ELEX 3525 Course Information

Instructor

Ed Casas. You can reach me by e-mail at ecasas@bcit.ca, by phone at +1 604 432 8936 or by posting a question to the course web site (see below).

Office Hours

My office is in SW1-3061, accessed through SW1-3059. Office hours are:

Day	Time
Monday	12:30 PM–2:20 PM
Tuesday	10:30 AM–1:20 PM

It's a good idea to let me know if you intend to come by as I may be away from my office.

Course Web Site

Lecture notes, assignments, lab instructions and solutions will be be handed out during lectures and will also made available on the course web site (https://learn.bcit.ca/d2l/home/367539).

Students can also ask and answer questions using the web site's "Discussions" feature.

Please do not send e-mail from the course web site, these e-mails have invalid return e-mail addresses and I cannot reply to them. Instead, use the e-mail address above.

Previous versions of this course including lectures, notes, assignments, exams and solutions, are archived at http://www.ece.ubc.ca/~edc. This is a good source of practice questions for exams.

Lecture, Lab and Exam Schedule

Lectures (classroom varies):

Day	Time
Tuesday	9:30 AM–10:20 AM
Wednesday	12:30 PM– 1:20 PM
Thursday	2:30 PM– 3:20 PM

Labs in SW1-3575:

Day	Time
Thursday (Set 3L,4V)	8:30 AM–10:20 PM

Lab instructions will be handed out and posted on the course web site. Labs begin the week of January 9. There will be no lab on the week of the mid-term or on last week of the term.

A two-hour mid-term exam is tentatively scheduled for Wednesday, February 15 from 11:30 to 1:20. A three-hour final exam will be scheduled between April 18-21.

Schedule changes will be posted on the course web site.

Evaluation

Component	Weight
Assignments	20%
Labs	20%
Mid-Term Exam	20%
Final Exam	40%

Assignments

Several (e.g. 4) assignments will be given out during the term. You will have at least one week to complete each assignment. Solutions will be handed out for all questions but only some of the questions will be marked.

Assignments should be considered as take-home exams as they are worth a significant fraction of your final mark, are to be done individually and will take many hours to complete.

Labs

The mark for each lab will be calculated as follows:

Component	Weight
pre-lab assignment	20%
completion of lab objectives	60%
accurate, complete and well-written lab report	20%

You will have approximately one week to prepare each pre-lab report. The purpose of the pre-lab assignment is to prepare for the lab so if the pre-lab report is not submitted before the start of the lab you will receive a mark of zero for that pre-lab.

The lab completion mark will depend on the lab. It may require demonstrating a working program or circuit. In other cases it will require submitting screen captures or measurements. In these cases you must submit a lab report with appropriate results to get the lab completion mark.

You will have at least one week after your lab to complete and submit your lab report. Any lab reports not submitted when the reports are collected will receive a mark of zero.

Please don't include a copy of your Pre-Lab Report in your Lab Reports. It's unnecessary material I have to download and skip through.

As with assignments, only parts of each pre-lab and lab report may be marked.

You do not have to pass the lab portion of the course to pass the course.

Exams

Exams will be "open book" and will allow any books or notes but no electronic devices other than a calculator.

Most students find it useful to bring well-organized lecture notes and solutions to the exercises/assignments to the exams.

Attendance and Absences

I recommend, but do not require, attendance at lectures. Students who do not attend lectures forfeit the opportunity to influence the (re-)scheduling of activities such as labs and exams or changes to the marking scheme. They must check the course web site regularly to stay informed of such changes. I recommend subscribing to D2L News postings to get timely updates.

You must attend a lab to get credit for completing it.

If you were unable to complete an assignment, lab or exam due to illness, please submit a Student Medical Certificate to Kelly Voros who will then notify the instructors of the courses affected.

Proctored Lab Hours

The telecom labs (SW1-3555, -3575, -3585) will be open for a few hours several evenings per week. Hours will be posted on the lab doors. Drop by SW1-3555 and ask the proctor for access to 3575 if you need to finish off a lab. You can also drop by if you want to work with your colleagues in a quiet environment.

Lecture Notes

There is no textbook for this course. Instead, lecture notes will be handed out before each lecture.

