Objective and Learning Outcomes: To examine the theoretical and applied aspects of atmospheric thermodynamics, and to explore properties of the planetary boundary layer.

In terms of the meteorology curriculum, this course focuses on the basic but essential understanding of energy and moisture transport in the atmosphere and their effect on the weather. The approach to these topics will be somewhat rigorous, but the underlying mathematics and its application to the topic will be discussed.

In terms of learning outcomes, we shall:

1. identify the main physical parameters of atmospheric thermodynamics;
2. recognize the important equations that describe the state of the atmosphere;
3. understand the meaning and applications of the first and second laws of thermodynamics;
4. become familiar with the interpretation and application of the Skew-T thermodynamic diagram;
5. comprehend the importance of the planetary boundary layer and microscale atmospheric processes.

Selected materials as necessary.

Please note that I will occasionally assign readings from the text that may or may not be covered explicitly in lectures. Note, also, that you will still be responsible for knowing the material, as it may show up somewhere down the line.

**Topics**: Some of the topics to be covered include (but are not limited to):

– Mathematical Tools and Problem Basics
– Thermodynamics Basics
– Physical Properties of the Air
– Atmospheric Pressure
– First Law of Thermodynamics
– Moist Processes
– Stability and Thermodynamic Diagrams
– Micrometeorology Basics
– Turbulence and Fluxes
– Planetary Boundary Layer Characteristics
– Other topics if time permits.

Lectures will be delivered electronically, with notes available prior to class meetings via Blackboard. When remote instruction becomes mandated, it will be asynchronous; details to follow when necessary.

**Communications Statement**: I make frequent use of email and Blackboard for communicating important information to students outside of class. Please pay attention to your email for important messages and respond accordingly. This is especially important during the COVID-19 pandemic, when circumstances may cause abrupt changes and disruptions to many (if not all) aspects of campus life, policies, and procedures, including this course.

I promise that I will make every effort to be as informative and transparent regarding any and every aspect of this class.
**Grading:** There will be two semester exams, along with a non-comprehensive final. The proposed distribution is as follows:

- Exams: 60%
- Homework: 40%

There will be *no* opportunity for *personalized* extra credit. The assignments and exams have been designed to assess your mastery of the learning outcomes discussed earlier in the syllabus. Therefore, if you fail to make arrangements to make up a missed assignment or exam, it will adversely affect your grade.

**Homework Assignments:** I will be assigning various homework exercises throughout the semester. Unless noted otherwise, any assignment will be due generally one week after it is given.

**Exams:** There will be a total of three exams. I do not typically have a time limit on exams, but I do have the following conditions:

1. If you are late to an exam session, you will be required to turn in your exam when the last person who started the exam on time turns her/his exam in, whether or not you have completed it.

2. If you do arrive for an exam after the first person completes her/his exam, you will not be allowed to take the exam and receive a grade of zero for said exam.

3. These policies apply unless prior alternative arrangements are discussed and approved by the professor. Such arrangements will be made at my sole discretion.

The following is a list of dates for the semester exams and the final; *plan accordingly.* Dates, of course, are subject to change.

- Exam 1: 28 September 2020 (Monday)
- Exam 2: 2 November 2020 (Monday)
- Final Exam: 18 December 2020 (Friday, 8:00 am, electronic)
Attendance: This is college. This is an upper-division course. We’re all big boys and girls, and you will be trusted to act accordingly, so formal attendance will not be taken. However, this will likely be a small class, and your presence (or absence) will be noted. Excessive unexcused absences will not act in your favor, especially with respect to a final grade; unexcused absences that exceed 15% of the scheduled class meetings could result in a failing grade. If the need arises that attendance be taken, then I reserve the right to do just that. Such a need has arisen on one occasion, and I was less than pleased. Let us not repeat such unpleasantness, shall we?

It is in your best interest to attend the lectures, as material for the exam will come directly from them. Lack of attendance (or attention during class) indicates a lack of interest in the course material; if you find that you cannot bring yourself to class, then it would be better for you to drop the course and reconsider your intentions.

Late/Missed Assignments and Exams: If you know that you will not be able to turn in an assignment on time, please let me know prior to class if at all possible (via phone, e-mail, or in person). I realize that this is not always possible; if not, please contact me as soon as possible after the missed class/assignment.

