UNIVERSITY OF CALGARY
DEPARTMENT OF CHEMISTRY
Syllabus
WINTER 2015

COURSE: CHEMISTRY 521 – Introduction to Atmospheric Chemistry

LEC	DAYS	TIME	ROOM	PROFESSOR	OFFICE	PHONE	EMAIL	OFFICE HOURS
L01	TuTh	11:00-12:15	SH 274	Dr. Hans Osthoff	SB 205	220-8689	hosthoff@ucalgary.ca	Wd 12-1

TEXTBOOKS:

Required:
"Introduction to Atmospheric Chemistry", Daniel J. Jacob, Princeton University Press (1999)
available for download at http://acmg.seas.harvard.edu/people/faculty/djj/book/index.html
or for purchase at the University bookstore

Recommended:
"Chemistry of the Upper and Lower Atmosphere", Barbara Finlayson-Pitts, James Pitts, Academic Press (2000)

TOPICS COVERED AND SUGGESTED READING:

Measures of atmospheric composition: Mixing ratio, number density and partial pressure	Chapter 1, DJ
Atmospheric pressure, structure, sea-breeze and Hadley circulation	Chapter 2, DJ
Gas-phase kinetics: Bimolecular reactions, 3-body reactions, chemical equilibria	Chapter 9, DJ Chapter 5, BFP
Atmospheric photochemistry: Actinic Flux, calculation of photolysis rate constants	Chapters 3 BFP
Simple models: Box and puff models	Chapter 3, DJ
Stratospheric ozone: Chapman mechanism, catalytic loss cycles, polar ozone loss, aerosols	Chapter 10, DJ Chapter 12, BFP
Oxidizing power of the troposphere: OH and HO_x, global CO, CH_4, NO_x, and O_3 budgets	Chapter 11, DJ Chapters 6+7, BFP
Ozone air pollution; production efficiency and control strategies	Chapter 12, DJ Chapter 16, BFP
Acid rain	Chapter 13, DJ Chapter 8, BFP
Aerosols: Sources, sinks, size distributions, chemical composition radiative effects	Chapter 8, DJ Chapter 9, BFP
Greenhouse effect and global climate	Chapter 7, DJ Chapter 14, BFP

This course does **not** have a laboratory component.

Department Approval: Approved by Department Head Date: December 2, 2014