Chemistry 312
Intermediate Analytical Chemistry
Fall 2021 – Let's see how this goes…

This 3 credit course is a continuation of CHEM 217/218 (prerequisites). It is primarily an introduction to modern analytical methods of analysis. Instrumental methods are the workhorse of the modern analytical laboratory and are used by nearly all branches of chemistry and biochemistry. This course will cover data analysis, atomic spectroscopy, instrumentation, chromatographic theory and practice as well as electrochemical methods.

COVID-19

The university, starting many years ago, asked us to include the following in our syllabi *In the event of extraordinary circumstances, the University may modify the delivery, content, structure, forum, location and/or evaluation scheme for this course.* The current COVID-19 crisis pretty much is the definition of circumstances beyond our control. As a result of these exceptional circumstances:

1. We are expecting to run the class/lab in face-to-face mode but this might change (i.e. return to on-line).
2. Much of the lecture material is already posted as Powerpoints with voice over. "Class time" will include "light lectures", questions, answers & problem solving/examples.
3. The postings/material that are made available to you are for use in this class. Keep in mind that these materials may not be recorded, distributed, published or broadcast, in whole or in part, without my express permission. Usually, I am happy to share. That is why you have access to "editable" content like the Powerpoint presentations. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities, so just ask!
4. My intentions are to have a midterm that will cover data analysis/statistics and atomic spectroscopy (see reading list). The planned date (subject to change) for the midterm is October 28th.
5. The final will be held during the regular final exam period (c. Dec 15th, date TBA). It will be comprehensive but, with an emphasis on chromatography.
6. I also plan on having shorter/smaller forms of assessment that I will roll into the "assignments" category. These include assignments, pop quizzes, puzzles (Yes, puzzles!) etc.
7. If there is a need to alter the term's schedule (exams, labs etc.) it may become necessary to submit a grade to the university prior to completion of all the required course components. This may mean that students will receive an 'INC' grade notation for the course which will be changed once the required components are completed.
8. Students who require additional accommodations, for the course, or their laboratory component, due to a documented disability should contact the Access Centre for Students with Disabilities for assistance.

COURSE INSTRUCTORS:

Professor Cameron Skinner

- Office: Science Pavillion 275-27 (if on-line: Spare Bedroom)
- Office phone: 848-2424 ext 3341
- Lab phone: 848-2424 ext 7558
  E-mail: Chem312@concordia.ca
- Office hours any time by appointment.

Senior lab supervisor

Rita Umbrasa

- Responsible for overall operation of the laboratory.

WEB SITE FOR INFORMATION

Moodle, accessible *via* your MyConcordia portal.

SCHEDULED LECTURE PERIODS:

Thursday 6:00-8:45 in CC 214

COURSE TEXT:

Required: Principles of Instrumental Analysis, Skoog, Crouch. Older editions (back to the 5th edition) should also be fine (page numbers won't match but content is same).

GRADING

There will be a single midterm and a final exam, see reading list for what is covered but the final is comprehensive (emphasis on post-midterm material). You must complete the avoiding cheating and plagiarism course as well (see below).

GRADING SCHEME

Midterm:	25% or 15%
Final:	30% or 40%
Lab:	25%
Assignments/in-class quizzes:	20%

The final mark is calculated to give you the highest score!

Be warned: In the event of extraordinary circumstances the content, format and/or evaluation scheme in this course is subject to change.

NB: If you are eligible for a lab exemption there is a deadline in EARLY September. The form is posted on the Moodle page (way down at bottom). Send to Elizabeth.montesano@concordia.ca

It is also important that you realize that:

You must pass both the lab & class components to pass the course!!
I consider 60% a pass for the lab and 50% a pass for the theory part of the course.

Grade range	Letter equivalent	Grade range	Letter equivalent
Lab failure or <35% in the class component	**R**	67-70	C+
0-50	F	70-73	B-
50-53	D-	73-77	B
53-57	D	77-80	B+
57-60	D+	80-87	A-
60-63	C-	87-95	A
63-67	C	95+	A+

LABORATORIES (See Moodle page for instructions/rota, way down at bottom)
All lab marks count towards your final grade (*i.e.* none will be thrown out). If you cannot hand in a lab report you MUST notify your TA (if you can't contact them notify R. Umbrasa) on, or before, the day the report is due! Failure to do so may result in your report being refused.

Late lab reports will be penalized by 10% per day after they are due!
You must e-mail your report (FOR GRADING, no paper copies b/c COVID) to: **Chem312@concordia.ca**
You must use the lab report template provided on Moodle.

LABORATORY NOTEBOOK
You **must use a carbon-copy notebook**, they are available in the Bookstore.

Student Laboratory Notebook with spiral binding
Carbonless copies
Made by Hayden McNeil
ISBN 1-930882-74-2
They will sell for about $20-25 each.

EXAM PREPARATION:
The exams will test both problem solving and general knowledge. For example, you should be able to draw in great detail any system or subsystem studied and to explain its operation. In general, you should know how things work, their advantages, disadvantages and their limitations. In addition, you should be able to critically evaluate a technique and you should be able to choose the best method to solve a particular problem.

PROGRAMMABLE CALCULATORS: NOT ALLOWED IN MIDTERM OR FINAL EXAMS

CHEATING AND PLAGIARISM

I encourage you to seek out the help of your classmates and to assist each other in solving problems. However, you should prepare your answers, and all of your submitted work, SEPARATELY. I will assume that identical answers are the work of a single individual and multiple copies of this work are simple evidence of cheating and plagiarism.

