

# Syllabus

## ATMOSSC 5940

Synoptic Lab 1: Weather Observations, Analysis and Forecasting

Term: Spring 2026

# Credit Hours: 2

In Person Monday/Wednesday 2:25-3:45, Derby 0070

Prerequisites: GEOG 1900 or 5900

## Course overview

### Instructor

- Dr. Jana Houser
- Email Address: [houser.262@osu.edu](mailto:houser.262@osu.edu)
- Office Location: 1124 Derby
- Office Hours: Mondays 10:30-12:00; Open door
- Course Zoom Link:  
<https://osu.zoom.us/j/92653370097?pwd=ndiREcS9p9KV2DKXqJq7dnBGY9IKFJ.1>

**Note:** My preferred method of contact is via email.

### Teaching Assistant

- Name: Brian Rakoczy
- Email Address: [Rakoczy.4@buckeyemail.osu.edu](mailto:Rakoczy.4@buckeyemail.osu.edu)
- Office Location: Derby 1131
- Office Hours: Mon, Wed 1:00-2:00

### Course description

*The overarching goal of this course is to train students to critically analyze weather conditions using a variety of observations and sources, as well as operational forecast models. Students are introduced to the basic sources of meteorological data, and the ways by which those data are collected, measured and displayed. Emphasis is placed on daily applications of course topics to real-world, current weather events and conditions, to allow students to become familiar with where they can obtain data themselves, how they should analyze the data, and how the observations relate to weather conditions and phenomena, and how they can be used for forecasting future atmospheric conditions.*

**Course expected learning outcomes**

- 1) *Explain* how meteorological observations are made by a variety of instruments, how these instruments work, and what their limitations are
- 2) *Use and analyze* surface and upper-air charts
- 3) *Identify* important synoptic-scale features at the surface and aloft using maps (e.g. high and low pressure systems, fronts, troughs, ridges, the jet stream, etc.)
- 4) *Interpret* directly observed data using a variety of tools including the station model, thermodynamic diagrams, METARs, etc.
- 5) *Interpret* remote observational data including satellite and radar observations in the context of physical understanding of the observations AND putting them in context of weather patterns
- 6) *Use* internet sources to acquire and analyze current meteorological conditions
- 7) *Explain* the basics of numerical weather modeling and how a forecast is generated.
- 8) *Make your own* forecasts and predictions using the tools and strategies introduced in this class.

**Credit hours and work expectations**

This is a **2-credit-hour course**. According to Ohio State policy ([go.osu.edu/credithours](http://go.osu.edu/credithours)), students should expect around 6 hours of engagement with the class each week to receive a grade of (C) average. Actual hours spent will vary by student learning habits and the assignments each week.

**Participation requirements**

Students are expected to attend class on a regular basis, complete all assignments, and be a positive contributor to in-class group quizzes, discussions, and activities.

Attendance Policy: While attendance is not formally part of your grade, I expect students to be at class EVERY LECTURE. Failure to do so will result in decreased peer evaluation grade and missed content delivery. IF YOU MISS CLASS FOR ANY REASON, Please communicate with me ASAP.

**Course communication guidelines**

The following section is a list expectations for how students can expect to communicate with me and with their peers, both in formal and informal communications.

**Writing style**

All writing for any work produced in this class is expected to be original work produced by the student. Use of appropriate grammar, writing techniques, scientific logic, and good hand writing are required.

### Tone and civility

This classroom is to be a safe space where students and professor are to be able to speak freely, be heard, and be respected. Debate and discussion are permitted and encouraged, so long as the conversation is civil and mutually respectful. Any individual who negatively disrupts the learning environment, demonstrates behavior or language that is unkind, disrespectful, demeaning, etc. will be asked to leave the classroom for the day.

### Citing your sources

If a source outside of course material is consulted for any assignment or other class work, students must cite this in their work, and provide a reference including website when possible.

## Course materials and technologies

### Textbooks

#### Strongly Recommended

Weather Analysis and Forecasting Handbook by Tim Vasquez (2<sup>nd</sup>; 2021 edition)  
ISBN-10: 978-0-9969423-4-8

### Course technology

#### Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available [at it.osu.edu/help](https://it.osu.edu/help), and support for urgent issues is available 24/7.

