme Atmosphere, American Meteorological Society, Boston, 2004.

DataStreme Ocean, American Meteorological Society, Boston, 2004.

DataStreme Water In the Earth System, American Meteorological Society, Boston, 2001.

Moran, Joseph, *Online Weather Studies 2nd Edition,* American Meteorological Society, Boston, 2002.

Online Ocean Studies, American Meteorological Society, Boston, 2005.

11. APPENDIX

The appendix includes nearly complete syllabi for the courses described in this paper.

APPENDIX

SYLLABI

Syllabi have been edited and include only portions related to course design and assessment. Class and College policies are included in the original syllabi, but not duplicated here.

ALVERNIA COLLEGE

Fall 2003
Weather on the Web - PHY390

January, 2004
PHY 390: *Water In The Earth System On The Web*
Winterim, Three-week Session

American Meteorological Society Custom Web Page for Alvernia College

Fall, 2004
PHY 390-N6: *Water In The Earth System Online.*

CABRINI COLLEGE

Fall, 2003
Science of Weather: Online Weather Studies, Graduate 533.

Fall, 2004
Application of Meteorology *Online Weather Studies,* Physics 205.

Weather on the Web - PHY390

Fall 2003 (MOD I & II)

4 credits

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Text

Online Weather Studies, Second Edition, American Meteorological Society, 2002.
Includes textbook and *Study Guide, Sixth Printing*, 2003.

Course Homepage: www.ametsoc.org/amsedu/online/onlinewx
User Name: alve073
Password:

Course Description

A study of the atmosphere's structure and properties using real-time data gathered from the Internet. The integration of theory and laboratory techniques will allow the student to study a variety of weather phenomena and their impact on society.

Course Format

The course will consist of three class meetings that will include two examinations and twelve chapters studied over the semester directed through online access to the site provided by the American Meteorological Society for this course. Students must have access to the internet and a color printer. Email access and a FAX machine are optional.

Course Objectives

After completing this course, the student should be able to:

- Describe the various methods of weather monitoring and forecasting.
- Explain the origin and evolution of the atmosphere.
- Illustrate the importance of heat transport in atmospheric circulation.
- Explain the role of water in weather systems.
- Identify the major components of Earth's atmospheric circulation.
- Describe the structure and life cycles of thunderstorms, tornadoes and hurricanes.
- Explain the basic features of our climate and weather and how they affect us.

Course Schedule

Important Dates:

Sep 12 - Last day to Add/Drop
Sep 6 - First Class
Oct 1 - May 2004 Graduation Applications Due
Oct 18 - Second Class Meeting; Midterm Exam– Chapters 1-6; (Time TBA)
Oct 17 - Last day to W/D without F by 4:30 PM
Dec 13 - Third Class Meeting; Final Exam– Chapters 7-12; (Time TBA)

WEEK	***TEXT***	***ACTIVITY***	***DUE DATE***
Sep 1	Ch. 1		
Sep 8	Ch. 1	1A, 1B	Sep 15
Sep 15	Ch.2	2A.2B	Sep 22
Sep 22	Ch.3	3A,3B	Sep 29
Sep 29	Ch.4	4A,4B	Oct 6
Oct 6	Ch.5	5A,5B	Oct 13
Oct 13	Ch.6	6A, 6B	Oct 20
Oct 20	Ch.7	7A.7B	Oct 27
Oct 27	Ch.8	8A.8B	Nov 3
Nov 3	Ch.9	9A,9B	Nov 10
Nov 10	Ch. 10	10A. 10B	Nov 17
Nov 17	Ch. 11	11A, 11B	Nov 24
Nov 24		Reflection Paper	
Dec 1	Ch. 12	12A, 12B	Dec 8
Dec 8		Reflection Paper	Dec 13 (if not completed prior)

Weekly and other Requirements

1. Attend all three meetings of the class.
2. Read the *Daily Weather Summary* and *Supplementary Information* each day beginning September 8.
3. Read the assigned chapter in the text and complete the two *Learning Activities* assigned each week beginning September 8. The first part of each *Learning Activity* is in the *Study Guide* and the second part is accessed using the web page. The first activity is available after noon on Monday each week and the second activity is available after noon on Wednesday each week.
4. You have one week to complete the two activities and deliver them to me (with the exception of the last week). You may do this by sending them to me in the mail in a 9 x 12 manila envelope post marked by the due date above. You may also email or FAX the work to me no later than the due date. I will confirm the receipt of the materials sent by FAX or email. Points will be subtracted from your weekly grade at the rate of one point for each activity late per day the assignment is late. You should make copies of all your work in case your assignment is lost in the mail. The final chapter will be delivered to me prior to or at the final class meeting.
5. Mid-Term and Final examinations will consist of 60 selected response questions related to chapter readings as reinforced by the activities. One point will be earned for each item correct. Up to 20 points of each exam may be replaced by constructed response test items of varying point values.
6. The reflection paper will consist of an essay, not to exceed three pages of text, that appropriately discusses how any aspects of the content of the course may impact on your own current, intended or planned career area. This will be presented at the fourth meeting of the class in a brief (no more than three minutes) presentation to the class. A rubric for assessment of the paper and presentation will be presented for class review during the first or second class meeting. At the student's request, with at least one week's notice to

