Weather Technology

MET - 130 - A

2023SP

VALPARAISO UNIVERSITY

Instructor Information

Kevin Goebbert
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Phone Number: 219-464-5517
Office Location
Kallay-Christopher Hall 201-F
Office Hours
Monday 1 – 3 pm; Tuesday 11 am – 12 pm; Wednesday 9 – 10 am;
Thursday 1 – 2 pm; Friday 9 – 10 am
Additional Information
To schedule a time to meet with me, please use the following link to put the meeting on my calendar:
https://kevingoebbert.youcanbook.me/

Course Details

MET 130

Course Description: Cr. 3. A course designed to give students experience using available weather technology. Students will be introduced to the Linux operating system, computer software specifically used in meteorology, and plotting meteorological charts. Introduction of simple shell scripting and map making will play a large role in the course. Additionally, students will be introduced to formal map analysis and mid-latitude weather systems. Prerequisite: MET 103.

Course Credits: 3.00

Instructional Method:

Class Meeting Days, Times, and Locations:

Lecture A: 10:30-11:20 p.m. (MWF, KCH 202)

Course Pre-requisite(s):

MET 103 is a pre-requisite course and that course content will reinforced and built upon in this course.

Estimated Time on Tasks:

Students should expect to at least 3 - 5 hours outside of class in order to complete the course successfully. Each student is different and will require a different amount of time to complete assignments and projects - refrain from comparing how much time you spend with that of another student.

Textbooks(s), Other Readings, and Materials

Title: None
Required or Recommended : None

Course Goals and Student Learning Objectives

1) Gain insight into basic scripting within a Linux environment from a meteorologically-based perspective. Concurrently expand ability to create weather products (maps, images) within Python language primarily using the declarative syntax from the MetPy module. (USLO 1; 2; 3)

2) Enhance capacity to communicate meteorological information within a digital environment and subsequently expand on said information in both oral and written formats (USLO 1; 2; 3; 4)

3) Increase your knowledge of weather map analysis as well as radar and satellite imagery through case studies, current meteorological events, and journal readings/responses (USLO 1; 2; 3)

Student Performance and Assessments

Course Assessments:

Map Journal 50%

Group Project 15%

Assignments (approximately 11) 15%

Midterm Exams (2 – 10 % each) 20%

Grading

Course Grading Scale:

Final grades will be based on your accumulated scores, approximately as follows

93 – 100	A	73 – 76.9	C
90 – 92.9	A-	70 – 72.9	C-
87 – 89.9	B+	67 – 69.9	D+
83 – 86.9	B	63 – 66.9	D
80 – 82.9	B-	60 – 62.9	D-
77 – 79.9	C+	<60	F

Attendance & Participation Policy

You are expected to be present for every class and lab session. A (notable) part of your grade in this course is based on your level of participation in class. Given the usual class format (interactive lecture followed by computer time to exercise new techniques and explore the Linux/Python environment), tardiness is strongly discouraged – please be on time to class! Acute tardiness will result in a lowering of your attendance grade (and will almost certainly impact your overall grade due to missed material).

If extenuating circumstances (illness, other) arise, please bring this to my attention at the earliest opportunity (and before class if at all possible). You are responsible for all materials missed. Starting with your third absence, your participation grade will be lowered by a full letter (e.g., B+ to a C+) with each additional absence. Continued absences will result in course failure!

Be an active participant! Ask questions! Interject relevant comments and observations! You should come to class prepared having read/watched any assigned materials.
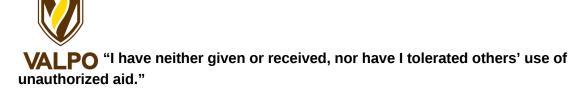
Athletes Excused Absences

Student-athletes are excused from class for university-sponsored competitions but are not exempt from completing course work missed during those absences. The manner in which work will be made up is at the discretion of the instructors, and students are responsible for obtaining any class notes or other course material. Faculty will provide options for student-athletes to make up missed work due to approved excused absences. Student-athletes may not be penalized solely for missed class time due to excused absences.

