EXPANDED COURSE DESCRIPTION
EARTH, SPACE SCIENCE AND ENGINEERING
Lassonde School of Engineering
Earth and Space Science and Engineering
LE / ESSE 3040 3.0 SECTION A
ATMOSPHERIC DYNAMICS I
FALL 2017 / WINTER 2018

Last Modified Date: 08/18/2017

COURSE CALENDAR DESCRIPTION

Dynamics of large-scale weather systems. Development of the equations of motion, geostrophy, thermal wind, vorticity and divergence, Ekman layers and the quasi-geostrophic theory. Three lecture hours. One term. Three credits. Prerequisites: LE/ESSE 2010 3.00; LE/ESSE 2470 3.00 or SC/PHYS 2010 3.00; SC/MATH 2015 3.00; SC/MATH 2271 3.00. Prior to Fall 2014: Prerequisites: LE/EATS 2010 3.00; LE/EATS 2470 3.00 or SC/PHYS 2010 3.00; SC/MATH 2271 3.00. Prior to Summer 2013: Prerequisites: SC/EATS 2010 3.00; SC/EATS 2470 3.00 or SC/PHYS 2010 3.00; SC/MATH 2015 3.00; SC/MATH 2271 3.00. Prior to Fall 2009: Prerequisites: SC/EATS 2010 3.00; SC/EATS 2470 3.00 or SC/PHYS 2010 3.00; AS/SC/MATH 2015 3.00; AK/AS/SC/MATH 2271 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
<th>Contact Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klaassen, Gary P</td>
<td>Sec. A / LECT / F</td>
<td><a href="mailto:gklaass@yorku.ca">gklaass@yorku.ca</a></td>
<td>York Ext. 77727</td>
</tr>
</tbody>
</table>

TOPICS AND CONCEPTS

Atmospheric Dynamics is not an easy subject, and the difficulty ramps up throughout the term. Students are expected to supplement the lectures by reading/working through the textbook and attempting to solve problems themselves.

6 Tutorials will be held in conjunction with assignments (TBA), and will include review problems, supplementary material (e.g. films) computer exercises. Attendance strongly recommended.

Course Content

6. The planetary boundary layer. Turbulence. The Ekman layer.

References

1. An Introduction to Dynamic Meteorology. 5th Edn. J.R. Holton and G.J. Hakim (Recommended text. 4th Edition is also acceptable).
4. The Ceaseless Wind. J.A. Dutton. (Reprinted by Dover Press as “Dynamics of Atmospheric Motion”)
5. Atmosphere-Ocean Dynamics. A.E. Gill (geophysical fluid dynamics)
GRADED ASSESSMENT

Term work (Assignments: 4 or 5): 30%
Midterm Exam (1 hour): 20%
Final Exam (3 hours): 50%
If the midterm is missed for a valid documented reason, the final exam will count for 70% of the mark. The penalty for late work is 10% per day.

ADDITIONAL INFORMATION

National Committee for Fluid Mechanics Films:
  • http://web.mit.edu/fluids/www/Shapiro/ncfmf.html
  • mit.edu/hml/ncfmf.html,
  • Vorticity I+II, many others
Alternate links:
  • Vorticity Part 1: http://www.youtube.com/watch?v=loCLkcYEWD4
  • Vorticity Part 2: http://www.youtube.com/watch?v=h6bmrRFYFbc

ACADEMIC INTEGRITY LINKS
  • Senate Policy on Academic Honesty -
    http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
  • Academic Integrity - http://lassonde.yorku.ca/academic-integrity

STUDENT LINKS
  • Student Rights and Responsibilities - http://oser.students.uit.yorku.ca/student-conduct
  • Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
  • Academic Accommodation for Students with Disabilities -
    http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/
  • Counselling and Disability Services - http://cds.info.yorku.ca/

Many courses utilize Moodle, York University's course website system. If your course is using Moodle, click here to access it.

Moodle @ York University