the instructor, the presentation may be made at the third class meeting. The writing and citation style incorporated must be consistent. You may choose a style expected to be used in your field. Margins must be one-inch or 2.5 centimeters on all four sides. Font used must be either Arial or Times New Roman of size 12.

Grading

Grades will be assigned according to the college grading scale as published in the student handbook. All requirements must be met satisfactorily as determined by the instructor.

Learning Activities	24 x 10 points *each*=	240	points
Midterm Exam		60	points
Final Exam		60	points
Reflection Paper and Presentation		40	points
Total		400	points

The optional chapters, A, B and C, and their activities may be completed for additional credit for the Learning Activities grade component. The twelve required chapters must all be completed and the activities must be submitted in pairs for the optional chapters; scoring will be the same as the other chapters. The total points earned from Learning Activities will not exceed 240. Due dates for the optional chapters will be identified by the instructor.

PHY 390: *Water In The Earth System On The Web*

Winterim 2004
4 credits

Mr. George W. Rumpp
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Text

Water In The Earth System, American Meteorological Society, 2001;
includes textbook and *Study Guide* with investigations, 2003.

Course Homepage:

http://64.55.87.13/amsedu/alvernia/index.html - Chapters

http://64.55.87.13/amsedu/WES/home.html - Resources

Course Description

A study of the hydrosphere of our Earth, its interactions in meteorology, oceanography and hydrology, using real-time data gathered from the Internet. The integration of theory and laboratory techniques will allow the student to study a variety of weather, oceanic and hydrologic phenomena and their impact on society.

Course Format

The course will consist of four class meetings that will include three examinations and twelve chapters studied over the course directed through online access to the html pages provided by the American Meteorological Society and recorded for this course. Some of the activities will be completed during the first three course meetings. Students must have access to the Internet and a color printer. Email access and a FAX machine are optional. Email is the preferred means of communication between the instructor and student.

Course Objectives

After completing this course, the student should be able to:

- Describe the concept of system science and that of water in particular.
- Explain how the unique properties of water influence its functioning in the Earth System.
- Illustrate how water is cycled among the various reservoirs in the Earth system and what the implications of that cycling are for the global fresh water supply.
- Describe the cycling of water into and out of the atmosphere.
- Describe the cycling of water into and out of the lithosphere.
- Identify how the flow of water impacts the land and humans.
- Describe the general characteristics of the ocean system.
- Explain how atmospheric circulation interacts with ocean circulation to move water through the global water cycle.
- Explain the role of water in regulating Earth's climate.
- Explain how interactions between the ocean and atmosphere impact worldwide weather and climate.
- Describe how future changes in climate could impact the global water cycle.
- Explain how the global water system may impact upon his or her own career choice.

Course Schedule

Monday, Jan 5	First Class
Monday, Jan 12	Second Class Meeting: Exam– Chapters 1-4; Investigation 5A: *Supercooling, Clouds and Precipitation;* Investigation 8B: *Ocean Temperature, Density, Pressure and Surface Currents.*
Thursday, Jan 15	Third Class Meeting: Exam – Chapters 5-8; Investigations 11A & B: *El Niño/La Niña.*
Friday, Jan 23	Fourth Class Meeting: Student Presentations; Final Exam– Chapters 9-12;

All classes will begin at 5:30 PM and end prior to 9:00 PM. Times and dates subject to change after meeting with the class. In case of inclement weather, the class will meet on the next available date.

