Materials for Fall 2012: 714 Syllabus

Student learning outcomes: By the completion of this course, you should be able to:
1) recognize and define the major terms that apply to atmospheric convection (and related phenomena covered in this course)
2) recognize, evaluate, and explain the elements (e.g., key figures and conclusions) of fundamental articles across the content area
3) explain the governing dynamics and microphysics of convective clouds and convective precipitation
4) efficiently read and distill key information from scientific papers, and communicate it to others
5) think critically about and intelligently critique papers and presentations across the content area of atmospheric convection, including observations, numerical simulations, and theory.

Course philosophy: This is an elective, graduate course. The level of difficulty will be set to maximize the benefit to the strongest students. If you have serious doubts about your ability to complete the assignments, please consult with us. The course requires students to understand and communicate the findings of journal articles, so active participation is expected and will be assessed.

Basic structure for course meetings: After some initial introductory lectures, the course will be divided into 3 modules. A module will have several subtopics. Each subtopic will involve the following:
- 1 class session of introductory lecture
- 2 class sessions to discuss key papers

Students will be assigned to one of four teams. Paper discussions will follow the “jigsaw” strategy wherein each student is assigned one primary paper per session and 3 secondary papers per session. Students will then exchange information about their primary papers with representatives from other teams. Finally, the instructors will guide a class-wide discussion of overarching themes and address any remaining questions. By the end of each module, you should be an expert in your primary papers, have a working knowledge of the main conclusions from your secondary papers, and understand how all of the papers fit together into the current state of the field.

Approximate schedule for a paper discussion class session
15-20 min  Instructors address pre-submitted questions and delineate overarching themes
5-10 min  Intra-team discussion to finalize presentations of primary papers
30-45 min  Small group presentations to students with other primary papers and discussion of overarching themes
10-15 min  Whole class discussion of overarching themes and any remaining questions

Primary paper responsibilities
Each team will be assigned one primary paper, and will have the following responsibilities:
- The team will work together to submit 1-2 questions about the primary paper (points that require explanation or additional teaching from an instructor) via e-mail to MP and SY at least 48 hours before class meeting time
- Each individual team member will submit a 1-2 page outline of the primary paper, to be turned in during the class where the paper is discussed
- Each individual team member will bring to class materials to communicate the key points and key figures from their paper (as hardcopy or electronic if they have their own laptop/iPad etc.). Team members will meet briefly during class to finalize the main points for their presentations to students from other teams.
Secondary paper responsibilities
Students read the abstract and conclusions from each secondary paper prior to the class session.

Assessments:
1. 1-2 page outlines will be due from each student for each of their assigned primary papers.
2. The instructors will monitor the in-class discussions, and will assess the quality and quantity of individual student participation, including depth of preparation and degree of leadership exhibited.
3. There will be a written essay exam on each module that will require distillation and synthesis of materials from that module.

Grading criteria:

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<th>Component</th>
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<tr>
<td>Outlines</td>
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<td>In-class participation</td>
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<td>Exam 1</td>
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There will not be a comprehensive final exam. Rather, the final exam time will be used for the exam on Module 3.

Your final letter grade will follow the familiar scale: ≥96 A+, 93–95.9% A, 90–92.9% A-, 87–89.9% B+, 83–86.9% B, 80–82.9% B-, etc. We may adjust this at the end if the grade distribution looks too low. University regulations concerning withdrawals and incompletes will be strictly enforced.