Unless otherwise noted, assignments are due at the beginning of class. After that, 20% will be deducted for each day that it is late, including the day it is due (providing you do not hand it in at the beginning of class). For example, if a HW assignment is handed in one day late, and it’s worth 50 points, the best possible grade would be 30/50, or 60%. Any other points would be subtracted as normally.

Exams must be made up before the next class meeting, unless prior arrangements have been made. If you fail to do so, you will receive a zero for that exam.

It is YOUR responsibility to contact me if you have missed an assignment or exam. I WILL NOT COME LOOKING FOR YOU; it is not in my job description. I advise you to contact me as soon as possible after an absence to find out what you missed, or to ask a classmate. If for some reason you cannot find me, send me e-mail or leave a message for me with the secretary or another faculty member.
**Cell Phones/Electronic Devices:** Out of common courtesy (and, I hope, common sense) I ask that you have cell phones turned off (or at least set to vibrate) during all class meetings. You should realize that it is distracting to all concerned to have one go off in the middle of a lecture. You should also realize that I have a rather twisted sense of humor, and might be inclined to embarrass you if it’s your phone that goes off. You might also be asked to leave the room for the rest of the session. Consider yourself warned.

In addition, NO ELECTRONIC DEVICES OF ANY KIND (except for a calculator) will be allowed in front of you during exams. If one is found within your reach during an exam (even if it is not yours), you will receive a zero for that exam.

**Professional Society Membership:** As I hope you know by now, meteorology is an evolving science. It doesn’t matter what you wind up doing: as long as you are in weather, you will need to keep up with the latest advances in the field. The best way to do this is to become a member of one of the professional societies. The big one in this field is the American Meteorological Society (AMS). The cost for students is more than 75% less than that for full membership: one year of student membership is $20.00; chump change, really. This entitles you to reduced registration fees at AMS conferences (trust me, any discount is welcome), and you get the Bulletin of the AMS, the official ‘organ’ of the society. On occasion there is an interesting article published in BAMS. In addition, students can subscribe to other AMS journals at reduced rates, including Monthly Weather Review and Weather and Forecasting.

The other society worth mentioning is the National Weather Association (NWA), an organization dedicated mainly to operational meteorology. Dues in this society are reduced for students ($30.00). This entitles you to access to the newsletter and the Journal of Operational Meteorology. There are often articles of interest to the operationally-oriented meteorologist contained therein. If you are interested in joining either society (and you should be, if you aren’t already), contact any of the meteorological faculty.
**Friendly Advice:** The material in this course can be somewhat daunting; you should be used to it by now. I might suggest that you study in small groups. One in your group may remember or recall a particular detail missed by the others, or may be able to explain a concept in such a way that the others can better understand it. You might also wish to see me in small groups outside of class if you have questions that you do not wish to ask in class.

You are all in the same boat here, going through many of the same things at the same time. At the very least, misery loves company. 😊 I cannot make you work together if you do not wish to, or if you know it will not work for you. I’m just offering a suggestion that may be of benefit to you.

**Drop/Withdrawal Policy:** At SUNY Brockport you may drop a course during the first four weeks of the semester. Simply take your registration form to the Office of Registration and Records, and they’ll officially remove you from the course and notify the instructor. You may also drop by computer, mail, or fax, but I suggest the personal approach (to avoid any surprises at the end of the semester). **The deadline for dropping this course is 5:00 pm Tuesday, 29 September 2020.**

After this date you may withdraw from the course. **Between 30 September and 6 November 2020 (Friday),** you may withdraw from the course without departmental or instructor permission. It must be done in person, it costs $20, and it will give you a ‘W’ on your transcript.