DAY	*TEXT*	*ACTIVITIES*	*DUE DATE*
1	Ch. 1	Activities A & B - submit, Complete Progress	Jan 6
2	Ch. 2	Activities A & B - submit, Complete Progress	Jan 7
3	Ch. 3	Activities A & B - submit, Complete Progress	Jan 8
4	Ch. 4	Activities A & B - submit, Complete Progress	Jan 12
5	Ch. 1-4	First Exam	Jan 12
6	Ch. 5	Activities A & B - submit, Complete Progress	Jan 13
7	Ch. 6	Activities A & B - submit, Complete Progress	Jan 14
8	Ch. 7	Activities A & B - submit, Complete Progress	Jan 14
9	Ch. 8	Activities A & B - submit, Complete Progress	Jan 15
10	Ch. 5-8	Second Exam	Jan 15
11	Ch. 9	Activities A & B - submit, Complete Progress	Jan 21
12	Ch 10	Activities A & B - submit, Complete Progress	Jan 22
13	Ch 11	Activities A & B - submit, Complete Progress	Jan 22
14	Ch 12	Activities A & B - submit, Complete Progress	Jan 23
15	Ch. 9-12	Final Examination, Reflection Paper	Jan 23
16		Reflection Paper & Presentation	Jan 23

Weekly and other Requirements

7. Attend all four meetings of the class.
8. Read the assigned chapter in the text and complete the *Chapter Progress* and two *Learning Activities* assigned each week beginning on the first day of class. The first part of each *Learning Activity* is in the *Study Guide* and the second part is accessed using the web page. Items related to pedagogy are not required. All chapters are available on the web site.
9. Read the *Weekly Water News* and *Supplementary Information* online for each chapter.
10. Chapters are due according to the schedule above. You may do this by sending them to me using email or FAX no later than one day past the due date. The instructor will confirm the receipt of the materials using email. Points will be subtracted from your grade at the rate of one point for each activity late per day the assignment is late past the day of grace. The final chapter will be delivered to the instructor prior to or at the final class meeting. The instructor may waive date of completion requirements.
11. Examinations will consist of selected response and constructed response questions related to chapter readings, progress questions and as reinforced by the activities. The total of each exam will be 60 points with selected response questions worth one point each and constructed response items worth up to 10 points each. Chapter Progress pages and course objectives will serve as a study guide for each exam.
12. The reflection paper will consist of an essay, not to exceed three pages of text, that appropriately discusses how any aspects of the content of the course may impact on your own current, intended or planned career

area. This will be presented at the fourth meeting of the class in a brief (no more than three minutes) presentation to the class. A rubric for assessment of the paper and presentation will be presented for class review during the first or second class meeting. At the student's request, with at least one week's notice to the instructor, the presentation may be made at the third class meeting. The writing and citation style incorporated must be consistent. You may choose a style expected to be used in your field. Margins must be one-inch or 2.5 centimeters on all four sides. Font used must be either Arial or Times New Roman of size 12.

Grading

Grades will be assigned according to the college grading scale as published in the student handbook. All requirements must be met satisfactorily as determined by the instructor.

Learning Activities	24 x 10 points *each*=	240	points
First Exam		60	points
Second Exam		60	points
Final Exam		60	points
Reflection Paper and Presentation		40	points
Total		460	points

Water in the Earth System

American Meteorological Society

an AMS course offered by

ALVERNIA COLLEGE

Winterim 2004

Benchmark Investigations

Investigation 1A
Investigation 1B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 2A
Investigation 2B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 3A
Investigation 3B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 4A
Investigation 4B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 5A
Investigation 5B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 6A
Investigation 6B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 7A

Investigation 8A

Investigation 7B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 8B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 9A
Investigation 9B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 10A
Investigation 10B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 11A
Investigation 11B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

Investigation 12A
Investigation 12B

- Supplement (archive)
- Weekly News (archive)
- Chapter Progress Response Form
- Investigation Response Form

HTML page created by Bernard Blair of the AMS Education Staff, showing links to archived WES pages from the previous semester. Used with permission.

PHY 390-N6: *Water In The Earth System Online*

Fall 2004

4 credits

Mr. George W. Rumpp
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Meeting Times and Locations

Schuylkill Campus – Pottsville	9:00 AM – 11:00 AM Room 106
Main Campus – Reading	1:00 PM – 3:00 PM Room 6, Graduate Center

Saturdays: August 28, October 9, November 6, December 11, 2004.

Times and dates are subject to change after meeting with the class.
In case of inclement weather, the class will meet on the next available date.

Text

Water In The Earth System, American Meteorological Society, 2001;
includes textbook and *Study Guide* with investigations,
2004-2005 edition.

Course Homepage: http://64.55.87.13/amsedu/WES/home.html

Course Description

A study of the hydrosphere of our Earth, its interactions in meteorology, oceanography and hydrology, using real-time data gathered from the Internet. The integration of theory and laboratory techniques will allow the student to study a variety of weather, oceanic and hydrologic phenomena and their impact on society.

