

Chemistry 7640 – Analytical Special Topics
Organic Environmental Chemistry
1 credit, Fall 2021

Instructor: Kimberly Hageman

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Class Time: Thursday 11:30am-12:20pm, Widtsoe 229

Office Hours: By appointment

Textbook: Schwarzenbach R.P., Gschwend, P.M., Imboden, D.M. *Organic Environmental Chemistry* 2017, 3rd Edition, John Wiley & Sons Inc.

Auto Access eBook: Environmental Organic Chemistry eBook, 3e by Schwarzenbach

This course requires all-inclusive digital materials that are provided to you at a lower price than traditional printed materials. These materials are paid for through an “Auto Access Digital Materials” charge placed on your student account when you registered for the course. **To access the materials, visit the Canvas course site.** For more details, including dates, deadlines, and opt-out info, visit your student Auto Access Portal: <https://portal.verba.io/usu/login>

Prerequisites: This course is designed for graduate students with a strong chemistry background and previous coursework and/or experience in environmental chemistry. If you don't meet these qualifications and still wish to take the course, please discuss with Dr. Hageman.

Learning Objectives: The objectives of this course are to gain a deep understanding of the physical chemistry of organic chemicals, gain skills in predicting their physicochemical properties, and understand how these properties control chemical fate in the environment. Most of the material will be derived from the textbook, with supplemental reading from the literature.

Assessment: A number of assignments will be used for assessment. There will be no exams.

Grading: USU's standard grading scheme (shown below) will be used.

A	100 %	to 94.0%
A-	< 94.0 %	to 90.0%
B+	< 90.0 %	to 87.0%
B	< 87.0 %	to 84.0%
B-	< 84.0 %	to 80.0%
C+	< 80.0 %	to 77.0%
C	< 77.0 %	to 74.0%
C-	< 74.0 %	to 70.0%
D+	< 70.0 %	to 67.0%
D	< 67.0 %	to 64.0%
D-	< 64.0 %	to 61.0%
F	< 61.0 %	to 0.0%

Withdrawal Policy: This course will follow the University policy on withdrawals stated in the current Catalog. Drop dates are listed in the Spring Schedule of Classes.

Attendance Policy: 100% attendance and on-time arrival are expected. If necessary, in-class quizzes will be implemented to encourage this. If you are in quarantine due to covid exposure or symptoms, contact Dr. Hageman as soon as possible and join the class via zoom. If you are not able to attend class due to illness, please inform Dr. Hageman via email. For all covid-related policies, see <https://www.usu.edu/covid-19/>.

University Policy and Procedures: See this website (<https://www.usu.edu/provost/faculty-life/syllabus>) for University policies and procedures concerning covid-19 classroom safety protocols, academic freedom and professional responsibilities, academic integrity and the honor pledge, plagiarism, course fees, grievances, sexual harassment, student disabilities, withdrawal, no-test days, assumption of risk, and mental health.

Tentative Course Outline (Subject to Modification)

Subject	Textbook Chapter
Introduction	1
Thermodynamics and Partitioning	4
Chemical Fate Modeling	6
Partitioning between Bulk Phases	7
Vapor Pressure	8
Solubility and Activity Coefficient	9
Organic Liquid-Air and Organic Liquid-Water Partitioning	10
Adsorption between Surfaces and Air	11
Sorption Processes	12
Sorption to Natural Organic Matter	13
Aerosol-Air Partitioning	15
Partitioning from Water and Air to Biota	16