EAPS 23001 – Laboratory in Atmospheric Science - Course Syllabus

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Course Information

EAPS 23001 – Laboratory in Atmospheric Science
CRN: 24803
Spring 2025
2 credit hours

Information About the Instructors

Prof. Gouri Prabhakar
email: gourip@purdue.edu
Pronouns: she, her

Teaching Assistant

TBD

Course Description

Credit Hours: 2.00. This course introduces you to the array of weather and climate datasets freely available on the internet in an online computational laboratory setting. The course is broken up into a small number of project-based online modules. For each module, you will write Python code to access, read, and visualize weather/climate data and present your findings to a hypothetical stakeholder to help them solve a problem. Each project will ask you to work with a different type of data format from across historical gridded and point data and forecast model data. The course will emphasize the importance of having data be freely available and "FAIR" (Findable, Accessible, Interoperable, Reusable) from the point of view of the philosophy of science, from a data science perspective, and also from a practical "how to do it" perspective. We will consider the fundamental role of openness and reproducibility in science and how it is this feature that makes science of unique value to society. Upon this grounding you will learn the data and communication skills needed to help solve real-world problems related to weather and climate.

Learning Outcomes

Students in this course will be able to:
- Write python code to read in, plot, and perform simple analyses using a wide range of weather and climate datasets (observations, numerical weather forecasts, reanalysis, climate models) in different formats that are publicly available on the internet.
- Visualize weather and climate data in maps and graphs
- Communicate weather and climate information clearly and concisely to non-experts using weather and climate data visualizations

Methods of evaluation: Students will demonstrate their mastery of topics by completing assignments online.

Learning Resources, Technology, & Texts

No text is required for this course. All reading material will be provided by the instructor.

Course Logistics

- Deadlines are an unavoidable part of being a professional and this course is no exception. Course requirements must be completed and posted or submitted on or before specified due date and delivery time deadline. Due dates and delivery time deadlines are defined as Eastern Time (UTC-4 daylight, UTC-5 standard). Please note, students living in distant time zones or overseas must comply with this course time and time and due date deadline policy. Avoid any inclination to procrastinate. To encourage you to stay on schedule, due dates have been established for each assignment; 25% of the total points will be deducted for assignments received 1-6 days late; assignments received more than 1 week late will receive 0 points.

Instructor's Email Availability and Policies

All communication related to this course, including discussion about course content among students, will take place via Brightspace Discussion Board. For questions for the instructors, Direct Message on Slack is preferred. If you feel you are being neglected in any way, please contact us

Assignments and Points

Your learning will be assessed through three-four homework assignments. There may be 1 -2 quizzes on Brightspace in addition to the assignments. These quizzes are for your benefit and will not be included in your final grade.

Grading Scale

In this class grades reflect the sum of your achievements accumulated throughout the semester. You will accumulate points as described in the assignments portion above.
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Semester average (%)	Letter grade
97-100	A+
94-96	A
90-93	A-
87-89	B+
84-86	B
80-83	B-

77-79	C+
74-76	C
70-73	C-
67-69	D+
64-66	D
60-63	D-
Below 60	F

Incompletes

Grades of Incomplete (I) will be given only in unusual circumstances. To receive an "I" grade, a written request must be submitted prior to Dec 3 and approved by the instructor. Requests are accepted for consideration but in no way ensure that an incomplete grade will be granted. The request must describe the circumstances, along with a proposed timeline for completing the course work. You will be required to fill out and sign an "Incomplete Contract" form that will be turned in with the course grades. Any requests made after the course is completed will not be considered for an incomplete grade.

Academic Guidance in the Event a Student is Quarantined/Isolated

If you must miss class at any point in time during the semester, please reach out to me via email so that we can communicate about how you can maintain your academic progress. If you find yourself too sick to progress in the course, notify your adviser and notify me via email or Brightspace. We will make arrangements based on your particular situation. Please note that, according to Details for Students on Normal Operations for Fall 2021 announced on the Protect Purdue website, "individuals who test positive for COVID-19 are not guaranteed remote access to all course activities, materials, and assignments."