Most lectures will include exercises that will be completed during the lecture. There isn't enough space to complete the exercises on the handouts so you should bring blank paper or a notebook to class where you can take notes and work out the answers to the exercises.

The answers that are worked out in class will, eventually, be made available on the course web site. But you should try to work out the exercises on your own.

Optional References

The text by Beasely, Electronic Communications: A Systems Approach is used by some other courses in the Telecom program and covers some of the material in this course. If you don't have a copy already I don't recommend buying one.

Andrew Tanenbaum's Computer Networks, 5th Edition and William Stallings' Data and Computer Communications, 10th edition, both published by Prentice-Hall/Pearson are readable introductions to many aspects of computer networking. Both are available in the BCIT Library.

Document Preparation and Submission

Document File Formats

Much of your professional work will involve working with electronic documents. The consequences of preparing a document in the wrong format can be serious. In this course you will be asked to submit assignments and lab reports in specific file formats. *If you submit an assignment or lab report in the wrong*

file format you will receive a mark of zero for that submission. The web site will not warn you if you submit a file in the wrong format.

Just as important as the file format is making sure your document is submitted to the correct dropbox and that it is readable. After uploading your submission, check that you've used the correct dropbox and then download your submission to make sure it was properly uploaded and is readable.

Creating PDF Files

Many word processors (including the free LibreOffice) will export to PDF files. There are also free utilities such as FreePDF that allow you to "print" any document to a PDF file.

If you prefer to write your labs and assignments by hand you can scan them and convert them to PDF. The BCIT library has document scanners. If you have a smart phone with a camera you can use various apps to photograph and convert your handwritten assignments to PDF. If you embed photos in a word processor document, please rotate, crop and scale them appropriately.

Please make sure the documents you submit are readable. Grayscale scans are usually easier to read than two-level.

Embedding Content

You should learn to include various types of content in your documents. In particular:

- scans or photographs of other printed or handwritten documents;

- graphs and tables created in other 'Office'-type programs and embedded in your document;

- the screen output of arbitrary software using screen-capture utilities (e.g. Windows' 'Snip' tool)

- program listings must be single-spaced and use a monospaced font such as Courier. A simple way to ensure this is to open your code with Notepad++ and use Plugins -> NppExport -> Copy RTF to clipboard and then paste into your word processor.

Units and Significant Figures

Numerical results without units are incomplete and will be graded as incorrect.

Read the Wikipedia article on Significant Figures. For example, if your measurements have three significant figures don't give results with 10. Marks may be deducted for using an unwarranted number of significant figures in your assignments and lab reports.

Use SI units ("engineering notation"). For example, 1.2×10^{-5} F should be written as 12μF.

Cover Pages and Templates

Each submission *must* include the following on the front, preferably on a separate cover page: the course number and name, the lab or assignment number and title, your name and BCIT ID, and the date the document was created.

You may find it helpful to create a document template that you can re-use for future submissions.

Submission

All assignments, pre-labs and lab reports are to be submitted to the "Dropbox" section on the course web site.

You may use any file name for your document. Don't add comments when submitting your documents as I won't see them. You must click "Submit" after uploading your file. Check that your document can be downloaded and is readable. You should receive an e-mail confirmation; save it.

Submissions may be collected anywhere from a few minutes to a few weeks following the submission deadline. If you have not submitted your file(s) to the correct dropbox when I collect them you'll receive a mark of zero for that submission.

You'll be able to update assignments and lab reports until the time I collect them. So if you're not finished by the deadline I recommend submitting the incomplete version and updating it later if you get a chance.

The web site will not warn you if you submit a file in the wrong format.

For practical reasons, no marks can be given for reports or assignments submitted to the wrong dropbox.

> **Note:**
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> 1. **If you do not submit an assignment or lab report in the required file format I will not download it or read it and you will receive a mark of zero for that submission.**
>
> 2. **You must submit the document *in PDF format* unless another file format is specified.**

These policies will seem harsh when you get no credit for something you've spent much effort on. Unfortunately, they're necessary in order to run the course efficiently and fairly.

Marking

The marking scheme will be published on the course web site under "Course Information" along with your encrypted marks. Each student will supplied with a password they can use to view their own marks.

