

Course Instructors: Kagan Kerman (Theoretical), e-mail: kkerman@utsc.utoronto.ca

Effie Sauer (Practical), e-mail: esauer@utsc.utoronto.ca

Kagan's office: Room SW533, Science Wing, office phone: (416) 287 - 7249

Effie's office: Room SW640, Science Wing, office phone: (416) 287 - 7209

Kagan's office hours: Tuesday, 2:00 - 3:00 pm, Wednesday 3:00 – 5:00 pm.

Effie's office hours: Mondays and Wednesdays from 10:30 am – 12:00 pm.

Required Text: Students are strongly encouraged to follow the lectures and the notes of the instructor for guidance in readings and problems from the following textbook:

Quantitative Chemical Analysis, Daniel C. Harris, 7th or 8th Edition, Publisher: W. H. Freeman

*Please note that the 8th edition is also available electronically as a subscription-based web resource (*i.e.* accessible on-line for a specified time period). Please see the note below for further details.

Strongly Recommended:

Student solutions manual for Quantitative Chemical Analysis

Note: Lecture handouts include suggested review problems from the text. Such material may be included on tests, tutorials, quizzes, and exams. *Quantitative Chemical Analysis* is available online (described below) and in the UTSC Bookstore or the Reserves section of the UTSC Library.

Electronic On-line Text: An electronic on-line version of the text is available both directly from the publisher and through a US publisher consortium. This entails purchasing a subscription to a web-based version of the text, which can be searched, annotated, *etc.* The text is the same from both sources, but the publisher's representative claims that their web interface is easier to use. Both versions allow a trial subscription or chapter preview, so you can try both versions before spending your money! To purchase:

- Publisher's version using an e-book card from the U of T Campus Bookstore (cheapest option- preview the text on-line at the url below before contacting the bookstore for availability of the subscription card)

- Direct from the publisher (Freeman) web site at <http://ebooks.bfwpub.com/qca8e.php>

Through the CourseSmart publisher consortium at <http://www.coursesmart.com/9781429269117>

Course Description:

Course Topics:

Sept. 13 Introduction to Analytical Chemistry

Sept. 14 Experimental Error and Statistics-1

Sept. 20 Experimental Error and Statistics-2

Sept. 21 Quality Assurance and Calibration Methods

Sept. 27 Fundamentals of Spectrophotometry -1 (UV-vis)

Sept. 28 Fundamentals of Spectrophotometry -2 (Fluorescence)

Oct. 4 Applications of Spectrophotometry (Surface plasmon resonance)

Oct. 5 Chemical Equilibrium

Oct. 11 Titrations

Oct. 12 Activity and the systematic treatment of equilibrium

Oct. 18 Monoprotic acid-base equilibria

Oct. 19 Polyprotic acid-base equilibria

Oct. 25 Acid-base titrations-1

Oct. 26 Acid-base titrations-2

Nov. 1 EDTA titrations-1

Nov. 2 EDTA titrations-2
Nov. 8 Introduction to analytical separations
Nov. 9 Fundamentals of electrochemistry-1
Nov. 15 Fundamentals of electrochemistry-2
Nov. 16 Electrodes and potentiometry
Nov. 22 Redox titrations
Nov. 23 Electroanalytical techniques
Nov. 29 Electrochemical biosensors
Nov. 30 Nanomaterial-based biosensors

Course Instruction: The course will consist primarily of lectures supported by practicals.

Evaluation:

Evaluation components Percent

Mid-term Exam	25%
Labs	35%
Quiz	5%
Final Exam	35%

Course Policies and General Information:

Course Announcements: Announcements, updates to readings, assignment topics, requirements, and evaluation, etc. will be posted to the course site. Students are responsible for checking the course website regularly.

Lecture/Lab/Tutorial Attendance: Attendance at lectures and labs is expected. Attendance is taken in labs and tutorials. If you need to miss a laboratory period for any *valid* reason, you must contact Dr. Sauer either by phone ([416-287-7209](tel:416-287-7209)) or by e-mail (esauer@utsc.utoronto.ca) *before* your next scheduled lab period. If the reason for your absence is medical, you must download a UTSC Medical Certificate and have it completed by your doctor (download at: http://www.utsc.utoronto.ca/~registrar/resources/pdf_general/UTSCmedicalcertificate.pdf)

. The completed note must contain the following information:

- Verification that you were examined on or before the day of your missed lab
- The nature of your illness
- A statement indicating the physician's professional opinion as to whether you should receive special consideration on medical grounds

Submit your completed medical note to Dr. Sauer within one week of your absence. A make-up lab will be rescheduled provided that space and time permits. If a make-up lab is not possible, the marks from the other labs will be re-weighted to make up for the missed lab.

