EXPANDED COURSE DESCRIPTION
EARTH, SPACE SCIENCE AND ENGINEERING
Lassonde School of Engineering
Earth and Space Science and Engineering
LE / ESSE 3030 3.0 SECTION A
ATMOSPHERIC RADIATION & THERMODYNAMICS
FALL 2017 / WINTER 2018

COURSE CALENDAR DESCRIPTION

Applications of basic thermodynamic principles to dry and moist atmospheric situations. Solar (short wave) and terrestrial (long wave) radiation with respect to absorption and scattering processes involving atmospheric atoms, molecules, aerosol particles and clouds. Three lecture hours. One term. Three credits.

Prerequisites: SC/MATH 2015 3.0; SC/MATH 2271 3.00; SC/PHYS 1010 6.00, or a minimum grade of C in SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00. Prior to Fall 2009: Prerequisites: AS/SC/MATH 2015 3.0; AS/SC/MATH 2271 3.00; SC/PHYS 1010 6.00, or a minimum grade of C in SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00. Course Credit Exclusion: LE/SC/EATS 3030 3.00

Course Listed Courses: PHYS 3080

INSTRUCTOR(S)

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<th>Name</th>
<th>Section / Format / Term</th>
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<td>Whiteway, James A</td>
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TOPICS AND CONCEPTS

Topics Outline
Fundamentals of radiation
Planetary radiation balance
IR radiation and thermal structure
Buoyancy and stability
Thermodynamics of dry and moist air
Convection
Formation of clouds and precipitation
Tephigrams and convective available potential energy
Solar radiation in the atmosphere: Scattering and absorption
Radiative transfer
Remote sensing
Climate

Textbooks
G. W. Petty
*A First Course In Atmospheric Radiation*
G. W. Petty
*A First Course In Atmospheric Thermodynamics*
2008, Sundog Publishing

J.M. Wallace and P. V. Hobbs
*Atmospheric Science: An Introductory Survey*

**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://oscr.students.uit.yorku.ca/student-conduct
- Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
- 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**