

Course Syllabus
Parameterization Schemes

METR 5803 Section 002
TR 1:00 – 2:15
NWC 5820

Instructor: Dr. David Stensrud
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Office Hours: 10-12 WF, NWC 4358
Prerequisites: Graduate status or permission of instructor

Required text: *Parameterization Schemes: Keys to Understanding Numerical Weather Prediction Models*, David Stensrud, Cambridge University Press, 2007, <http://www.cambridge.org>

Course Content: This course is designed for graduate students interested in numerical weather prediction. The objective of this course is to provide the student with an overview of the assumptions used in the parameterization of sub-grid scale physical processes and an understanding of how these assumptions may influence numerical forecasts of the weather. Various well-known parameterization schemes will be reviewed and discussed in class.

Chapter 1	Why study parameterization schemes?
Chapter 2	Land surface-atmosphere parameterizations
Chapter 3	Soil-vegetation-atmosphere parameterizations
Chapter 4	Water-atmosphere parameterizations
Chapter 5	Planetary boundary layer and turbulence parameterizations
Chapter 6	Convective parameterizations
Chapter 7	Microphysics parameterizations
Chapter 8	Radiation parameterizations
Chapter 9	Cloud cover and cloudy-sky radiation parameterizations
Chapter 11	Thoughts on the future

Grading: The grading scheme for this course is:
20% problem sets
20% mid-term exam
20% final exam
20% pop quizzes and class participation
20% paper review

Grading Policy: All assignments are due at the end of the class period on the day assigned. No credit will be given for late assignments. Exceptions may be given for emergency situations after consultation with the instructor.

Problem Sets: There will be a total of 8 to 10 problem sets assigned during the semester. Each problem set has been developed to expand upon topics covered in class and several of them will require the students to write computer programs. Since the instructor is familiar with the FORTRAN programming language, using this language in your programming assignments is encouraged, but not required. However, assistance in writing code in other programming languages is not available.

Paper Review: Each student will choose a paper from a list of acceptable journals (*Monthly Weather Review*, *Journal of the Atmospheric Sciences*, *Tellus*, *Quarterly Journal of the Royal Meteorological Society*) and both write a formal review of the paper and present an overview of the paper with comments during class. *The journal article must be approved in advance by the instructor.* The oral summary of this paper will be limited to 15 minutes during class (12 minutes for the presentation and 3 for questions from the audience). The grade for this paper review will be based upon the following distribution: 75% on the written paper review, and 25% on the class presentation. The written review should be no more than 3 pages in length. The written reviews are due in class on 22 September October, with the oral class presentations occurring from 29 September to 1 October during regular class time.

Mid-term examination: A mid-term examination is tentatively scheduled for 22 October and will cover material presented during the lectures, reading assignments, and homework.

Final examination: A final examination is scheduled during finals week according to the University schedule.

Quizzes: Four or five quizzes will be given during class periods and will primarily cover reading materials assigned during previous lectures. You will be given 10 minutes to complete each quiz, and they will be handed out when class begins. The days of these quizzes will not be announced and no makeup will be provided.

Class participation: Each student is expected to participate in class by attending lectures, asking questions, and participating in team-based homework assignments.

Academic Honesty: Homework assignments are important for your understanding of the material. Occasional help from a classmate is fine, but be sure that you actually understand the material. Realize that simply copying a homework assignment from any source is considered cheating and will definitely not help your understanding. If caught, such activity could result in a failing grade in the course and possible disciplinary action. You are responsible for knowing the University of Oklahoma Student Code, which can be obtained at <http://www.ou.edu/studentcode/>.

Plagiarism: Please read the document *Nine Things You Should Already Know About Plagiarism...*, which is posted on Desire2Learn. You will be held responsible for your understanding of plagiarism.

Examinations: If you cannot be present for an examination, it is YOUR responsibility to make other arrangements before the examination. Otherwise, the missed test cannot be retaken.

Reasonable Accommodation Policy: The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Those having such a need are requested to speak with Dr. Stensrud as early in the semester as possible. Students with disabilities also must be registered with the Office of Disability Services (ODS) prior to receiving accommodations in this course. You may contact the ODS at Goddard Health Center, Suite 166, phone 405-325-3852 or TTD only at 405-325-4173.