Course Format

The course will consist of four class meetings that will include three examinations and twelve chapters studied over the course directed through online access to the html pages provided by the American Meteorological Society. Some of the activities will be completed during the first three course meetings. Students must have access to the Internet and a color printer. Email access and a FAX machine are optional. Email is the preferred means of communication between the instructor and student.

Course Objectives

After completing this course, the student should be able to:

- Describe the concept of system science and that of water in particular.
- Explain how the unique properties of water influence its functioning in the Earth System.
- Illustrate how water is cycled among the various reservoirs in the Earth system and what the implications of that cycling are for the global fresh water supply.
- Describe the cycling of water into and out of the atmosphere.
- Describe the cycling of water into and out of the lithosphere.
- Identify how the flow of water impacts the land and humans.
- Describe the general characteristics of the ocean system.
- Explain how atmospheric circulation interacts with ocean circulation to move water through the global water cycle.
- Explain the role of water in regulating Earth's climate.
- Explain how interactions between the ocean and atmosphere impact worldwide weather and climate.
- Describe how future changes in climate could impact the global water cycle.
- Explain how the global water system may impact upon his or her own career choice.

Course Schedule and other Important Dates

August 28	First Class Introduction, review of syllabus and course objectives, online and course processes, the scientific method.
September 7	Last day to Add/Drop
October 9	Second Class Meeting Investigation 5A: *Supercooling, Clouds and Precipitation;* Investigation 8B: *Ocean Temperature, Density, Pressure and Surface Currents.* Exam– Chapters 1-4.
October 22	Last day to W/D without F
November 6	Third Class Meeting Investigations 11A & B: *El Niño/La Niña.* Exam – Chapters 5-8+.
December 11	Fourth Class Meeting Student Presentations. Final Exam– Chapters 9-12+;

	TEXT	***ACTIVITIES***	***DUE DATE***
Aug 28		First Class Meeting	
Aug 30		Preview Week of Online Materials (Chapter 1)	
	Ch. 1	Activities A & B - submit, Complete Progress Questions	Sep 13
	Ch. 2	Activities A & B - submit, Complete Progress Questions	Sep 20

	Ch. 3	Activities A & B - submit, Complete Progress Questions	Sep 27
	Ch. 4	Activities A & B - submit, Complete Progress Questions	Oct 4
Oct 9	Ch. 1-4	First Exam	Oct 9
	Ch. 5	Activities A & B - submit, Complete Progress Questions	Oct 11
	Ch. 6	Activities A & B - submit, Complete Progress Questions	Oct 18
	Ch. 7	Activities A & B - submit, Complete Progress Questions	Oct 25
	Ch. 8	Activities A & B - submit, Complete Progress Questions	Nov 1
Nov 6	Ch. 5-8+	Second Exam	
	Ch. 9	Activities A & B - submit, Complete Progress Questions	Nov 8
	Ch 10	Activities A & B - submit, Complete Progress Questions	Nov 15
	Ch 11	Activities A & B - submit, Complete Progress Questions	Nov 29
Nov 22		No Activities Posted this week	
	Ch 12	Activities A & B - submit, Complete Progress Questions	Dec 6
Dec 11	Ch. 9-12+	Final Examination, Research Paper and Presentation	

Course Requirements

13. Attend all meetings of the class. A penalty of 5% for the first absence and 10% for each subsequent absence will be assessed against the final grade. Properly documented absences, particularly with advance notice, will be considered and may be granted a waiver from the penalty by the instructor. Two late arrivals will constitute one absence for grading purposes. If you arrive later than the midpoint of the class, it will be considered an absence. Further, in-class assignments and labs can not be made up and you will earn a zero for any lab or activity assignment based on the material from that class unless a **documented**, valid excuse is provided. Properly documented absences, including Alvernia-sponsored athletic events and religious holidays, particularly with advance notice will be considered and may be granted a waiver from the penalty by the instructor. *Please therefore think carefully about skipping class.*
14. Read the assigned chapter in the text and complete the *Chapter Progress* and two *Learning Activities* assigned each week beginning on the first day of class. The first part of each *Learning Activity* is in the *Study Guide* and the second part is accessed using the web page. Items related to pedagogy are not required. Materials are posted to the web site on Tuesday and Thursday of each week and are removed very early on Mondays. You will be able to obtain access to the most recent past week's pages through your instructor, but it is always best to stay current with the work.
15. Read the *Weekly Water News* and *Supplementary Information* online for each chapter.
16. Chapters are due according to the schedule above. You may do this by transmitting them using email or FAX no later than one day past the due date. The instructor will confirm the receipt of the materials using email. Points will be subtracted from your grade at the rate of one point for each activity late per day the assignment is late past the day of grace. The final chapter will be delivered to the instructor prior to or at the final class meeting. The instructor may waive date of completion requirements.
17. Examinations will consist of selected response and constructed response questions related to chapter readings, progress questions and as reinforced by the activities. The total of each exam will be 60 points with selected response questions worth one point each and constructed response items worth up to 10 points each. Chapter Progress pages and

course objectives will serve as a study guide for each exam. Examinations will focus primarily on the identified chapters, but **the second and final examinations may include items related to concepts considered earlier in the course**.