Attendance Policy

This course follows Purdue's academic regulations regarding attendance, which states that students are expected to be present for every meeting of the classes in which they are enrolled. When conflicts or absences can be anticipated, such as for many University-sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to the instructor is not possible, the student should contact the instructor as soon as possible by email or phone. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases falling under excused absence regulations, the student or the student's representative should contact or go to the Office of the Dean of Students website to complete appropriate forms for instructor notification. Under academic regulations, excused absences may be granted for cases of grief/bereavement, military service, jury duty, and parenting leave. For details, see the Academic Regulations & Student Conduct section of the University Catalog website. Guidance on class attendance related to COVID-19 are outlined in the Protect Purdue Pledge for Fall 2021 on the Protect Purdue website.

Classroom Guidance Regarding Protect Purdue

Any student who has substantial reason to believe that another person is threatening the safety of others by not complying with Protect Purdue protocols is encouraged to report the behavior to and discuss the next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights and the Violent Behavior Policy under University Resources in Brightspace.

Academic Integrity

Students are expected to do their own work. Incidents of suspected academic misconduct will result in a failing grade on the assignment/exam/quiz for the first offense and a failing grade (F) for the course for the second offense. Each incident will be reported to the Dean of Students/Office of Student Rights and Responsibilities (OSRR). https://www.purdue.edu/odos/osrr/

Academic dishonesty of any kind will not be tolerated. Academic misconduct is defined as "dishonesty in connection with any University activity". This includes cheating, plagiarism, knowingly furnishing false information, or aiding (directly or indirectly) other parties in committing academic misconduct. Plagiarism is a special kind of academic dishonesty in which
one person steals another person's ideas or words and falsely presents them as the plagiarist's own product.

Individuals can email a concern to integrity@purdue.edu or call 765-494-8778 to speak with a staff member in the Office of Student Rights and Responsibilities about the matter. OSRR staff will then investigate the situation and provide feedback to the reporter. Concerns may also be reported anonymously.

Some specific examples of academic misconduct include:
- using another student's previously graded assignment or an answer key from a previous year's course
- doing class assignments for someone else
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- using unauthorized materials, prepared answers, written notes, or concealed information during an exam
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- presenting the sequence of ideas or arranging the material of someone else, even though such is expressed in one's own words, without giving appropriate acknowledgment

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Diversity, Equity, and Inclusion Statement

The Department of Earth, Atmospheric, and Planetary Sciences supports an inclusive learning environment where students from diverse backgrounds and perspectives can be successful. Dimensions of this diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. In line with our departmental goals, we disavow all racism, xenophobia, homophobia, sexism, Islamophobia, anti-Semitism, classism, ableism, and hate speech or actions that attempt to silence, threaten, and degrade others. It is my intent to be respectful of this diversity, and to oppose actions that diminish it, as here in EAPS we embrace the notion that such diversity enriches and enhances our intellectual community. When introducing yourself in class or when communicating via email, please indicate your preferred pronouns and/or if you have a preferred name which may differ from the information listed on Brightspace.

Mental Health/Wellness Statement

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack. Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747. Hours of operation are M-F, 8 am- 5 pm.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc. sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is completely free and can be done on BoilerConnect. If you have any questions, please contact Purdue Wellness at evans240@purdue.edu.

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Accessibility

Purdue University is committed to making learning experiences accessible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247

Basic Needs Security

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Course Schedule

This schedule of topics and assignments is **approximate** and subject to change during the semester

Week	Module	Class/Lab
1-2	Module 0: Foundations of data	**Overview of FAIR principles and applications. Foundations. I: Principles and Concepts**; **Foundations II**: **Infrastructure and Enabling Technology--** ● NCAR and ECMWF Reanalysis Data ● ESGF ● MyGeoHub ● Jupyter Notebook ● GitHub ● Docker ● Globus ● Rstudio
3-6	Module 1: Project 1	Stakeholder 1 Need: Data type: point weather/climate data
7-9	Module 2: Project 2	Stakeholder 2 Need: Data type: gridded weather/climate data
10-12	Module 3: Project 3	Stakeholder 3 Need: Data type: model data
13+	Module 4: Data workflow	● How to 'Publish' your work in a FAIR way. ● Public repositories ● DOIs ● Publication of weather and climate data , description, and workflows using mygeohub, PURR, or another suitable repositories.

link to the Purdue Academic Calendar and key University dates for the Fall 2022 semester

        Aug. 22 – Classes Begin
        Sep. 5 – Labor Day (no classes)
        Oct. 10-11 - October Break (no classes)
        Nov. 23-26 - Thanksgiving Break (no classes)
        Dec. 10 - Classes End
        Dec. 12-17 - Final Exams

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Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Link to Purdue's nondiscrimination policy statement.

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