

January 14, 2020

Hi Science 123 Students,

I am looking forward to our spring 2020 course in introductory meteorology. I want to inform you about the course and some of the resources we will be using.

Many students wonder how much math will they need to know or use to do well in the course. I believe an introductory level of differential calculus learned in our Math 140 course is necessary and sufficient to have a proper introduction to meteorology (or atmospheric sciences, more generally). The atmosphere is nothing if not dynamic. And, change and rates of change for the sake of analysis and prediction require the concept of the derivative. The lowest level college meteorology texts require only a scant background in mathematics. These texts are expensive and rather superficial in their presentation of the material. I have not been satisfied using them as a primary source of information in my earlier offerings of this course. My search for a higher level introductory text only finds books that require multivariable differential and integral calculus. Clearly too high a level on the mathematical scale for our purposes.

Consequently, I see a “hole” in introductory meteorology textbooks in the current market. Therefore, I am in the process of writing my own manuscript to fill the void. However, it’s not done yet. I do have a [website](#) that provides all the important information on all of the topics included in the completed text, but mostly in a terse outlined form. (Note that the website is in the process of being updated for the spring 2020 semester course.) If you follow the “Chapter List” link on the left hand side of the opening page, you will see the information I am referring to. While you are exploring the site, you may want to look at some of the exercises and exercise examples documents to get a sense of the level of mathematics required for the course.

Students have successfully completed past offerings of this course using the website material and notes taken in class. However, if you want to supplement these sources, I suggest you purchase one of the editions of Ahren’s book entitled “[Meteorology Today: An Introduction to Weather, Climate and the Environment](#).” (ISBN-13: 9781337616669 ) It is one of the more popular low-end math-based introductory texts I mentioned above. I have instructed the Luther Bookstore to order the 12th edition to have on hand. The most recent edition is 12, but earlier editions (9, 10, and 11) will suffice, and securing a copy of an earlier (used) edition should reduce the cost considerably. I want to emphasize, though, that I am not requiring you to purchase a text. It would be too bad to purchase a book that you feel was not required or useful to you in some way.

In addition to reading the material and doing some computational homework exercises, you will be required to complete 12 or so open resources “reading” quizzes administered through the Katie course website. There will be three unit exams. The last one will be given during the final week. Also, working with one or two other classmates, you will participate in a “friendly” weather

forecasting contest with the other class forecasting teams. More information will be made available after the semester begins and we get closer to doing the actual exercises.

In closing, I want to emphasize that meteorology and climatology (atmospheric sciences), are two of the most interdisciplinary, science-based disciplines. They require elements of mathematics, physics, chemistry and biology to name the obvious components. When considering the economical and societal impacts of major droughts, floods, hurricanes, blizzards and smaller scale storms, their “reach” into other disciplines is appreciated as well. I hope the course does the subject justice and leaves you with a foundation for understanding the dynamic environment in which we live here on Earth. See you in February!