

DATA 151: Introduction to Data Science

Fall 2021 Syllabus

Official Course Description: Introduction to the use of computer-based tools for the analysis of large data sets for the purpose of knowledge discovery. Students will learn to understand the Data Science process and the difference between deductive hypothesis-driven and inductive data-driven modelling. Students will have hands-on experience with appropriate online analytical processing and data mining software platforms and will complete a project using real data.

Pre/co-requisites: one of STAT 140, STAT 240, IDS 205, or PSY 201.

Instructors: Dr. Kevin Goebbert
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E-mail Address: kevin.goebbert@valpo.edu

Office Hours: MR 10:30 – 11:30 am; TW 3 – 4 pm
or by appointment
(If my door is open, feel free to stop by)

To schedule a time to meet with me, please use the following link to put the meeting on my calendar.

<https://kevingoebbert.youcanbook.me/>

- Goals:**
1. Students understand the fundamental concepts of data science and knowledge discovery.
 2. Students can apply and perform the basic algorithmic and computational tasks for data science.
 3. Students develop and improve analytical thinking for problem formation and solution validation, especially using technology.
 4. Students prepare for success in a world overflowing with data.

Course Schedule: **Lecture:** MW 1:50 – 2:40 pm, in GEM 232
 Labs: TR 1:30 am – 2:45 pm, in GEM 232

Course Grades:

Semester Project	40%
Lab Assignments	30%
Exam 1	15%
Exam 2	15%

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

Text: *Python Data Science Handbook*, by Jake VanderPlas
<https://jakevdp.github.io/PythonDataScienceHandbook/>

Python for Data Analysis, by Wes McKinley
<https://www.programmer-books.com/wp-content/uploads/2019/04/Python-for-Data-Analysis-2nd-Edition.pdf>

Weapons of Math Destruction by Cathy O’Neil, ISBN: 978-0553418811

Other Texts: Data Science with Co-Lab
<https://colab.research.google.com/notebooks/intro.ipynb>

Suggested supplies: Computer/Tablet, notebook

Attendance: You are expected to be in all class sessions ON TIME. Coming late to either lecture or lab will result in you being marked absent for that period and the participation will be marked down accordingly. Being absent or late for class should be seen as equivalent to being late or absent for work. Please bring appropriate extenuating circumstances to my attention as soon as possible when a situation arises.

Class Format: This course will heavily utilize computing and it will be important to have access to a machine during class that will be able to actively participate in class activities.

Participation: Participation is a large part of this course in weather discussion, please come to every discussion prepared to offer meaningful insights, ask thought provoking questions, and enlighten the conversation with your observations of what is happening in the atmosphere and why is it happening. The success of this class will largely depend on the entire groups’ effort to participate. The participation grade will be graded using the following rubric out of ten points and will be factored into the homework/lab score as one assignment.

- I contribute several times during every class discussion. (9-10)
- I contribute at least twice during virtually every class discussion. (8)
- I often contribute to class discussion. (7)
- I occasionally contribute to class discussion. (6)
- I rarely contribute to class discussion. (0-5)

Classroom Conduct: 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. At all times, individuals who are not vaccinated will be required to wear a mask indoors. All 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.

- Students who fail to abide by these rules will first be asked to comply because it is University policy at this time; if they refuse, they will be reminded that it is required.

- If they again fail to comply then they will receive an unexcused absence for the class and may also receive a zero on any tests, quizzes, or other evaluated activities for that day, and/or a 5% reduction of their final class grade for each occurrence of non-compliance.
- Non-vaccinated students who refuse to wear a mask will be reported to the Dean of Student Life for conduct in violation of University policy.
- All instructors have the authority to ask all students to wear a mask in their classroom and create a seating chart for their classroom.
- Students who feel ill should not attend in-person classes.
- The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these categories.
- 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.

Late Work: Homework/Lab assignments and projects are due at the beginning of the class on the day that the assignment is due, unless otherwise specified. Late work will not be accepted except in extreme circumstances requiring my advance notification and appropriate documentation.

Exams: There will be an exam on Tuesday 5 October 2021 and an exam on Thursday 2 December 2021 during class.

Cell Phones: The use of cell phones during lecture and/or lab is strictly prohibited.

Honor Code: “I have neither given or received nor have I tolerated others’ use of unauthorized aid.” This honor code should appear on all assignments, labs, and exams. Every assignment turned in (whether homework, laboratory assignment, or exam) should be a product of your individual work, which reflects your understanding of the course material.

On assignments, I encourage you to work with others to understand how to approach and solve a problem or understand a fundamental concept, which may be needed to fully answer the question, but you must still perform your OWN work. Unless specified otherwise, each person must complete and turn in their individual copy of an assignment. Authorized aid for lab assignments include, your textbook, your notes, and your professor. Unauthorized aid includes others’ lab assignments, and/or lab keys.

On exams the only authorized aid is the professor (or a designee if not available). Study guides, notes, crib sheets, and nearby exams are strictly prohibited for use during the exam and are considered unauthorized aid. Please see me if you do not understand or are confused by a question on an exam. I expect you to show all of your work wherever multiple steps are required. You will not be given full credit if I cannot determine how you got to your final solution. Additionally, previous years exams are considered unauthorized aid.

Students with Disabilities: The Access & Accommodations Resource Center (AARC) is the campus office that works with students to provide access and accommodations in cases of diagnosed mental or emotional health issues, attentional or learning disabilities, vision or hearing limitations, chronic diseases, or allergies. You can contact the office at aarc@valpo.edu or 219-464-5206. Students who need, or think they may need, accommodations due to a diagnosis, or who think they have a diagnosis, are invited to contact AARC to arrange a confidential

discussion with the AARC office. Further, students who are registered with AARC are required to contact their professor(s) if they wish to exercise the accommodations outlined in their letter from the AARC.

Course Cancellation Policy: Notifications of class cancellations will be made through EMAIL, WHICH IS THE OFFICIAL COMMUNICATION TOOL OF VALPARAISO UNIVERSITY. Additional announcements *may* come through blackboard and posts on the classroom door. Any cancellations will be made with as much notice as possible.

Copyright: Lectures, exams, homework problems, homework keys and handouts are the intellectual property of your instructor intended for your use. Dissemination, copying and posting of this material for any use other than this class in Fall 2021 without the express written permission of the instructor (and that of major league baseball) is a violation of copyright laws.