Given the importance of the lab component of this course, any labs missed in excess of one will receive a mark of zero, **regardless of the reason**, and no re-weighting will occur. Labs missed without adequate documentation will also receive a mark of zero.

Office Hours: Students are welcome to ask questions or resolve course-related problems by contacting the Course Instructor either by dropping in during scheduled office hours or by making an appointment. Students are responsible for work missed as a result of absence; the Course Instructor will not re-teach

material covered in the lectures and lab sessions.

e-mail Communication: The Course Instructor may be contacted via the course e-mail address (kkerman@utsc.utoronto.ca) to get clarification on course-related issues, to submit assignments, or to ask brief questions. The Course Instructor will endeavour to provide responses to emails within 48 h. Urgent issues must be communicated in person or by telephone (with a follow up email message).

Missed mid-term Test & Quizzes: The exact date of the mid-term test will be provided when the examination is scheduled. Quizzes will be given during each tutorial. Students who miss the term test or any of the quizzes will be assigned a mark of zero for the test or quiz, unless they can document a compelling reason for missing it. Students in that position must submit a written request to the Course Instructor with appropriate documentation. If a request is accepted for the mid-term test, the weighting of the final examination will be increased to 60%. If a request is accepted for any of the quizzes, the weighting of the remaining quizzes will be adjusted accordingly. There will be no make-up quizzes or mid-term tests.

Final Examination: The final examination will take place during the UTSC examination period in December following the end of the course. The exact date will be provided when the examination is scheduled.

AccessAbility: Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. The UTSC AccessAbility Services staff (located in **S302**) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca. The sooner you let us know your needs the quicker, we can assist you in achieving your learning goals in this course.

Cell Phones: During lectures and labs please turn off your cell phones to avoid disruption of the class. If circumstances warrant use of your cell phone and you must receive an emergency call, please inform the Course Instructor at the beginning of the session in advance and then excuse yourself from the session to respond to the call outside the lecture or lab.

Academic Calendar: Further information about academic regulations and course withdrawal deadlines can be found in the UTSC Calendar. You are encouraged to read this material.

Centre for Teaching and Learning: If you need assistance with effective writing skills, study skills, exam preparation, note taking, or time management, free workshops and advice are available from the Centre for Teaching and Learning, which can be reached at:
http://www.utsc.utoronto.ca/~ctl/Student_Support/index.html

Computer Use: Ethical use of University computers is expected at the University of Toronto at Scarborough. Guidelines are set out in the UTSC Calendar. It is expected that the equipment and/or resources accessed in the UTSC Library and the computer labs are to be used for academic research, assignments, and course activities only.

Academic Integrity: Honesty and fairness are considered fundamental to the University's mission, and, as a result, all those who violate those principles are dealt with as if they were damaging the

integrity of the University itself. When students are suspected of cheating or a similar academic offence, they are typically surprised at how formally and seriously the matter is dealt with - and how severe the consequences can be if it is determined that cheating did occur. The University of Toronto treats cases of cheating and plagiarism very seriously.

Examples of offences for which you will be penalized include (but are not limited to):

- Using any unauthorized aids on an exam or test (e.g., "cheat sheets")
- Representing someone else's work or words as your own - plagiarism (see web document "How not to plagiarize" available online at <http://www.utoronto.ca/writing/plagsep.html>)
- Falsifying documents or grades
- Purchasing an essay
- Submitting someone else's work as your own
- Submitting the same essay or report in more than one course (without permission)
- Looking at someone else's answers during an exam or test
- Impersonating another person at an exam or test or having someone else impersonate you
- Making up sources or facts for an essay or report.

As a student it is your responsibility to ensure the integrity of your work and to understand what constitutes an academic offence. If you have any concerns that you may be crossing the line, please, read

from the website <http://www.utoronto.ca/academicintegrity/resourcesforstudents.html> and always consult your instructor. Your instructor can explain, for example, the nuances of plagiarism and how to use secondary sources appropriately; he or she will also tell you what kinds of aids - calculators, dictionaries, etc. - are permitted in a test or exam. Ignorance of the rules does not excuse cheating or plagiarism.

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to **Turnitin.com** for the detection of plagiarism. All submitted papers will be included as source documents in the **Turnitin.com** reference database solely for the purpose of detecting plagiarism of such papers. The terms that apply to the University's use of the **Turnitin.com** service are described on the **Turnitin.com** web site.

This information is taken from the brochure, "*Academic Integrity*" and website, part of a series of UT publications to help students understand the University's rules and decision making structures. For copies, visit the Office of the Registrar at UTSC. All of the policies and procedures surrounding academic offences are dealt with in one policy: "*The Code of Behaviour on Academic Matters*". The full text is located in the back of the UTSC Calendar.