Content Outline / Course Schedule

Tentative Schedule

Date			Topic	Hand Out	Assignments Due
1/9/23	Week 1	M	**No Class**		
1/11/23		W	**No Class - AMS Annual Meeting**		
1/13/23		F	Syllabus - Virtual Activity		
1/16/23	Week 2	M	**No Class - MLK Day Activities**		
1/18/23		W	Linux Intro	Assignment #1	
1/20/23		F	Linux wrap-up/work day		
1/23/23	Week 3	M	Surface Maps		
1/25/23		W	Surface Maps Wrap-Up	Assignment #2	Assignment #1 Due
1/27/23		F	*Journal Reading Intro/Wx Discussion*	*Bjerknes and Solberg (1922)*	
1/30/23	Week 4	M	Python Datetime Function		
2/1/23		W	Python Notebooks to Scripts	Assignment #3	Assignment #2 Due
2/3/23		F	*Discussion of Bjerknes and Solberg 1922*		*Map Journal Redo Maps*
2/6/23	Week 5	M	Upper-air Observation and Maps		
2/8/23		W	Intro to Upper-air Map Analysis	Assignment #4	Assignment #3 Due
2/10/23		F	*Weather Discussion*		
2/13/23	Week 6	M	Forces and Gridded Data		
2/15/23		W	Force Balances	Assignment #5	Assignment #4 Due
2/17/23		F	*Weather Discussion*	*Mass (1991)*	*Map Journal Redo Maps*
2/20/23	Week 7	M	NCM/Cyclone Structure		
2/22/23		W	Surface Map Analysis/Fronts	Assignment #6	Assignment #5 Due
2/24/23		F	*Discussion of Mass 1991*		
2/27/23	Week 8	M	NWP/HTML	Project	
3/1/23		W	Exam 1		Assignment #6 Due
3/3/23		F	*Project Work Day*	*Sanders & Doswell (1995)*	*Map Journal Redo Maps*
3/6/23		M	**Spring Break**		
3/8/23		W	**Spring Break**		
3/10/23		F	**Spring Break**		
3/13/23		M	**Spring Break**		
3/15/23		W	**Spring Break**		
3/17/23		F	**Spring Break**		
3/20/23	Week 9	M	Introduction to Computer Logic/If Statements		
3/22/23		W	Python Looping Statements	Assignment #7	
3/24/23		F	*Discussion of Sanders and Doswell 1995*		*Map Journal Redo Maps*
3/27/23	Week 10	M	Thickness and MetPy Calculations		
3/29/23		W	Vorticity and Advections	Assignment #8	Assignment #7 Due
3/31/23		F	*Weather Discussion*		*Map Journal Redo Maps*
4/3/23	Week 11	M	Mid-lat Cyclones, Precip, Storm Tracks		
4/5/23		W	Balloon Launch	Assignment #9	Assignment #8 Due
4/7/23		F	**No Class - Good Friday**		
4/10/23	Week 12	M	Stability, Skew-Ts, etc.		
4/12/23		W	Plotting Soundings	Assignment #10	Assignment #9 Due
4/14/23		F	*Weather Discussion*		*Map Journal Redo Maps*
4/17/23	Week 13	M	Satellites Imagery		
4/19/23		W	Jet Streams and Upper-level waves	Assignment #11	Assignment #10 Due
4/21/23		F	*Weather Discussion*		
4/24/23	Week 14	M	Plotting Radar Data		
4/26/23		W	*Project Work Day*		Assignment #11 Due
4/28/23		F	Exam 2		
5/1/23	Week 15	M	*Project Work Day*		
5/3/23		W	*Project Work Day*		
5/5/23		F	Final Map Journal Day		*Map Journal Redo Maps*
5/9/23	Week 16	T	Project Presentations: 12:50 - 2:50 pm		Final Project Due

Honor Code Statement

"I have neither given or received, nor have I tolerated others' use of unauthorized aid."

This statement is written on all homework, quizzes, and exams at Valparaiso University. Every student must write out the Honor Code in full and sign it for all work submitted for academic credit. The Honor Code expresses the promise of the student not to cheat through either action or inaction. The use of these words expresses the faith of the faculty in the student body.

https://www.valpo.edu/honor-council/

Honor Code: "*I have neither given or received nor have I tolerated others' use of unauthorized aid."* The Honor Code should be upheld and written in full on all assignments, projects and exams.