18. The research paper will not exceed three pages of text that appropriately discusses and documents the impact of any weather phenomenon on a given population of people. References, pictures, graphs and similar supporting materials will not count in the three pages of text. This will be presented to the class in a brief (no more than five minutes) presentation with the order of presentation to be determined by random assignment. **A detailed description of requirements for the project and a rubric for assessment of the paper and presentation, including supporting media and expectations, will be provided**. At the student's request, with at least one week's notice to the instructor, the presentation may be made at any earlier class meeting if it can be scheduled.
    - The writing and citation style incorporated must be consistent using either APA or MLA models. You may choose a style expected to be used in your field.
    - Margins must be one-inch or 2.5 centimeters on all four sides.
    - Font used must be either Arial or Times New Roman of size 12.
    - Directly quoted material may not exceed more than 10% of the text.
    - Files forwarded to the instructor must be in a form compatible with Microsoft *Word* or *Excel*.

    Any correspondence by email or other means will be considered unofficial unless a specific confirmation is received from the instructor.

Grading

Grades will be assigned according to the college grading scale as published in the student handbook. All requirements must be met satisfactorily as determined by the instructor. Grades may be withheld or recorded as an "Incomplete" or "Failure" if all course requirements are not met by the student.

Learning Activities	24 x 10 points *each*=	240	points
First Exam		60	points
Second Exam		60	points
Final Exam		60	points
Research Paper and Presentation		80	points
Total		500	points

Science of Weather
Online Weather Studies
Graduate 533

Dr. Phyllis E. Rumpp
phyllis.rumpp@cabrini.edu

Course Home Page: www.ametsoc.org/amsedu/online/onlinewx

User Name: cabr178
Password:
Online Weather Studies backup course homepage: http://onlinewx.comet.ucar.edu

Text:

Online Weather Studies, 2nd Edition, Dr. Joseph M. Moran, 2002
Online Weather Studies Study Guide, 6th Printing, American Meteorological Society, 2002-2003
Online Activities at the Online Weather Web site. http://www.ametsoc.org/amsedu/online/onlinewx

Course Description:

This course is an all-encompassing study of the science of the atmosphere by following weather as it is happening, in real-time via the Internet. By using the textbook and study guide, along with the web-site, background information on the properties of the atmosphere, the interactions between the atmosphere and other components of the Earth system, and the principles that govern weather and climate will be incorporated into an exciting learning experience. Using an inquiry based approach; critical thinking skills will be promoted as the analysis and interpretation of real-time weather information are developed.

Objectives:

a. To utilize and understand the sources of weather information
b. To identify the composition and structure of the atmosphere
c. To understand the balance and control of temperature in the troposphere
d. To integrate the effects of air pressure, humidity, clouds and precipitation on our weather
e. To identify the forces governing atmospheric circulation
f. To manipulate live data involving weather systems
g. To learn the dangers of hazardous weather
h. To competently be able to utilize weather analysis and forecasting
i. To be able to recognize and name atmospheric optics
j. To understand the forces in climate and climate change

Project-Based Science pedagogically guides online Weather Studies. This approach engages the learners in exploring their world by investigation of meaningful, driving questions. The course incorporates these questions, investigations, collaboration, technology, and artifacts. Each investigation has printed and electronic components that make use of meteorological and climatologically data available on the Internet. Investigations engage the student in observation, prediction, data analysis, inference, and critical thinking skills. The course presents opportunities for students to collaborate with their teacher and fellow students as together they negotiate understanding of weather systems.

Assignments and Meeting Dates:

Students will meet with the instructor at the first session, mid-term, and final. There will also be a trip to Channel 3 to view a live broadcast with Kathy Orr at the end of the course. Students will upload their assignments, weekly, and send them to their instructor. Or answers to activities and text questions may be faxed to 610-409-9582. Transmissions should arrive no later than the following Monday of the weekly assignment. Corrections to the assignments and discussion with the instructor will then occur online via e-mail.

Each weekly assignment will include reading the chapter(s) assigned from the textbook, the corresponding activity from the Study Guide, and the "live, online data" activities from the Internet web site.