**Between 7 November and 4 December 2020 (Friday),** you may only withdraw from the course with department permission (chair’s signature). College policy dictates that permission to withdraw should be given “only for extraordinary circumstances.” It will be your responsibility to demonstrate that your own circumstances apply through written documentation, without which the Department of the Earth Sciences will not grant permission to withdraw from the course. It must be done in person, it costs $20, and it will give you a ‘W’ on your transcript. **The absolute deadline for withdrawal from this course is 5:00 pm Friday, 4 December 2020. Failing the course is NOT a legitimate reason to withdraw.**

Please consult the Adding, Dropping, and Withdrawing Courses policy ([https://www.brockport.edu/support/policies/adopted/emsa_registration_add_drop_withdraw_courses.html](https://www.brockport.edu/support/policies/adopted/emsa_registration_add_drop_withdraw_courses.html)) for any questions with regard to this policy.
**Academic Dishonesty Policy:** Violations of the Student Academic Dishonesty Policy refer to actions related to the evaluation of performance in any undergraduate or graduate course bearing SUNY Brockport credit (other dishonest acts, e.g., falsifying transcript records, are dealt with by Judicial Affairs). These violations include, but are not limited to, the following:

A. **Plagiarism** - presenting as one’s own, the words, ideas, or products of another without providing a standard form of documentation, such as footnotes, endnotes, or bibliographic documentation.

B. **Fabricating facts, statistics, or other forms of evidence in papers, laboratory experiments, or other assignments.**

C. **Presenting someone else’s paper, computer work, or other material as one’s own work.** This includes work done as part of group/team collaboration unless specifically approved by the instructor. Students should assume that any out-of-class assignments or take home examinations are to be done individually and without collaboration unless the instructor specifically states otherwise.

D. **Writing or attempting to write an examination, paper, computer work, or other material for another student, or otherwise representing one’s own performance as another’s (for example, signing another student into class); allowing someone else to take one’s examinations or do one’s classwork/assignments.**

E. **Buying and selling, or sharing of examinations or assignments; possession of examinations or answers to examinations without the instructor’s permission.**

F. **Using “cheat sheets,” looking onto another’s paper, or talking to someone other than the instructor or proctor during an examination, without the instructor’s permission.**

G. **Failing to follow the rules of conduct for taking an examination as stipulated by the instructor prior to the examination or as stated by him or her in a written course syllabus.**

H. **Presenting work for one course for which credit has been received or will be received in another course without the consent of both instructors.**

I. **Published divisional, departmental, unit, and/or individual program policies may address additional violations unique to specific programs and their ethical codes.**
Academic Dishonesty Policy (continued): Consult https://www.brockport.edu/support/policies/adopted/aa_vprovost_academicaffairs_academic_dishonesty.html for any questions with regard to this policy.

Mandatory COVID-19 Safety Measures to Protect You and Our SUNY Brockport Community: SUNY Brockport’s primary concern during this COVID-19 pandemic focuses on the safety, health, and well-being of students and the college community.

Your compliance with these mandatory safety measures will help reduce the likelihood of COVID cases and keep our campus safe so we can convene in-person classes and student activities. Failure to follow the directive of a college official will result in a referral to the Student Conduct Board and appropriate actions will be taken. Please note, you will be asked to leave the classroom if your behavior endangers yourself or others by not following safety directives set by the college and a referral to the Student Conduct Board will be made. As per the Code of Student Conduct, Failure to Comply with the directive of a college official could result in disciplinary action, including but not limited to removal from the residence halls and/or suspension.

Student cleaning requirements:

Wipe your work surface (desk or table) and seat prior to use with the disinfectant wipe effective against COVID19 provided in the classroom. Deposit the used wipe in a classroom garbage receptacle. If shared items are used in the classroom, disinfect them before and after use.

Seating & Social Distancing:

- Do not occupy seats that are marked “Do not sit.”

- Maintain social distance (stay 6’ apart) from others in the classroom to the extent possible.

Face covering:

Wear an appropriate face covering that covers your nose and mouth at all times. You may lift your mask briefly to take a drink. Eating is not permitted inside the classroom. Please see the attached link for specific information regarding Social Distancing and Face Covering Policy.
**Safety Measures** (continued):

Healthy Practices:

- Do not report to class if you are feeling ill. Leave class quietly and immediately if you are feeling unwell and notify your instructor as soon as you are able to.

- Follow respiratory hygiene and cough etiquette. Avoid touching your eyes, nose, and mouth, and wash your hands after touching your face. Cover coughs and sneezes. Wash your hands with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, sneezing, or touching your face. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. While hand sanitizer with at least 60% alcohol is widely available throughout the campus, it is less effective than washing with soap and water. Washing your hands often is considered the best practice.