On assignments, I encourage you to work with others in order to understand an approach, solve a problem or understand a fundamental concept, but submitted work is to be yours alone. Using others' assignments or work from previous iterations of this class are considered to be unauthorized aid. On class projects, teamwork is encouraged (unless otherwise directed), but all work submitted should be your own.

On exams, the only authorized aid is the instructor, unless otherwise directed. Study guides, notes, crib sheets and nearby exams are all considered unauthorized aid. Work should always be shown, where appropriate, to receive full credit. Previous years' exams are considered unauthorized aid.

Class Cancellation Method

Notifications of class cancellations will be made through Blackboard with as much advance notice as possible. It will be both posted on Blackboard and sent to your Valpo e-mail address. If you don't check your Valpo e-mail account regularly or have it set-up to be forwarded to your preferred e-mail account, you may not get the message. Please check Blackboard and your Valpo e-mail (or the e-mail address it forwards to) before coming to class.

Emergencies

VU's Emergency Notification System (ENS) uses multiple forms of communication, including e-mail, building alarms, outdoor sirens, message boards, computer alerts, Twitter, and public address messaging. Please review the specific procedures for this class found in Blackboard. Remember: "Siren inside, GO outside; Siren outside, GO inside." To evacuate, gather your personal belongings quickly and proceed to the nearest exit. Do not use the elevator. To shelter in place, move away from the windows and stay low to the ground; lock or barricade the door if there is a threat of violence.

Access and Accomodation Statement

As a student-centered community, Valparaiso University seeks to ensure all students receive the support they deserve to attain their education goals. As such, the institution is responsive to the needs of students who have disabilities as defined by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. Students with documented disabilities (visible or invisible) who believe their diagnoses will create barriers to course success are encouraged to reach out to the Access and Accommodations Resource Center(AARC) to determine eligibility for reasonable accommodations.

To begin the process of establishing accommodations please contact AARC staff at aarc@valpo.edu or 219-464-5206.

 Starfish is used in this course to communicate concerns and kudos to support student success. This communication is shared with your advisor as an additional layer of support. For information and resources on Starfish, visit: valpo.edu/starfish. To access Starfish, visit: starfish.valpo.edu.

Academic Support Services

To get help in this course, the best place to start is to work with your instructor during office hours and ask your professor if there are any Help Sessions or department-level tutoring offered for this course. The next step is to use the Academic Success Center (ASC) online directory (valpo.edu/academicsuccess) or contact the ASC (academic.success@valpo.edu) to help point you in the right direction for academic support resources for this course. Valpo's learning centers (Writing Center, Language Resource Center, [Hesse Learning Resource & Assessment Center], and Academic Success Center) offer a variety of programs and services that provide group and individual learning assistance for many subject areas.

Library Support Services

Christopher Center Library

1410 Chapel Drive

Valparaiso, IN 46383

Phone: 219.464.5500

library@valpo.edu

library.valpo.edu/

Judith L. Beumer Writing Center

The Writing Center is located on the lower level of the Christopher Center. It is free for undergraduate and graduate students. The Writing Center offers individual peer consultations and workshops on writing to support your growth as a writer. Make an appointment at any time by going to http://valpo.mywconline.com/. The sessions provide strategies and guidance on writing assignments from any discipline, at any stage in the writing process, and for writers at all skill levels. Their goal is for you to become a credible, more confident writer who is able to make the best choices in any writing situation. Additional information is available at www.valpo.edu/writingcenter/.

Diversity and Inclusion

Valparaiso University is a welcoming community, grounded in the Lutheran tradition, built on values of mutual respect, positive regard, freedom, and reliant on grace. We strive to boldly include all individuals and groups who contribute to the life of our campus in a mutually beneficial way. Difference is a strength and reason for celebration, and we affirm that we are most inclusive when we bring groups together to make decisions in collaborative, equitable ways. Our values do not support language or behavior that demeans members of our campus based on age, appearance, ethnicity, race, color, religion, sexual orientation, gender identity, biological sex, disabilities (visible and invisible), ideological/political positions, intellectual perspective, socio-economic status, immigration status, veteran status, and national or regional origin. Actions and behaviors based on positions or perspectives that inherently marginalize, oppress, or deny full dignity to all are not tolerated. As such, we will consistently and vigilantly assess our academic and co- curricular offerings and our admissions, hiring, and promotion policies in reflection of these values.

