



NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Course Syllabus

Course Information

<i>Course Number/Section</i>	PHYS 789
<i>Course Title</i>	Graduate Seminar
<i>Term</i>	Spring 2018
<i>Days & Times</i>	3:00 – 3:50 W 307 Gibbs Hall

Professor Contact Information

<i>Professor</i>	Dr. Yuh-Lang Lin
<i>Office Phone</i>	(336) 285-2127
<i>Email Address</i>	ylin@ncat.edu
<i>Office Location</i>	302H Gibbs Hall
<i>Office Hours</i>	5:00-6:00W or by appointment
<i>Other Information</i>	MesoLab website: http://mesolab.org

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Undergraduate Atmospheric Dynamics, Fluid Dynamics or equivalent (solid calculus, PDE and physics backgrounds)

Course Description

This course focuses on numerical modeling of hurricanes, tropical meteorology and climatology, midlatitude cyclones, storms, and weather systems, and severe local storms affecting the US continent, and other weather phenomena. Students are required to pursue research on a subtopic and make presentations of the results. In particular, the use of the Weather Research and Forecast (WRF) model in simulating hurricanes and other weather phenomena will be emphasized in the research. In order to facilitate the scientific research and discussions, NCAT ISET Center PIs and collaborators who are working on weather related modeling and data analysis are invited to participate in the class.

Student Learning Objectives/Outcomes

- Objective:** Use analytical thinking skills to evaluate information critically
- Outcome:** Students will demonstrate the ability to answer conceptual questions raised during their presentations.
- Objective:** Effectively relate basic ideas and concepts to more sophisticated atmospheric systems in tropics.
- Outcome:** Students will demonstrate the ability to summarize their research and present it to the class effectively and participate in discussions.

Required Textbooks and Materials

Required Texts

None

Suggested Course Materials

Suggested Readings/Texts

- (1) Tropical Cyclones and Tropical Meteorology
 - Laing, A., and J.-L. Evans, 2009: "Introduction to Tropical Meteorology" (A free book on COMET, UCAR):
https://www.meted.ucar.edu/loginForm.php?urlPath=tropical/textbook&go_back_to=http%253A%252F%252Fwww.meted.ucar.edu%252Ftropical%252Ftextbook%252F#
 - Anthes, 1982: "Tropical Cyclones – Their Evolution, Structure and Effects" (AMS)
 - Holton, J., 2004: "Intro. to Dynamical Meteorology" (Academic Press), Ch. 11
 - Emanuel, K. A., 2005: "Tropical Meteorology" (An MIT OpenCourseWare free book: search for "MIT OpenCourseWare" => "Tropical Meteorology"
<http://ocw.mit.edu/OcwWeb/Earth--Atmospheric--and-Planetary-Sciences/12-811Spring-2005/CourseHome/index.htm>)
 - Lin, Y.-L., 2007: "Mesoscale Dynamics" (Cambridge U. Press), Ch. 9.

(2) Tropical Climate

- Hastenrath, S., 1988: Climate and Circulation of the Tropics (Reidel, 455pp.)
- Riehl, H., 1979: Climate and Weather in the Tropics (Academic Press)

(3) Synoptic and Mesoscale Dynamics

- Holton, J. R., and G. J. Hakim, 2013: An Introduction to Dynamic Meteorology (Elsevier Academic Press)
- Bluestein, H. B., 1993: Synoptic-Dynamic Meteorology in Midlatitude I & II (Oxford)
- Lin, Y.-L., 2007: Mesoscale Dynamics (Cambridge)

(4) Storm Dynamics

- Houze, R. A., Jr.: Cloud Dynamics (Academic Press)
- Cotton, W. R., and R. A. Anthes: Storm and Cloud Dynamics (Academic Press)
- Lin, Y.-L., 2007: Mesoscale Dynamics (Cambridge)
- Markowski, P., and Y. Richardson, 2010: Mesoscale Meteorology in Midlatitudes (Wiley-Blackwell)

Assignments & Academic Calendar

Topics, Reading Assignments, Due Dates, Exam Dates (optional: withdrawal dates, holidays, etc.)