- Self-Service and Chat support: [it.osu.edu/help](https://it.osu.edu/help)
- Phone: 614-688-4357(HELP)
- Email: [8help@osu.edu](mailto:8help@osu.edu)
- TDD: 614-688-8743

#### Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen ([go.osu.edu/canvasstudent](https://go.osu.edu/canvasstudent))
- CarmenZoom virtual meetings ([go.osu.edu/zoom-meetings](https://go.osu.edu/zoom-meetings))

#### Required Equipment

- Computer: current Mac (MacOs) or PC with high-speed internet connection
- In order to complete activities, it is strongly recommended that you purchase a digital pen that will allow you to write directly on the digital word document assignments. If you don't know where to start, I recommend the XP Pen (I personally have the Deco 01), which can be used very easily with Macs or Microsoft systems by simply plugging in the tablet to a USB port
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

### Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at [go.osu.edu/office365help](https://go.osu.edu/office365help).

### Carmen Access

You will need to use BuckeyePass ([buckeyepass.osu.edu](https://buckeyepass.osu.edu)) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass website for more information: <https://buckeyepass.osu.edu/>
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

## Grading and instructor response

### How your grade is calculated

Assignment Category	Points and/or Percentage
Exams (2) – 2 midterms worth 15% each	30%
Weekly Quizzes	20%
Weekly Homework	20%
Final Project	10%
Class Participation	10%
WxChallenge	10%
Total	100%

### Description of major course graded components:

- **Exams (30%):** There will be two midterm exams worth equal weight (15% each) for this course. Exams are scheduled during class time and will be pencil and paper written exams. Exam dates are tentatively scheduled as shown on the last page.
- **Weekly quizzes (20%):** At the beginning of **MONDAY'S** class, there will be a quiz that will evaluate students' preparation for that week's material. The quiz will be taken twice, back to back, once independently and once in your group. Both grades will count for credit according to the percentages determined at the beginning of the semester. *If you are absent, you can make arrangements to take the quiz individually if you contact me **within 24 hours** of the absence.* If you are absent, your individual grade will also count as your group grade. You can have **2 make ups** during the semester

unless there are extenuating circumstances *that we have been in communication about*. If you are late to class, you will NOT be granted extra time to complete your quiz. The lowest quiz grade (individual AND group) will be dropped.

- **Homework (20%)**: If time allows, a portion of class time will be spent on homework problems. The goal of the homework is to get you to immediately apply what you have learned in class. Homeworks will be made available following MONDAY's class and will be due SUNDAY NIGHT at 9:00 PM. Each day late will be a 5% deduction.
- **Final Project (10%)**: In lieu of a final exam, there will be a final project due during finals week at the end of the semester. This project requires you to make observations of the atmosphere locally for a one-week time frame, and to put the observations into the context of synoptic weather systems. For more information including rubric, see the Final Project handout on Carmen.
- **WX Challenge (10%)**: Since this is an observations and forecasting class, you will be required to participate in the National WX forecasting Challenge. Each city will contribute 10 points towards the final grade in this category. Part of your grade (8/10 points) is based purely on participation. So, if you manually enter 100% of the forecasts, you will automatically receive partial credit (8/10 points). The remaining 2 points will be based upon forecast accuracy. If you place in the national consensus at the end of the forecasting timeframe for a city, you automatically earn full credit. If you are in the top 25% of forecasters, you earn 10/10. If you are between the top 50% and 25%, you earn 9/10. Anyone placing below the 50% mark will earn 8 points. You are allowed ONE missed forecast per city. Any additional missed forecasts will result in a 0.5 point deduction per missed forecast. (So, out of 8 forecasts, if you miss 3, you will lose 1 point. This point will be deducted from your final rank-based point assignment for the city at the end of the forecast period.) If you, for example, placed in the top 50% (but below 25%), AND you missed 3 forecasts, you will be assigned an 8/10 for that city. There are SIX cities throughout the semester.
- **Class participation (10%)**: *This grade is earned based upon your attendance and your group peer-evaluation*. Each group member will anonymously evaluate the others' preparation and participation in group quizzes and activities twice during the semester. The average of an individual's responses will be used as this grade unless there is an obvious outlier in the evaluations. See Group Evaluation Rubric handout on Canvas document.
- **Academic integrity and collaboration guidelines**

[Insert a detailed description regarding how students are meant to complete the assignment and what your part of the academic

## Late assignments

For each day late an assignment is turned in, there will be a 5% deduction in the grade.

