

TROPICAL METEOROLOGY

ATMS-345

Fall 2024

Course Description:

The tropical atmosphere is a unique but critically important component of our earth-atmosphere system. It serves as the driving force of the general circulation, creates destructive storms, and alters global weather on many time scales. This course will examine the characteristics and processes of the tropics and how they connect to weather and climate on a global scale.

Class Meetings: MW 9:30–10:45 a.m. in RRO 238

Prerequisites: ATMS-305

Credit hours: 3

Professor

Dr. Caitlin Crossett

Office: RRO 251

Phone: 828.250.3888

Email: ccrosset@unca.edu

Office Hours: M 2–3 p.m., and
TuTh 10–11 a.m. or by appointment:

<https://calendly.com/ccrosset>

GENERAL INFORMATION

Textbooks: (1) Laing, A. and J. L. Evans, 2016: *Introduction to Tropical Meteorology*, Version 4.0, COMET Program https://www.meted.ucar.edu/tropical/textbook_2nd_edition/
(2) Hennon, C. C., 2020: *Tropical Meteorology A First Course*, 6th Ed. (available on Moodle)

Webpage: The course page on Moodle will provide lecture slides, announcements, assignments, and sources of additional information. Please get in the habit of checking it frequently.

Visit <http://www.atms.unca.edu/slos.shtml> for a list of the student learning outcomes for the Department of Atmospheric Sciences.

ASSIGNMENTS

Homework: Homework questions will relate principles learned in class to different circumstances to build mastery of course material. You are encouraged to work with other students on homework, but you must turn in your own work. Even if you don't get the correct answer, you will get partial credit for showing your work.

Exams: Two exams, a midterm and a final, will be given in this course. Each exam will only cover material from before the previous exam (i.e., not cumulative). Although exams are not cumulative, many topics in this course build upon each other, so reviewing course material throughout the semester will be beneficial to you in this course. You are expected to take the exams during the scheduled time unless other accommodations (i.e., University sponsored events, religious observances, etc.) have been cleared through me before the exam.

Tropical Weather Briefings: Two times throughout the semester each student will give a short tropical meteorology weather briefing. Each presentation will last ~10 minutes and are meant to

cover the current state of the tropics including but not limited to, monsoons, tropical waves, tropical cyclones, ENSO, the Madden-Julian Oscillation, etc. More information is located on the tropical weather briefings handout.

Course Work	% of Grade
Homework	45%
Weather Briefings	15%
Midterm Exam	20%
Final Exam	20%

A	92–100	C	72.0–77.9
A-	90.0–91.9	C-	70.0–71.9
B+	88.0–89.9	D+	68.0–69.9
B	82.0–87.9	D	60.0–67.9
B-	80.0–81.9	F	< 60.0
C+	78.0–79.9		

EXPECTATIONS/ COURSE POLICIES

Late Work: I will accept late work for a 10% per day late penalty. No exams or quizzes will be given after the day they have been assigned in class (unless arrangements have been made with me). **LIFE TOKEN:** You will be allowed one 48-hour extension on one homework assignment for no penalty. You must clear this extension with me no less than 24-hours before the due date.

Academic Honesty: Any act of plagiarism, cheating, or use of unauthorized material or assistance is academic dishonesty. A person who knowingly assists another in cheating is likewise guilty of cheating. It is up to my assessment of the gravity of the offense, that a student may be punished by a failing grade or a grade of zero for the assignment or test, or a failing grade in the course. I expect that you will exercise integrity in all quizzes, exams, and written assignments. Please email me or come in during office hours if you have additional questions or need clarification on any point.

Attendance/ Participation: Your success in this course is tied to attending lectures regularly and keeping up with course content, excessive absences will impact your grade through your understanding of course material.

Technology Use: You may use laptops or tablets during class to take notes, but you may not use them for watching TV, doing work for other classes, or anything else not related to course discussion. I reserve the right to change this policy should distractions become an issue. If you have accommodations through the Office of Academic Accessibility (accessibility.unca.edu) for electronics use during class, please come talk to me.

Artificial Intelligence Tools Policy: Using an AI-content generator such as ChatGPT to complete assignments without proper attribution violates academic integrity. By submitting assignments in this class, you pledge to affirm that they are your own work and you attribute use of any tools and sources (guides to citing AI tools can be found [here](#)). Approved uses of ChatGPT are limited to: Brainstorming ideas, fine tuning research questions, assistance with coding (i.e., finding bugs), and locating supporting information such as journal articles and web pages. If you are unsure if a specific use of ChatGPT is approved, please email, or come talk to me.

Communication: I will primarily contact you about course information through email or Moodle so please get in the habit of checking both every day! Therefore, email is also the best way to reach me with any questions/comments/concerns (ccrosset@unca.edu). I will monitor email from 8a.m.–5p.m. during the work week and intermittently outside of these hours and during the weekend.