Presentation Schedule for EES 992-2 and PHYS 789-1

Date	Pres. #	Presentation Title	Presenters
1/10	1	Introduction	Dr. Lin
1/17	2	Introduction to Atmos Sci faculty research	Atmos Sci faculty
1/24	3	Introduction to Atmos Sci faculty research	Atmos Sci faculty
1/31	4	Introduction to Atmos Sci faculty research	Atmos Sci faculty
2/7	5	(1) Weather briefing (2) Student presentations	(1) To be announced (TBA) (2) TBA
2/14	6	(1) Weather briefing (2) Student presentations	(1) (2)
2/21	7	(1) Weather briefing (2) Student presentations	(1) (2)
2/28	8	(1) Weather briefings (2) Student presentations	(1) (2)
3/5-9		Spring Break	
3/14	9	(1) Weather briefings (2) Student presentations	(1) (2)
3/21	10	(1) Weather briefing (2) Student presentations	(1) (2)
3/28	11	(1) Weather briefing (2) Student presentations	(1) (2)
4/4	12	(1) Weather briefing (2) Student presentations	(1) (2)
4/11	13	(1) Weather briefing (2) Student presentations	(1) (2)
4/18	14	(1) Weather briefing (2) Student presentations	(1) (2)
4/25	15	(1) Weather briefing (2) Student presentations	(1) (2)

5/2	16	(1) Weather briefing (2) Student presentations	(1) (2)
5/7-11		Final Exam Week	No Exam for this class

Grading Policy

- (1) Attendance and participation in discussions 15%
 - (2) Weather Briefing 15%
 - (3) Presentations 40%
 - (4) Report (based on presentation ppt file) 30%
- (Presentation material has to be submitted within a week of presentation)

Course Policies

Make-up exams

Not applicable

Extra Credit

No Extra Credit

Late Work

Not applicable

Special Assignments

Not applicable

Academic Integrity

Enrollment in the class means that you agree to abide by the expectations of North Carolina A&T State University about academic integrity. For specific information refer to your Student Handbook. Also, refer to the most current Undergraduate Bulletin for the academic dishonesty policy. The North Carolina A&T State University's Academic Honor Code will be enforced.

Your responsibilities in the area of honor include, but are not limited to, avoidance of cheating, plagiarism and improper or illegal use of technology. Your presentations, assignments, and quizzes are expected to be your own work. Any questions about these should be directed to the professor. It is permissible to request assistance from a librarian when doing database research as long as the selection and organization of the research for the presentation is in your own work.

Class Attendance

The College of Arts and Sciences requires students to be on time for class and to attend class on a regular basis. If the student has unexcused absences, is late for class or leaves class early, the student's grade may be lowered.

(See attendance policy set forth by the instructor in the course syllabus.)

Excused absences will comply with the following university policy on make up work:

"Sickness (verification needed); death of relative (immediate family); participation in an approved university related activity; acting in the capacity of a university representative (band, choir, sports, related travel, etc.); extraordinary circumstances including court appearances, family emergency~ at the discretion of the professor, etc. require a signed statement.

NOTE: "Other reasons for class absences are not acceptable."

Classroom Citizenship

Normal classroom decorum is expected.

Technical Support

If you experience any problems with your A&T account you may call Aggie Tech Support (formerly Help Desk) at 336.334.7195.

Field Trip Policies / Off-Campus Instruction and Course Activities

Not applicable

Student Affairs website <http://www.ncat.edu/~staffair/>;

Student Handbook: <http://www.ncat.edu/~deanofst/Handbook.htm>;

Student Travel Procedures and Student Travel Activity Waiver

<http://businessfinance.ncat.edu/policies%20and%20procedures%20index.htm>

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address: Student Travel Procedures and Student Travel Activity Waiver

<http://businessfinance.ncat.edu/policies%20and%20procedures%20index.htm>.

Additional information is available from the office of Student Affairs, please check the website at <http://www.ncat.edu/~staffair/>.

Below is a description of any travel and/or risk-related activity associated with this course.

Other Policies (e.g., copyright guidelines, confidentiality, etc.)

Student Handbook: <http://www.ncat.edu/~deanofst/Handbook.htm>

Family Educational Rights and Privacy Act

http://www.ncat.edu/~registra/ferpa_info/index.htm

Student Conduct & Discipline

North Carolina A&T State University has rules and regulations that govern student conduct and discipline meant to ensure the orderly and efficient conduct of the educational enterprise. It is the responsibility of each student to be knowledgeable about these rules and regulations. Please consult the undergraduate

http://www.ncat.edu/~acdaffrs/Bulletin_2008-2010/2008-2010_Undergraduate_Bulletin.pdf

and graduate bulletins: 2008-2010 Graduate Catalog.doc

<http://www.ncat.edu/~gradsch/cstudents.html> and student handbook

<http://www.ncat.edu/~deanofst/Handbook.htm> for detailed information about specific policies such as academic dishonesty, cell phones, change of grade, disability services, disruptive behavior, general class attendance, grade appeal, incomplete grades, make up work, student grievance procedures, withdrawal, etc.

These descriptions and timelines are subject to change at the discretion of the Professor.

01.27.09 – Submitted to Faculty Senate by LEW