Week one: September 3
- Chapter 1, "Monitoring Weather"

Week two:
- Chapter 2, "Atmosphere: Origin, Composition, and Structure"

Week three:
- Chapter 3, "Solar and Terrestrial Radiation"

Week four:
- Chapter 4, "Heat, Temperature, and Atmospheric Circulation"

Week five:
- Chapter 5, "Air Pressure"

Week six:
- Chapter 6, "Humidity, Saturation, and Stability"

Week seven:
- Chapter 7: "Clouds, Precipitation, and Weather Radar"

Week eight:
- Chapter 8: "Wind and Weather"
- Chapter A: "Weather Analysis and Forecasting"

Week nine:
- Chapter 9: "Atmosphere's Planetary Circulation"
- Chapter B: "Atmospheric Optics"

Week ten:
- Chapter 10: "Weather Systems of Middle Latitudes"
- Chapter C: "Climate and Climate Change"

Week eleven:
- Chapter 11: "Thunderstorms and Tornadoes"

Week twelve:

Chapter 12: "Tropical Weather Systems"

Assessment:
Students will be assessed through their weekly assignments in the textbook, the study guide, and Internet activities. A mid-term test will be given on campus for the second meeting. A research paper, combining at least three of the weather concepts learned in the course, will be used to assess comprehension and application of the class content. The students will apply the concept knowledge to a local weather event.

Grading:

Learning Activities (24 x 20 pts. each)	480 pts.
Mid-term exam	**200 pts.**
Final Research paper	**320 pts.**
Total points:	**1000 pts.**

The following table will determine your performance and grade:

A	94-100%	(940-1000 points)
A-	90-93.9%	(900-939.5 points)
B+	87-89.9%	(870-899.5 points)
B	84-86.9%	(840-869.5 points)
B-	80-83.9%	(840-869.5 points)
C+	77-79.9%	(770-799.5 points)
C	74-76.9%	(740-769.5 points)
C-	67-73.9%	(670-739.5 points)
D+	64-66.9%	(640-669.5 points)
D	60-63.9%	(600-639.5 points)
F	< 60%	(< 600 points)

Course Requirements:

Attendance Policy:
Class attendance at all three meetings will be mandatory. The last meeting will involve a field trip to Channel 3, CBS broadcast weather center to watch a live broadcast with meteorologist, Kathy Orr.

Assignments:
All of the weekly assignments are to be completed and uploaded to me by the following Monday. Points will be deducted if the assignments are late. (10 pts. per day)

Materials Needed:

1 three-ring binder (3 inch)
1 package colored pencils
1 three-hole punch
Online access for gathering data and assignments
Ability to upload materials or a Fax machine
Computer and color printer

Website for the Online Weather Studies:
www.ametsoc.org/amsedu/online/onlinewx

Application of Meteorology
Online Weather Studies
Physics 205

Revised 9/22/04

Dr. Phyllis E. Rumpp
phyllis.rumpp@cabrini.edu

George W. Rumpp
George.W.Rumpp@cabrini.edu

Application of Meteorology *is planned to be an interesting, unique and exciting science course, utilizing materials developed and supported by the* American Meteorological Society. *Our ultimate purpose is to provide a meaningful and valuable experience. This document is intended to assist with that process and provide you with the information you need to understand the course and expectations. If you have any questions, please ask. It is our desire that you understand our expectations, plan to apply yourself diligently, and find the program to be a great experience.*

Prerequisites

Prior to taking this course, the student must have satisfied his or her mathematics and instructional technology (ITR) core requirements.

Course Description

This course is an all-encompassing study of the science of the atmosphere by following weather as it is happening, in real-time via the Internet. By using the textbook and study guide, along with the web-site, background information on the properties of the atmosphere, the interactions between the atmosphere and other components of the Earth system, and the principles that govern weather and climate will be incorporated into an exciting learning experience. Using an inquiry based approach; critical thinking skills will be promoted as the analysis and interpretation of real-time weather information are developed.

Text and Internet URL

Online Weather Studies, 2nd Edition, Dr. Joseph M. Moran, 2002;
Online Weather Studies Study Guide, American Meteorological Society, 7th Printing 2004.

ISBN: 1-878220-66-7

Online Activities at the *Online Weather* URL:
http://www.ametsoc.org/amsedu/online/info/index.html#access
You will be provided with account and password information in class.

Outcome Statements for the Distribution Area of the Core Curriculum

Natural Science (S)
As a result of this course, students will demonstrate

- an understanding of the core principles of science and the interrelationships between science and other disciplines.
- an understanding of the impact of scientific discovery and technology on society.
- an understanding of the scientific method through laboratory experimentation and data analysis.
- scientific literacy and effective communication of scientific ideas.

