Syllabus for ATMS 261 – Computer Applications in Meteorology – Spring 2015

Date	Topic	Project*
F 16 Jan 2015	Intro/ Intro to Linux	Getting started
F 23 Jan	Linux command window	Group Project #1
F 30 Jan	VIS5D	Group Project #2
F 6 Feb	GARP	Group Project #3
F 13 Feb	FORTRAN and scripting	Group Project #4
F 20 Feb	Python	Group Project #5
F 27 Feb	Moving data	Group Project #6
F 6 Mar	Excel	Group Project #7
F 20 Mar	Minitab/Matlab	Group Project #8
F 27 Mar	GIS and Google Earth	Group Project #9
F 3 Apr	MS Movie Maker	Group Project #10
F 10 Apr	Summary	Work on final project
F 17 Apr	"	"
F 24 Apr	"	"

*assignment completed before class ends on this date

Description

A course designed to equip the student with tools for effective communication, and data analysis and manipulation with a focus on applications in the atmospheric sciences. These tools will be introduced for computers having Linux (UNIX) and Windows operating systems.

Student Learning Outcomes

The computer skills introduced in this course represent the starting point of computer competency development that will eventually aid the student in

- generating scientifically meaningful results from applying mathematical devices to the atmospheric governing equations
- developing their ability to communicate scientific information to experts and laypersons through computer media
- nurturing an ability to make a significant contribution to a team-based research effort

Outline

        Introduction
        Applications within the Linux Operating System
                The Linux command window
                Office Tools
                Communication Tools
                        Visualization
                                VIS5D
                                GARP/GEMPAK
                                McIDAS
                                NCAR-Graphics
                Data Manipulation Tools
                        crunching data (making calculations)
                                FORTRAN
                                Python
                        moving data (push/pull)
                                  FTP
                                telnet
                                ssh/kerberos
                                LDM
        Applications within the Windows Operating System
                Data Manipulation Tools
                        moving data (push/pull)
                                  Online weather data resources
                                FTP
                                telnet
                                ssh/kerberos
                      crunching data (making calculations)
                                Excel
                                Minitab
                                Matlab
                                IDL
                      displaying data
                                GIS
                Office Tools
                      MS Word
                Communication Tools
                      Visualization
                              Powerpoint
                              Movie Maker
                The DOS command window
                Remote Logins

Grading

Preparatory Projects	20%
Final Project	30%
Attendance	50%
Total	**100%**

92% < total score ≤ 100%	A
90% < total score ≤ 92%	A-
88% < total score ≤ 90%	B+
82% < total score ≤ 88%	B
80% < total score ≤ 82%	B-
78% < total score ≤ 80%	C+
72% < total score ≤ 78%	C
70% < total score ≤ 72%	C-
68% < total score ≤ 70%	D+
60% < total score ≤ 68%	D
total score ≤ 60%	F

Preparatory Projects

Weekly projects will be assigned during each class and are intended to aid in improving your understanding of the computer tools needed to complete the case study analysis associated with the course final project. Due to the limited number of computers in the RRO 209 lab, projects will be worked on in groups that are assigned by the instructor. Each individual within the group will receive an identical grade.

Final Project

Each of the Linux (Unix) and Windows applications introduced in the weekly preparatory projects provide background and preparation of a virtual "toolbox" that will allow each student team in ATMS 261 to meet the analysis requirements of a winter weather event that impacted western North Carolina. The final project will consist of a video documentary and an accompanying summary paper describing the impact of the weather event and focuses on the analysis of the meteorological ingredients that came together with the right timing and in the right amounts to make case study unusual. The final project is due at the beginning of the final exam period, at which time we will watch and evaluate each of the student team videos.

Attendance

One unexcused absence drops the attendance score to **40%**. Two unexcused absences drop the attendance score to **25%** of the final grade. Three or more unexcused absences results in the complete loss of the attendance score (**0%**).

Exams

None

Final Exam

The written summary paper of your final project will be turned in at the beginning of the final exam period and the video documentary portion of your final project will be viewed and evaluated during the final exam period. There will be no final examination in this course.

Assignment/Quiz/Exam Policy

Assignments are to be handed in <u>before the end of class</u> on the date they are due. Assignments handed in after the start of lecture are considered late until 4:30 pm on the date they are due and will be have an automatic 10% deduction from their final score. Assignments handed in after 4:30 pm on the date they are due will receive no credit. Accommodations can be made under special conditions.

Instructor

Doug Miller   http://www.atms.unca.edu/dmiller/courses/index.htm

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Textbook

None required

References

Given as necessary

Disabilities

Contact Prof. Miller early in the course if you have a disability that requires special accommodation.

Academic Integrity

Cheating or plagiarism results in a failed assignment, quiz, or exam on the first infraction. A second infraction results in course failure and a report to the UNCA administration. See http://www.unca.edu/catalog/academicregs.html under "Student Responsibilities" for a refresher on the UNCA policy.