Respectful Classroom Environment: I ask that everyone be respectful of other students, the instructor, and any guest presenters while in class. Just as you expect others to actively listen to your diverse set of thoughts and perspectives, I ask that you do the same.

UNIVERSITY RESOURCES

Accessibility: UNC-Asheville values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and/or make an appointment to meet with the Office of Academic Accessibility as soon as possible. To make an appointment, call 828.232.5050 or email academicaccess@unca.edu. Learn more about the process of registering, and the services available through the Office of Academic Accessibility here: accessibility.unca.edu

University Writing Center: The University Writing Center, in the library, offers free, one-on-one sessions with student writing consultants—both in-person and online. We work with writing at every stage of the writing process, from brainstorming to polishing, in a judgment-free environment. To make an appointment, visit writingcenter.unca.edu.

Math Lab: Staffed with qualified tutors, the Math Lab is here to support you in math! If you are in any course that involves math you can drop into the Math Lab on the third floor of Robinson Hall (RRO 323) anytime during the hours listed on this website: <https://math.unca.edu/learn/math-lab/>.

Mental Health Support: As a student, you may experience a range of challenges that can interfere with learning, such as stressful life events, experiences of anxiety and/or depression, self-harm, substance use, and/or unusual difficulty with ordinary life activities. The increased stress of school can also make existing mental health struggles more difficult to manage. Support is available and treatment can help. Learn more about the confidential mental health services UNC Asheville provides to support student success at <https://www.unca.edu/life/health-counseling/>. The Health and Counseling Center is located at 118 W.T. Weaver Boulevard. Appointments can be made by calling 828-251-6520. A UNC Asheville counselor on call is available after 5 p.m. and on weekends; the counselor on call can be accessed by calling the UNCA Campus Police dispatcher at 828-251-6710. Additionally available after hours and on weekends, call the Bulldog Health Link at 1-888-267-3675, where you can get immediate support for mental health, medical consultation, concern for a friend, and/or community resources. In case of an emergency, you can also call RHA's Mental Health Mobile Crisis Unit at 1-888-573-1006.

COURSE SCHEDULE (subject to change) – ATMS 345 – Fall 2024

Week	Date	Topic	Reading	Assignment
1	19-Aug	Introduction/ What are the Tropics?	Comet: Chs. 1.1, 1.3	
	21-Aug	Climatology of the Tropics	Comet: Chs. 1.4, 1.6-1.7, 1.9 Hennon: Ch. 2-3	
2	26-Aug	Climatology of the Tropics		
	28-Aug	Climatology of the Tropics		
3	2-Sep	Labor Day Holiday - NO CLASS		
	4-Sep	Tropical Waves	Comet: Chs. 4.1.2, 7.1.1 Hennon: Ch. 4	
4	9-Sep	Tropical Waves		HW1
	11-Sep	Tropical Waves		
5	16-Sep	Hadley Cells		
	18-Sep	Hadley Cells		Sign up for Briefings
6	23-Sep	Walker Circulation	Comet: Ch. 4.2.1	
	25-Sep	ENSO	Comet: Ch. 4.2.1 Hennon: Ch. 13	
7	30-Sep	ENSO		HW2
	2-Oct	Madden-Julian Oscillation	Comet: Ch. 4.1.1 Hennon: Ch. 5	WB1
8	7-Oct	Fall Break - NO CLASS		
	9-Oct	Exam #1		
9	14-Oct	Madden-Julian Oscillation		WB2
	16-Oct	Monsoons	Comet: Ch. 3.5	WB3
10	21-Oct	Monsoons		WB4
	23-Oct	TC Climatology	Comet: Chs. 8.1, 8.6 Hennon: Ch 7	WB5
11	28-Oct	TC Structure		HW3
	30-Oct	TC Formation	Comet: Chs. 8.2-8.3, 8.6; Hennon: Ch 8	WB6
12	4-Nov	TC Formation		WB7
	6-Nov	TC Intensity	Comet: Chs. 8.4-8.5 Hennon: Ch. 10	WB8
13	11-Nov	TC Intensity		WB9
	13-Nov	Guest Lecture: Dr. Carl Schreck NCICS		
14	18-Nov	TC Motion	Comet: Ch. 8.7 Hennon: Ch. 9	WB10
	20-Nov	TC Impacts	Comet: Ch. 8.8 Hennon: Ch. 12	HW4
15	25-Nov	Climate Change in the Tropics	Hennon: Ch. 14	WB11
	27-Nov	Thanksgiving Break - NO CLASS		
16	2-Dec	Climate Change in the Tropics		WB12
Monday	9-Dec	8:00-10:30AM: Exam #2		