Objectives

k. To utilize and understand the sources of weather information.
l. To identify the composition and structure of the atmosphere.
m. To describe the balance and control of temperature in the troposphere.
n. To integrate the effects of air pressure, humidity, clouds and precipitation on our weather.
o. To identify the forces governing atmospheric circulation.
p. To manipulate live data involving weather systems.
q. To identify the dangers of hazardous weather, now and then.
r. To competently be able to utilize weather analysis and forecasting.
s. To be able to recognize and name atmospheric optics.
t. To describe the forces in climate and climate change.

Project-Based Science pedagogically guides this course. This approach engages learners in exploring their world by the investigation of meaningful, driving questions. The course incorporates these questions with investigations, collaboration, technology, and artifacts. Each investigation has printed and electronic components that make use of meteorological and climatologically data available on the Internet. Investigations engage students in observation, prediction, data analysis, inference, and critical thinking skills. The course presents opportunities for students to collaborate with their teachers and fellow students as together they negotiate understanding of weather systems.

Assignments and Meeting Dates

Classes will meet on Thursdays from 1:50 PM – 3:05 PM in rooms 103 or 358.

Week	***Date***	***Topic and Online****	***Due***
1	2-Sep	Introduction, review of syllabus and course objectives, online and course processes, the scientific method.	

2	9-Sep	*Monitoring Weather*; Introduction of Research Paper	Ch. 1	Activities A & B Complete *Review…* and *Critical Thinking* Questions
3	16-Sep	*Atmosphere: Origin, Composition, and Structure*	Ch. 2	Activities A & B – submit Ch. 1., Complete *Review…* and *Critical Thinking* Questions
4	23-Sep	*Solar and Terrestrial Radiation*	Ch. 3	Activities A & B - submit Ch. 2., Complete *Review…* and *Critical Thinking* Questions
5	30-Sep	*Heat, Temperature and Atmospheric Circulation*	Ch. 4	Activities A & B - submit Ch. 3., Complete *Review…* and *Critical Thinking* Questions
6	7-Oct	**Dean's Holiday - No class** Work *on Chapter 5: Air Pressure.* Chapter 4 online and text assignments are to be completed and turned in to one of the instructors by this date (see right).	Ch. 5	Activities A & B and *Questions for Review* and *Critical Thinking Questions* are to be submitted for Chapter 4.
7	14-Oct	*Humidity, Saturation and Stability* Discussion of last week's topic	Ch. 6	Activities A & B – submit Ch. 5., Complete *Review…* and *Critical Thinking* Questions **First Exam: Chapters 1-4**
8	21-Oct	*Clouds, Precipitation, and Weather Radar;* Investigation: Supercooling, Clouds and Precipitation	Ch. 7	Activities A & B – submit Ch 6., Complete *Review…* and *Critical Thinking* Questions
9	28-Oct	*Wind and Weather;* El Nino and La Nina Investigation	Ch. 8	Activities A & B – submit Ch. 7, Complete *Review…* and *Critical Thinking* Questions
10	4-Nov	*Atmosphere's Planetary Circulation*	Ch. 9	Activities A & B – submit Ch. 8, Complete *Review…* and *Critical Thinking* Questions **Second Exam: Chapters 5-8+**
11	11-Nov	**No Class: Cabrini Day** Work on Chapter 10: *Weather Systems of Middle Latitudes.* Chapter 9 online and text assignments are to be completed and turned in to one of the instructors by this date (see right).	Ch 10	Activities A & B and *Questions for Review* and *Critical Thinking Questions* are to be submitted for Chapter 9.
12	18-Nov	*Thunderstorms and Tornadoes* Discussion of last week's topic	Ch 11	Activities A & B – submit Ch. 10, Complete *Review…* and *Critical Thinking* Questions; **Project Presentations**
13	25-Nov	Thanksgiving - no class		
14	2-Dec	*Tropical Weather Systems* Collegial Sharing	Ch 12	Activities A & B – submit Ch. 11, Complete Progress Questions; **Project Presentations**
15	9-Dec	Collegial Sharing		Activities A & B – submit Ch. 12, Complete Progress Questions; **Project Presentations**
16		Week of Dec 13: Exam date to be determined (class date Dec 16) * Chapters are posted online at the beginning of the week noted, usually on Monday		**Final Examination:** **Chapters 9-12+**

