UNIVERSITY OF CALGARY
DEPARTMENT OF CHEMISTRY
COURSE SYLLABUS
FALL 2015

COURSE: CHEMISTRY 321 – Environmental Chemistry

LEC	DAYS	TIME	ROOM	INSTRUCTOR	OFFICE	PHONE	EMAIL	OFFICE HOURS
L01	TuTh	15:30-16:45	SB 103	Dr. Osthoff	SB 205	220-8689	hosthoff@ucalgary.ca	Tu Th 5-6; Wd 12-1

TEXTBOOK: The main course text will be "Fundamentals of Environmental and Toxicological Chemistry: Sustainable Science", Fourth Edition, by Stanley E. Manahan, CRC Press (2013), available for purchase at the University bookstore or online at http://www.crcpress.com/product/isbn/9781466553163. The following texts are recommended reading and are available either in the library on reserve or online via the library web site: "Elements of Environmental Chemistry", 2nd Edition, by Ronald Hites and Jonathan Raff, ISBN 978-1-118-04155-0, and "Environmental Chemistry", 5th or 4th Edition, by Colin Baird and Michael Cann, W.H. Freeman, NY.

TOPICS COVERED AND SUGGESTED READING:

	Manahan (4th ed.)	**Baird/Cann (4th / 5th ed.)**	**Hites/Raff (2nd ed.)**
Review of chemistry fundamentals: States of matter; gas laws; elements and chemical bonding; kinetics; equilibria; mass balance; organic chemistry	Chapters 19-20	-	Chapters 1-2
Global biogeochemical cycles	Chapter 1	-	-
Toxicology and bioaccumulation	Chapter 2	Chapters 10-11/13-15	Chapter 7
Aqueous chemistry and water pollution	Chapter 19.5; 3-4	Chapter 13 / 10	Chapter 5
Waste water treatment and colloids	Chapter 5	Chapter 14 / 11	-
Pesticides, DDT, organochlorine compounds	Chapters 4.10-4.13	Chapters 10-11 / 13-15	Chapter 6.1
Herbicides, Dioxins, Furans, and PCBs	Chapters 4.10-4.13	Chapters 10-11 / 13-15	Chapters 6.1 and 8
PAH, estrogens, fire retardants	Chapters 4.10-4.13	Chapters 12 / 13-15	Chapter 8
Chemistry and pollution of the atmosphere	Chapters 6-7	Chapter 1 / 1	Chapter 3
Regional air pollution: Ozone, fine particulate matter, and acid rain	Chapters 6-7	Chapters 3, 5 / 3-4	Chapter 3
Catalytic destruction of stratospheric ozone and Montreal Protocol	Chapters 7.9, 8.11	Chapter 2 / 2	Chapter 3
Greenhouse effect and climate forcing	Chapters 8.1-8.3	Chapter 6 / 5	Chapter 4
Soil Chemistry	Chapters 10 -11	Chapter 16 / -	-
Environmental chemistry of the biosphere	Chapters 12-13	Chapter 15 / -	-
Toxic metals and high-tech trash	Chapters 14-15	- / Chapter 12	-
Energy	Chapter 17	Chapters 7-8 / 6-8	-
Radioactivity & nuclear energy	Chapter 14, 17	Chapter 9 / 9	-

This course does not have a laboratory component.

Department Approval: Approved by Department Head Date: September 2, 2015