For exams, no make-ups will be allowed unless there has been explicit communication with the instructor.

## Grading Scale

- 93-100: A
- 90-92: A–
- 87-89: B+
- 83-86: B
- 80-82: B–
- 77-79: C+
- 73-76: C
- 70-72: C–
- 67-69: D+
- 60-66: D
- Under 60: E

## Instructor feedback and response time

### Grading and feedback

If you email me, you can expect a response within 1-2 business days. Some days I am actively monitoring email and I may respond immediately. Other days, I deprioritize email and may not respond at all that day.

Homework assignments and exams will be graded within approximately one week of their due-date.

Quizzes will be graded the day they are taken.

## Other Classroom Information and Policies:

- **\*IMPORTANT ILLNESS AND TRAVEL RELATED INFORMATION:** This class will be offered in person. If you find yourself ill and/or needing to quarantine (or cannot attend class in person for some university sanctioned reason), I will live-stream our class via Zoom. **HOWEVER:** this is not a default option. **YOU MUST CONTACT ME PRIOR TO THE START OF CLASS** to make arrangements for me to start the Zoom.
- Additionally, there are a few times where I will be traveling over the semester (see the calendar on the last page). On these dates, I will deliver class via a remote lecture on Zoom, or students will be responsible for watching video lectures asynchronously.
- In the case of inclement winter weather, classes will transition to a virtual framework. The zoom link is found on the **FIRST PAGE** of the syllabus, and in the Announcements section of the Carmen Page.
- **AI:** The use of AI (e.g. Chat GPT) in assisting you to complete assignments, projects, or any other course material is discouraged. Materials are graded based upon the explanations provided in class and on Carmen by the instructor.
- Classes will begin AT 12:45 whether you are here or not. Please try not to be late as this disrupts the class environment.

- Make-up exams will only be allowed if arrangements have been made PRIOR TO the exam date or for unusual extenuating circumstances.
- Assignments, course materials and grades will be updated and posted on Carmen.
- If you have special needs for any reason, please see <http://www.ohio.edu/disabilities/> for information. I will only be able to grant you special permissions if you have the appropriate documentation of your disability and your needs.
- Cell phones and other electronic devices ARE ONLY PERMITTED for use in the classroom or the lab for polling purposes, for completing assignments or if you have a specific need that requires their use. In such situations please notify me of your need and provide any university documentation that supports it.
- For remote lectures, students are expected to have their cameras ON during the entire duration of Zoom meetings. I do not care if you just rolled out of bed, or if you are in last night's clothes, but I want to see your face, as do your classmates.
- Computers in the lab are ONLY to be used when working on assignments. Use of the computers during lectures is not permitted.

**\*NOTE: This course is executed following the “Team-based Learning” pedagogical method. As such, there will be distinct differences between this course and the traditional lecture-style class.**

- **Class Time:** You are expected to come prepared to class on MONDAY having already read through the week's course materials (book, Powerpoints and/or videos). Class material will be posted on Canvas and students may access this information at any time. In order to aid you in your preparation, I have provided you with book references matching the Powerpoint slide content. Book readings are not required, but are added to be an additional source of information. Content for assignments/exams will be based off powerpoints.
- **Monday's Class:** We will start class time immediately with the quiz. Following the quiz, we will identify topics/questions that students want to focus on for that week, and this material will be what we talk about in class time through a series of “mini lectures”. \*NOTE: There will be some powerpoint content that we do not explicitly talk about in class. But you will STILL be responsible for knowing this content. This is why it is SO IMPORTANT for you to come to class prepared. That way you know what to ask and what topics you need clarification on.
- **Wednesday's Class:** We will finish up with any remaining mini-lecture topics that were not covered on Monday. Otherwise, Wednesday will consist of active learning activities including group discussion-based multiple choice questions, and application-based homework questions for the remainder of the class time. The homework questions are similar to exam questions and are therefore good study tools.
- \*I will be on campus on Mondays and Wednesdays. Other days of the week, I will be working remotely. If you need to reach me, send me an email and we can set up a zoom meeting if necessary on days I am working remotely.