Any student who feels ill or has any medical needs should contact the Student Health Center at (585) 395-2414 or your personal physician to discuss your symptoms. If you think you need to see a medical professional, contact the Student Health Center to make an appointment first as there are no walk in hours at this time. Students who experience significant cough, worsening of chronic asthma symptoms, a fever that lasts more than two to three days, dizziness, and/or dehydration should be evaluated. If symptoms are severe and urgent assistance is needed, contact the Student Health Center and/or University Police on campus (585) 395-2222 or 911 if off campus.

Emergency evacuation considerations:

In the event of an evacuation alarm, everyone should immediately find the nearest exit, leave the building, and proceed to an assembly area with a face covering on and maintain social distance from others to the extent possible. While it is important to maintain social distance, you should not delay exiting the building in order to do so in the event of any emergency. In areas where separate entrances/exits have been established, it is important to note that these do not apply in the event of an emergency. Individuals should use the nearest exit. When re-entering the building, maintain social distance from others. Upon re-entering the building, avoid congregating in the entranceway or lobby. Take the stairs instead of the elevator whenever possible.
**Student Accessibility Services Disability Statement:** SUNY Brockport is committed to fostering an optimal learning environment by applying current principles and practices of equity, diversity, and inclusion. If you are a student with a disability and want to utilize academic accommodations, you must register with Student Accessibility Services (SAS) to obtain an official accommodation letter which must be submitted to faculty for accommodation implementation. If you think you have a disability, you may want to meet with SAS to learn about related resources. You can find out more about Student Accessibility Services at [https://www.brockport.edu/life/accessibility_services/](https://www.brockport.edu/life/accessibility_services/), or by contacting SAS via sasoffice@brockport.edu, or 585-395-5409. Students, faculty, staff, and SAS work together to create an inclusive learning environment.

**Title IX Compliance:** Sex and gender discrimination, including sexual harassment, are prohibited in educational programs and activities, including classes. Title IX legislation and College policy require the College to provide gender equity in all areas of campus life. If you or someone you know has experienced sex or gender discrimination, sexual harassment, sexual assault, intimate partner violence, or stalking, we encourage you to seek assistance and to report the incident through resources available at [https://www.brockport.edu/about/title_ix/](https://www.brockport.edu/about/title_ix/). Confidential assistance is available at Hazen Center for Integrated Care and RESTORE. Faculty are NOT confidential under Title IX and will need to share information with the Title IX & College Compliance Officer. For these and other regulations governing campus life, please see all of our Student Policies at [https://www.brockport.edu/support/policies/index.php](https://www.brockport.edu/support/policies/index.php).
Important Dates for Fall 2020

August 27, Thursday  Welcome Weekend/New Student Registration
August 31, Monday, 8 am  Instruction Begins
September 7, Monday  Labor Day (Classes in Session)
September 8, Tuesday, 5 pm  Deadline to Add a Class (without fee)
September 17, Thursday  Constitution Day (Classes in Session)
September 18, Friday, 5 pm  Deadline to Add a Class
September 29, Tuesday, 5 pm  Deadline to Drop a Class (without withdrawing)
October 17, Saturday, 5 pm  Mid-term (1st Quarter Ends)
October 19, Monday, 4 pm  Student Progress Evaluations Due in Registrar's Office
November 6, Friday, 5 pm  Deadline to Withdraw Without Departmental Permission
November 23, Monday  Thanksgiving Recess Begins*
November 30, Monday, 8 am  Instruction Resumes Remotely
December 4, Friday, 5 pm  Deadline to Withdraw
December 11, Friday, 5 pm  Regular Course Schedule Ends (2nd Quarter Ends)
December 14, Monday, 8 am  Final Exam Period Begins
December 19, Saturday, 5 pm  Final Exam Period Ends (Semester Ends)
December 24, Thursday, 4 pm  Grades Due From Faculty

*In the event that a resurgence in COVID-19 cases results in another pause before Thanksgiving Break, classes will be held remotely on November 23, 24, and 25.