Marked assignments and lab reports will be uploaded back to the Dropbox section of the course web site and will be available in the "feedback" column. Typically each comment indicates an error for which a mark was deducted. Not all items in each report will be marked.

Equipment

You will need a USB flash ("pen/stick/thumb/key") drive to transfer data to and from lab instruments. It should be formatted with the usual MS-DOS FAT-32 file system (rather than NTFS, for example). Encrypted drives will not work. The equipment manuals specify the drive should be 8 GB or less but larger drives often work.

A calculator that can convert between decimal, binary and hexadecimal number bases will be very useful. A calculator that can compute cumulative Gaussian probabilities (such as the Sharp EL-W516XBSL or Casio FX-115ES/991ES commonly purchased by first-year students) will be useful for a few problems. In exams you may use any calculator but not a phone, tablet or computer.

For a couple of labs you will need your solderless prototyping board ("breadboard"), wire strippers for 24-gauge wire and some hookup wire. Components will be supplied.

If enough students still have them, we may use the Altera EPM240 CPLD board from your introductory digital electronics courses.

Software

There is a range of free and useful PC software that we will use in the course that you can optionally install on your computer. This includes: the Notepad++ text editor, the tcc Tiny C and Pelles C compilers, the Octave Matlab-compatible numerical analysis software, the Audacity waveform editor, Altera's Quartus Prime FPGA synthesis and simulation software, and the LibreOffice and FreePDF programs mentioned above. Most of these are also available, or have equivalents, for Mac and Linux systems.

You can also install some licensed software for free including Microsoft's Visual Studio and Mathwork's Matlab.

Copyright and Plagiarism

Throughout your career you will use the work of others. This introduces two different risks: copyright infringement and plagiarism.

Whenever you use the work of others you should ask yourself two questions:

- Am I allowed to copy this material? This question is answered by Canadian copyright law and determines whether you would infringe copyright.

- Do I need to cite a source for this idea? This question is answered by BCIT's policy on academic integrity and determines whether you would commit plagiarism.

Copyright law forbids copying others' work without permission although there are certain exceptions. In addition to the "fair dealing" exemptions, BCIT belongs to Access Copyright which gives you permission to copy and download material from many publishers.

Plagiarism means taking credit for the work of someone else. Briefly, you must reference the source of an idea if there's a possibility a reader could mistake it as your own.

You are expected to comply with these laws and policies. The BCIT Library has introductory material on copyright and avoiding plagiarism.

Briefly, if a classmate asks for help, help them find their own solution, do not show them yours. When copying is detected we can't tell who copied from whom and all students involved will be penalized.

Assignments, labs and exams may be set up in a way that allows plagiarism to be detected. This may not be obvious to you.

Academic Integrity

In this course, assignments, labs and exams are to be done individually. Students are encouraged to seek help from classmates but copying is not allowed. Instances of plagiarism will be reported to the Associate Dean and dealt with according to BCIT policy 5104 ("Sanctions range up to and including suspension from the institute.").

Here are some guidelines for this course:

Don't:

- divide up the questions on an assignment or work together on solutions

- submit a modified copy of someone else's solution

- ask to look at someone else's solution or show someone else your solution, not even in rough form

- write out a solution for someone else, not even on a white board

Do:

- help someone else arrive at their own solution by asking them leading questions

- explain your interpretation of the question (but not the solution)

- explain material found in the lecture notes or other references

- share books, papers or links to useful reference material – unless finding this material is part of the assignment

- compare your final numerical results – but only if each person has arrived at their answer independently; any discrepancies must be resolved independently

How to Do Well

What do you need to do well in this course? Experience has shown that:

to pass: attend all lectures and labs and submit all assignments and lab reports with answers – right or wrong

to get above 70%: actively participate by asking questions of yourself, your colleagues and/or the instructor

to get above 90%: review the material critically and find the instructor's mistakes

Your mark will also depend on your ability to follow instructions and pay attention to details. Students often fail to notice important details and lose marks for things such as giving a very complete and detailed answer to a different question, submitting in a different file format (.doc, .zip) than the one requested, or doing the work and then submitting it late or not at all.