**Course Outline: (Updated 1/5/2026)****\*This course outline is subject to change based upon lecture/classroom pace and unforeseen circumstances**

<i>Week</i>	<i>Class Dates</i>	<i>Topics</i>	<i>Reading</i>	<i>Quiz #</i>	<i>HW #</i>
1	1/12-1/18	Welcome, syllabus, intro, review of atmospheric variables and instruments, WX Challenge rules	Not in book	Practice quiz on Wednesday	No HW
2	1/19-1/25	1/19 – No Class (MLK) NWS, ASOS, Surface model	2.1, 2.3-2.11, Appendix 2	Quiz 1 on Wednesday	HW 1 Due 1/25
3	1/26-2/1	1/26 – AMS CONFERENCE: Class delivery TBD 1/28 – METARs and TAFs	2.2, Appendix 11	No Quiz	HW 2 Due 2/1
4	2/2-2/8	Fronts, Isoplething, Surface analysis	Ch 5	Quiz 2 on Monday	HW 3 Due 2/8
5	2/9-2/15	Upper air observations/radiosondes, upper-air maps, jet stream, troughs/ridges	2.12, Ch 4, Appendix 4	Quiz 3 on Monday	HW 4 Due 2/15
6	2/16-2/22	Skew-T basics	Ch 3	Quiz 4 on Monday	HW 5 Due 2/22
7	2/23-3/1	<b>Exam 1: 2/23</b> Radar Intro	8.1-8.2, 8.4	No Quiz	No HW
8	3/2-3/8	Satellite Obs	Ch 7	Quiz 5 on Monday	HW 6 Due 3/2
9	3/9-3/15	Cloud types and their meaning	Appendix 1	Quiz 6 on Monday	HW 7 Due 3/9
10	3/16-3/22	NO CLASS SPRING BREAK		No Quiz	NO HW
11	3/23-3/29	Weather Systems	Ch 6	Quiz 7 on Monday	HW 8 due 3/23
12	3/30-4/5	Intro to NWP, operational models	Ch 10	Quiz 8 on Monday	HW 9 Due 3/30
13	4/6-4/12	MOS, <b>Exam 2: 4/8</b>		No Quiz	HW 10 Due 4/6
14	4/13-4/19	Operational Models, Climate, Global, Regional, Convective, etc.	Not in Book	Quiz 9 on Monday	No HW
15	4/20-4/26	Forecasting Strategies	Not in Book	Quiz 10	HW 11 Due 4/20
16	4/27-5/3	Finals: PROJECT DUE 4/29 11:59 PM	No class 4/27	No Quiz	No HW



## Academic policies

### Academic integrity policy

See **Descriptions of major course assignments**, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct: <http://studentlife.osu.edu/csc/>

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page ([go.osu.edu/coam](http://go.osu.edu/coam))
- Ten Suggestions for Preserving Academic Integrity ([go.osu.edu/ten-suggestions](http://go.osu.edu/ten-suggestions))

### Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

### Creating an environment free from harassment, discrimination, and sexual misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual



orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Civil Rights Compliance Office:

Online reporting form at <http://civilrights.osu.edu/>,

Call 614-247-5838 or TTY 614-688-8605,

Or Email [equity@osu.edu](mailto:equity@osu.edu)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Civil Rights Compliance Office to ensure the university can take appropriate action:

All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.

The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

## Intellectual diversity

Ohio State is committed to fostering a culture of open inquiry and intellectual diversity within the classroom. This course will cover a range of information and may include discussions or debates about controversial issues, beliefs, or policies. Any such discussions and debates are intended to support understanding of the approved curriculum and relevant course objectives rather than promote any specific point of view. Students will be assessed on principles applicable to the field of study and the content covered in the course. Preparing students for citizenship includes helping them develop critical thinking skills that will allow them to reach their own conclusions regarding complex or controversial matters.

## Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and

other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](https://ccs.osu.edu) or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

## **Accessibility accommodations for students with disabilities**

### **Requesting accommodations**

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of a viral infection or fever, please let me know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; or [slds.osu.edu](https://slds.osu.edu).

### **Religious accommodations**

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.



A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the Office of Civil Rights Compliance: <https://civilrights.osu.edu/>

Policy: [Religious Holidays, Holy Days and Observances](#)