Lab reports and other submissions will be compared to current (and past) lab reports, the WWW and other sources using software tools. Submissions will also be retained and added to our database for future comparisons. So….Don't do it, don't try it and don't even think about it! If you do, you will have to explain yourself to the Dean.

As part of your CHEM course, you are ***required*** to i) attend a Chemistry and Biochemistry Departmental Seminar on the academic conduct code and the appropriate use of information sources and ii) pass the online quiz associated with this seminar (the passing grade for the quiz is 100%). (**Note:** this quiz is graded by the Department of Chemistry and Biochemistry, and you do not have access to it until after you have attended the seminar. Therefore, any other quiz you may have taken on the academic code of conduct does not count toward the CHEM 101 requirement.) The aim of this seminar and quiz is to clarify the academic conduct code in terms of which practices will be considered unacceptable with regards to work submitted for grading in your CHEM course. **You are only exempt from repeating the seminar and the quiz if you have done both in Fall 2016 or more recently,*** otherwise you are required to repeat both this term. This short seminar (1 hour) will be held at the following times (note that you will not be given credit if you join too late and/or leave early):

Date (Fall 2021)	Time	Mode	Registration link
Sept. 22 (Wednesday)	21:00-22:00	Zoom	meeting/register/1
Sept. 23 (Thursday)	21:00-22:00	Zoom	meeting/register/2
Sept. 27 (Monday)	19:00-20:00	Zoom	meeting/register/3

As space for each of the Zoom seminars is limited, please **register early** for your preferred slot. Then do not forget to **attend** that seminar slot on the date above!

We will take attendance at the Zoom seminar.

If you do not complete this course requirement, your final grade for the course may be lowered by one full letter grade with an incomplete (INC) notation until such time as this requirement is completed. Please refer to the undergraduate calendar (section 16.3.5) for details on removal of an incomplete notation.

* You are exempt if you can locate your ID in the pdf file located on the Departmental web site (http://www.concordia.ca/content/dam/artsci/chemistry/docs/Compliance-list.pdf) and if there is no entry in the "quiz" column for you.

The **deadline for completing the quiz** is generally around the first week of October (for Fall term courses). Inform yourself of the exact date/time at the seminar.

The Academic Code of Conduct can be found in section 17.10 of the academic calendar (http://www.concordia.ca/academics/undergraduate/calendar/current/17-10.html). Any form of unauthorized collaboration, cheating, copying or plagiarism found in this course will be reported and the appropriate sanctions applied. The mandatory seminar is a clear and fair opportunity to learn what our faculty regards as academic

misconduct. Failure to take part in this learning opportunity and thus ignorance of these regulations is no excuse and will not result in a reduced sanction in any case where academic misconduct is observed.

This material is an extract from the Undergraduate Calendar Code of Conduct (Academic)

(http://registrar.concordia.ca/calendar/16/16.html#16.3.14)

Offenses:

Any form of **cheating**, **plagiarism**, personation, falsification of a document as well as any other form of dishonest behaviour related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under this Code.

Any attempt at or participation related in any way to an academic offence is also an offence under this Code and shall be dealt with in accordance with the procedures set out in this Code.

Without limiting the generality of article above, academic offences include, but are not restricted to, the carrying out or attempting to carry out or participating in:

i. personation — assuming the identity of another person or having another person assume one's own identity;
ii. plagiarism — the presentation of the work of another person as one's own or without proper acknowledgement;
iii. the contribution by one student to another student of work with the knowledge that the latter may submit the work in part or in whole as his or her own;
iv. multiple submission — the submission of a piece of work for evaluative purposes when that work has been or is currently being submitted for evaluative purposes in another course at the University or in another teaching institution without the knowledge and permission of the instructor or instructors involved;
v. the obtention by theft or any other means of the questions or answers of an examination or of any other University-related resource that one is not authorized to possess;
vi. the possession or use during an examination of any non-authorized documents or materials or possessing a device allowing access to or use of any non-authorized documents or materials;
vii. **the use of another person's examination during an examination**;
viii. communication with anyone other than an invigilator during an examination or the obtention of any non-authorized assistance during an examination;
ix. tearing or mutilating an examination booklet, inserting pages into a booklet or taking a booklet from the examination room;
x. the falsification of a document, in particular a document transmitted to the University or a document of the University, whether transmitted or not to a third party, whatever the circumstances;
xi. the falsification of a fact or research data in a work including a reference to a source which has been fabricated. Falsification shall not include those factors intrinsic to the process of academic research such as honest error, conflicting data or differences in interpretation or judgement of data or of experimental design.

Punishment:

i. Reprimand the student;
ii. Direct that a piece of work be re-submitted;
iii. Enter a failing grade for the piece of work in question or for the course, if applicable;
iv. Enter a failing grade and ineligibility for a supplemental examination or any other evaluative exercise for the course;
v. Impose the obligation to take and pass courses of up to twenty-four (24) credits in addition to the total number of credits required for the student's programme as specified by the Dean. If the student is registered as an Independent student, the sanction will be imposed only if he or she applies and is accepted into a programme;
vi. Impose specified community service at the University of up to ten (10) hours per week for a specified period of time;
vii. Refer the case to the Academic Hearing Board.