Other Important Dates

September 2 (F)	First Class Meeting
September 6 (M)	Labor Day – no Cabrini classes
September 7 (T)	Last day to Drop/Add/Declare Audit
October 20 (W)	Semester Midpoint
November 10 (W)	Last day to Withdraw from a course

Requirements

1. Attend all meetings of the class. A penalty of 2% for the first absence and 5% for each subsequent absence will be assessed against the final grade. You will be expected to be on time for class. Three late arrivals will constitute one absence for grading purposes. If you arrive later than the midpoint of the class, it will be considered an absence. Further, in-class assignments and labs can not be made up and you will earn a zero for any lab or activity assignment based on the material from that class unless a **documented**, valid excuse is provided. Properly documented absences, including Cabrini-sponsored athletic events and religious holidays, particularly with advance notice will be considered and may be granted a waiver from the penalty by the instructor. *Please therefore think carefully about skipping class.*
2. Read the assigned chapter in the text and complete the *Chapter Review* and two *Learning Activities* assigned each week beginning on the first day of class. The first part of each *Learning Activity* is in the *Study Guide* and the second part is accessed using the web page.
3. Read any assigned supplementary materials.
4. Assignments are due according to the schedule above. You may submit them using email, FAX, or in person, no later than the following class meeting. The instructor will confirm the receipt of the materials using email if submitted by fax or email. Points will be subtracted from your grade at the rate of one point for each activity late per day the assignment is late. The final chapter will be delivered to the instructor prior to or at the final class meeting.
5. Examinations will consist of selected response and constructed response questions related to chapter readings, progress questions and as reinforced by the activities. The total of each exam will be 60 points with selected response questions worth one point each and constructed response items worth up to 10 points each. Chapter Progress pages, activities and course objectives will serve as a study guide for each exam. **Successive exams may incorporate concepts from earlier chapters.**
6. The research paper will not exceed three pages of text that appropriately discusses and documents the impact of any weather phenomenon on a given population of people. References, pictures, graphs and similar supporting materials will not count in the three pages of text. This will be presented to the class in a brief (no more than five minutes) presentation with the order of presentation to be determined by a lottery for dates and sequence of individual classroom presentations assignment, in a format to be required by the instructors. **A detailed description of requirements for the project and a rubric for assessment of the paper and presentation, including supporting media and expectations, will be provided**. At the student's request,

with at least one week's notice to the instructor, the presentation may be made at any earlier class meeting if it can be scheduled.

7. A range of reference and background sources in addition to individual research will be expected.

   For the written portion of the research:

   - The writing and citation style incorporated must be consistent using either APA or MLA models. You may choose a style expected to be used in your field.
   - Margins must be one-inch or 2.5 centimeters on all four sides.
   - Font used must be either Arial or Times New Roman of size 12.
   - Directly quoted material may not exceed more than 10% of the text.
   - Files forwarded to the instructor must be in a form compatible with Microsoft *Word* or *Excel*.
   - *The text of the final paper will be submitted using* Turnitin.com *and a hard copy provided at the time of the presentation to the class. Instructions on the use of* Turnitin.com *will be made available to all students.*

All online transmission of work and all communications via email from students will be by the assigned Cabrini email address. Any correspondence by other email address or other means will be considered unofficial unless a specific confirmation is received from the instructor.

Grading

1. Grades will be assigned according to the college grading scale as published in the *Undergraduate Catalog*. Refer to page 55 of the 2004-2005 catalog. All requirements must be met satisfactorily as determined by the instructor.

2. Grades may be withheld or recorded as an "Incomplete" or "Failure" if all course requirements are not met by the student.

3. Students may complete an optional chapter's activities to earn up to 10 additional points for each activity, not to exceed the maximum total for "Learning Activities," **if** all assigned activities and examinations are completed.

Learning Activities	24 x 10 points *each*=	240	points
First Exam		60	points
Second Exam		60	points
Final Exam		60	points
Research Paper and Presentation		80	points
Total		500	points

4. A missed exam may not be made up. However, you may drop the lowest of the first two exams, if you so desire, upon advice to your instructor prior to the final examination. The final exam and the research paper and presentation must be completed at the scheduled time for each.

5. Your grade will be based upon earned and awarded points as a percentage of the total possible points less appropriate deductions (such as those for attendance). Your grade will be determined as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
>94	90-93.9	87-89.9	84-86.9	80-83.9	77-79.9	74-76.9	70-73.9	67-69.9	64-66.9	60-63.9	<60

Materials Needed

1 three-ring binder (3 inch)
1 package colored pencils
1 three-hole punch
Online access for gathering data and assignments
Ability to upload materials or a Fax machine
Computer and color printer