Title IX Statement

Valparaiso University strives to provide an environment free of discrimination, harassment, and sexual misconduct (sexual harassment, sexual violence, dating violence, domestic violence, and stalking). If you have been the victim of sexual misconduct, we encourage you to report the incident. If you report the incident to a University faculty member or instructor, she or he **must notify** the University's Title IX Coordinator about the basic facts of the incident. Disclosures to University faculty or instructors of

sexual misconduct incidents are **not confidential** under Title IX. **Confidential** support services available on campus include: Sexual Assault Awareness & Facilitative Education Office "SAAFE" (219-464-6789), Counseling Center (219-464-5002), University Pastors (219-464-5093), and Student Health Center (219- 464-5060). For more information, visit https://www.valpo.edu/titleix/ .

COVID 19 Policy

Following University policy, all students, faculty, and staff attending an on-campus class or event must be fully vaccinated against the COVID-19 virus, except for those who receive official University exemptions. When necessary for the safety of all, the University may require all faculty, students, and staff to wear a mask indoors for discrete periods of time. Any such decision will be made in consultation with the county and state health departments, the local conditions, and the advice of the CDC. University policies will be updated regularly at https://www.valpo.edu/covid-info/ .

Consistent with general faculty oversight of classroom conduct, students are required to follow the university guidelines for safety in the classrooms, labs, and other learning spaces.

- Faculty may require masks in their classrooms and labs at their discretion when conditions may call for such discretion. Faculty will notify students in their classes if this is a requirement for their course.
- Students who feel ill should not attend in-person classes.
- Students required to miss class because they are following a COVID protocol outlined by their healthcare provider or the University should contact their instructors via email to create a plan for keeping up to date with their studies.

Bias and Incident Reporting

A bias incident is any act that appears and/or is perceived by the targeted person(s) to be motivated by animus toward one or more of their identities (i.e., race, religion, nationality, sex, disability, gender identity or expression, sexual orientation).

You can submit a bias incident report at valpo.edu/bias, by calling the Valparaiso University Police Department (VUPD) at 219.464.5430, or by requesting an in-person report be submitted by speaking directly to any Valparaiso University faculty or staff member.

If you are concerned about the immediate health and safety of yourself or someone else, call 911 or the Valparaiso University Police Department (VUPD) at 219.464.5430.

University Academic Resources

Additional Information on Valparaiso University policies can be found online at the following sites:

valpo.edu/registrar/calendar - Academic Calendar, including deadlines for adding, dropping, withdrawing from, and requesting any other registration changes to course sections; holidays; academic breaks; and the final examination schedule.

datavu.valpo.edu - DataVU for managing registration; viewing your class schedule, academic record, and degree requirements; granting proxy access to parents and guests; accessing financial aid details; and applying for graduation.

valpo.edu/registrar/forms - Electronic forms for registration changes that require special approval, changes to your plan of study such as adding a major or minor, changes in enrollment status, and more.

valpo.edu/registrar/catalogs - Catalog with academic policies, program information, and more.

valpo.edu/it/ - Information Technology helpdesk support services for students and staff.

valpo.edu/covid-info/ - COVID-19: guidance.

Course Policies

Late Policy: Homework will be due at the beginning of class on the posted due date and time. Please let me know of any extenuating circumstances. In-class labs must be completed during class and turned in at the end of the period unless prior arrangements are made. Exams are excused *only* with a doctor's note.

Because life happens, each of you have up to three days of free reprieve total, with no questions asked, that can be applied to a *non-exam* item. If you find yourself needing an extra day to finish an assignment, email me to secure the use of one (or more) of your reprieve days. These reprieve days are not for the extenuating circumstances, but just the normal run of the mill life getting in the way.

Other Policies: Cell phones are not to be used in **any** fashion (to include calls, texts, etc.) during lecture or discussions unless authorized by instructor. Cell phones (in any fashion, including use as a calculator) are considered unauthorized aid during exams. Email, web surfing, and accessing social media / other non-class related materials are not to be performed during the lecture portion of class.