

UTSC
CHMB16Lectures
Excel tutorial)LabsCourse InfoLinks (including

Course Info

LABS START WEEK OF SEPTEMBER 20

You will need Adobe Acrobat to read some notes on this website. You can download the free Reader here:

<http://www.adobe.com/products/acrobat/readstep2.html>

Temporary Stand In: pdf of slides shown at first lecture - [Syllabus](#)

Marking Scheme:

Midterms 10% ea

2 * 10% = 20%

Lab

40%

Final Exam – cumulative

40%

Note: there are NO MAKEUPS – if you miss one or both midterms, that 10% will be added to your final exam

For the lab marking scheme, go to the [lab page](#).

Required Text:

Quantitative Chemical Analysis, 6th ed.

Daniel C. Harris

Freeman

This book should be available shrink-wrapped with the solutions manual in the UTSC Bookstore. “Required” here means the lectures will be delivered on the assumption all attendees are in possession of this book – often referred to as ‘Harris’ or ‘DCH’. All problems (assigned/recommended – a matter of semantics) will be from this book. There are older editions, but it is the responsibility of the student to correlate an older edition with the problems assigned in the course. Note that page numbers have changed with older editions as well. The 4th edition and older have no “Chapter 0”. NOTE ALSO: this text is a heavily used reference for the laboratories, especially since you will often encounter a concept in the lab before it is covered explicitly in the lecture.

Recommended Texts:

As in any introductory course, many topics are encountered, but in the interests of time, sometimes only relevant highlights are covered. The APPLICATION of statistics is DIRE to any sort of analysis: chemists/scientists, economists, pollsters/politicians, journalists, lawyers, gamblers; all use statistics to varying degrees (of freedom?). The

first few lectures (outline to be posted in the coming weeks below) will concern the use of statistics in analytical chemistry, including error analysis and how to meaningfully interpret data sets. Harris covers these topics in a to-the-point presentation which is appropriate for this course's breadth. Yet students may find themselves wanting to hone up their familiarity with the foundational principles and round out their general understanding of this incredibly powerful tool. As such, the 1st recommended text is ideal for beginners and is an excellent resource if you expect to stay in a field requiring frequent analysis (see those listed above in green).

1. **The Cartoon Guide to Statistics**
Larry Gonick & Woollcott Smith
HarperCollins

The 2nd recommended text is a very well written "fleshing out" of the techniques highlighted in Harris. The huge attraction here of this particular book, unlike the vast majority of statistics texts, is that it's intended for analytical chemists. All the examples and problems at chapters' ends are either conceivable chemical experiments or even taken from published data sets. Thus if you find it frustrating to adapt a given discussion to your area of particular concern – analytical chemistry – this book is ideal. I recommend this 2nd book to students who intend/expect to continue in analytical chemistry. All of us who employ analysis in a chemical context find it an indispensable part of our acquired libraries. In addition, this recent edition includes the burgeoning field of chemometrics – an amalgam of chemistry, statistics, and computer science. The even newer field of bioinformatics – dealing with the amassed data from genomes and proteomes – owes a large debt to chemometrics.

2. **Statistics and Chemometrics for Analytical Chemistry, 5th ed.**
J.C. Miller & J.N. Miller
Pearson Education Canada

i.e. don't feel obligated to purchase either recommended texts – I think you will find the 1st one very useful, and you may find yourself in need of the 2nd one as you proceed through your studentdom/career.

Regarding computer programs:

Obviously, the use of computers in empirical science is as widespread as in any other field. As this is NOT a course geared towards teaching specific computer techniques, learning various programs is left to the student – including those sections of Harris that discuss *Excel*. (There are several books which specifically teach Excel techniques for chemistry – investigate these if you wish). The amount of time a given student may need/chooses to spend on learning this program (or other mathematical/graphing software) is a very individual thing. While students may find great time-saving benefit in labs, tests are not venues in which the programs will be used. However, if you expect to remain in analysis, knowledge of these programs is not only helpful, but sometimes considered an industry standard.

One resource that is a **HIGHLY RECOMMENDED** exercise may be found at the following U

Textbooks: Note the UTSC Bookstore has been fully informed of all the text choices,

both required and recommended. Please direct your inquiries regarding availability to them.

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