

TOX 3300 Analytical Toxicology (Fall 2017)
University of Guelph
Department of Chemistry
Course Outline

Course Description: TOX 3300 Analytical Toxicology F (3-3) [0.50] is a course specifically designed for students in toxicology and related programs. This course introduces fundamental concepts and principles of selected instrumental analytical methods which are widely used in trace analysis of toxicologically relevant chemical species in complex biological and environmental samples. The course is intended to build the foundations of good laboratory practice in toxicological research and provide students with an understanding of all aspects of instrumental chemical analysis including of sampling, sample preparation, detection and data analysis.

Prerequisites: CHEM 2480, BIOC 2580, TOX 2000 (TOX 2000 may be taken concurrently)

Restrictions: CHEM 3430 and CHEM 3450. This is a Priority Access course. Enrolment may be restricted to particular programs or specializations. See the Department of Chemistry for more information.

Instructor: Dr. Wojciech Gabryelski, SSC 1248, ext. 53850

Email: wgabryel@uoguelph.ca

Lectures: Mondays, Wednesdays and Fridays from 11:30 a.m. to 12:20 p.m. in MCKN 231

Office hours: Tuesdays, Wednesdays and Fridays 1:30 - 4:30 p.m. Please feel free to come to see me for help at any time when you need it.

Lab Coordinator: Dr. Kate Stuttaford, SSC 3113A, ext. 53382, kstuttaf@uoguelph.ca

1. COURSE MATERIALS

Textbook: (required) D.C. Harris, "Quantitative Chemical Analysis", **9th ed.** (2016), W.H. Freeman and Company, New York, USA, and Solution Manual for this book (Total cost 240 CAD\$).

I will put one copy of each on reserve in our library.

Lab. Manual: (required) Lab. Manual for TOX 3300 may be purchased for \$10 from the chemistry department at the start of the semester). **You will need the lab manual for the introductory laboratory session.**

Other materials: (supplementary textbook) D.A. Skoog, F.J. Holler, S.R. Crouch, "Principles of Instrumental Analysis", **6th ed.** (2007), Thomson-Brooks/Cole Belmont, CA.

D.A. Skoog, F.J. Holler, T.A. Nieman, "Principles of Instrumental Analysis", **5th ed.** Call number KQ79.I5.S58. (*There are three copies of the book in the library for a two week loan*)

Lecture notes, problem sets, exam examples and other useful information will be available through the CourseLink website.

2. EVALUATION

Grading: The course grade will be calculated based on the scheme below:

Midterm	30%	Friday, October 20 th , 11:30 a.m.-12:20 p.m., (in class)
Final Exam	40%	Wednesday, December 6th, 7:00-9:00 p.m., Room TBA
Laboratory	30%	

IMPOTRANT! To get credit for the course, passing grades (50% or higher) must be obtained on both the laboratory AND the lecture components of the course; failure to achieve both will result in a reported mark no higher than 48%.

Missed Midterm Examination: If you do not write the midterm, documentation must be given to your instructor. If a valid excuse is received (doctor's notes are always acceptable), a make-up midterm examination will be given.

Missed Final Examination: If you miss a final exam, contact your Program Counselor as soon as possible (refer to www.uoguelph.ca/uaic/programcounsellors for a list of Program Counselors). Official documentation is required. Consult the Undergraduate Calendar (Section VIII, under Academic Consideration).

3. COURSE CONTENT (Lectures)

1. Instrumental Analysis
2. Atomic Absorption and Atomic Emission Spectroscopy
3. Molecular Spectroscopy
4. Introduction to Separation Methods
5. Gas Chromatography
6. Liquid Chromatography
7. Electrophoresis and field separations
8. Mass Spectrometry
9. Electrochemical Analytical Methods
10. Ion Selective Electrodes and Biosensors

Each section of lectures (1-10) is approximately one week in duration.

4. LABORATORY

Lab Description: TOX 3300 labs provide an opportunity to learn and understand practical aspects of instrumental analytical methods which are widely applied in toxicological studies. Experiments in TOX 3300 labs include determination of nitrates in water using Ion-Selective Electrodes, determination of calcium in a vitamin tablet using Atomic Absorption and Emission Spectroscopy, determination of quinine in Tonic Water using Molecular Spectroscopy, analysis of steroids by Gas Chromatography, analysis of analgesic compounds by Liquid Chromatography as well as comprehensive analysis of complex samples using Mass Spectrometry. Students learn how to calibrate analytical instruments and how to optimize their performance. **The lab coordinator (Dr. Kate Stuttaford) uses the CourseLink website for lab discussion groups and to post lab grades and relevant information about lab activities and regulations.**

Lab Activities: Laboratories in TOX 3300 are scheduled on Monday and Tuesday afternoons (2:30-5:20 p.m.) and Monday and Tuesday evenings (7:00-9:50 p.m.) in SSC 3105. Introductory labs are in the week of September 11th. For the introductory lab, the students should bring with them the copy of **the lab manual** only; they do not need lab coats or goggles. Attendance to the introductory lab is required and students can expect to stay for approximately one hour. During this time they will meet the TA, review lab safety procedures, be assigned a lab partner, and get the schedule of experiments so they know which experiment to prepare for the following week. TAs (Delaney Armstrong-Price, Jennifer Robinson and Darcy Fallaise) will set office hours for students to answer their lab related questions. The laboratory manual can be purchased (cash only) from the Chemistry Department in SSC 2106 on weekdays (9:30 am to 3:30 pm) from September 8th to September 13th.

5. UNIVERSITY POLICIES

E-mail Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Drop Date

The last date to drop one-semester courses, without academic penalty, is **Friday, November 3rd, 2017**. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Recording of Materials

Presentations which are made in relation to course work-including lectures-cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:

<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>