ELEX 3330 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 Discussions section of the course web site (see below).

Lecture, Lab and Exam Schedule

Lectures are 50 minutes long starting on March 29 and ending May 19 (8 weeks) at:

Day	Time	Room
Tuesday	11:30 AM	SW1-3190
Thursday	1:30 PM	SE6-206

Labs are 110 minutes long starting on April 54 and ending on May 12 (6 weeks) at:

Day	Time	Room	Set
Monday	10:30 AM	SW3-3620	3F
Thursday	3:30 PM	SW3-3620	3E

A one-hour mid-term exam will be held around the end of April. A two-hour final exam will be scheduled between May 24–27.

Any changes will be posted on the course web site.

Office Hours

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

Day	Time
Wednesday	11:30 AM – 1:30 PM
Thursday	10:30 AM – 1:30 PM

It's a good idea to let me know if you intend to drop by as I may be away from the office. Other times are also possible by appointment.

Evaluation

Component	Weight
Assignments	10%
Labs	30%
Mid-Term Exam	20%
Final Exam	40%

Assignments

Two or three 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. Each assignment should take several 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%
lab report	20%

Since the purpose of the pre-lab assignment is to prepare for the lab you will receive a mark of zero for it if it's not submitted before the start of the lab.

In most cases you will need to demonstrate a working design to get the lab completion mark. In other cases you will need to submit screen captures or simulation results. In these cases you must submit a lab report to get marks for completing the lab.

You will have at least one week after you complete your lab to submit your lab report to the course web site. However, any lab reports not submitted when the reports are collected will receive a mark of zero.

Not all pre-lab and lab report questions may be marked.

Exams

Exams are "open book." Any books or notes are allowed. No electronic devices other than a calculator are allowed.

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

There are no lab exams in this course.

Absences

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.

Marking Scheme and Marks

The marking scheme is available on the course web site under Content > Course Information > Marking Scheme.

Your marks are available on the course web site under Content > Course Information > marks. You can retrieve the password required to view your marks by clicking on the envelope icon on the top of page. Do not use the D2L e-mail system for anything else.

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/284787`).

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.

Lecture Notes

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

Most lectures include exercises that we will complete during the lecture. There isn't enough space to complete the exercises on the handouts so you should bring 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

There is a wealth of information on digital logic design using VHDL available on-line and in books.

Some of the the better books include:

David Harris and Sarah Harris, *Digital Design and Computer Architecture*. Second Edition. Elsevier. 2013. This is a clearly-written text. About half of the content (Chapters 6-8) deals with computer architecture rather than digital system design. The first edition is available in the library.

Stephen Brown and Zvonko Vranesic. *Fundamentals of Digital Logic with VHDL Design*. Third Edition. McGraw-Hill, 2014. Has a similar but somewhat more detailed coverage than Tocci. Also describes how each topic is modelled or implemented using HDLs. The library has the second edition.

Ronald J. Tocci, Neal Widmer, Greg Moss. *Digital Systems: Principles and Applications*. 10th Edition. Prentice-Hall 2007. This is the text used at BCIT for first-year digital logic courses. It has minimal coverage of modern design techniques (e.g. HDLs) but may be a useful reference for students that already have the text.

The Altera and Xilinx web sites contain reference information and tutorials on CPLD and FPGA devices, design methodology and design software.

Quick reference cards summarizing VHDL syntax and the IEEE 1164 package types are available on the course web site.

Software

You will need to use Quartus Prime, or the earlier Quartus II, to prepare for labs and to complete assignments. You can install the free Windows or Linux versions on a PC that has $\approx$10 GB free disk space and 2 GB physical RAM. Mac users can install it under Virtualbox/Linux (also free). You need only download and install the Quartus Prime Lite Edition (1.7 GB), ModelSim Altera Edition (1.1 GB) and support for Cyclone IV devices (464 MB).

You may want to download the files at BCIT due to their size. They may be available on the course folder on ShareOut.

Quartus II is also installed in various BCIT labs where it can be used during proctored lab hours. It

should be available in the first-year and Telecom labs (SW1-3045, 3055, 3555, 3575, 3585).

Document Preparation and Submission

Document File Formats

Much of your professional work will involve working with electronic documents. There are many document formats and 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 to the course web site in specific file formats. Unfortunately, the web site will not warn you if you submit a file in the wrong format. *If you do not submit an assignment or lab report in the required file format I will not read it and you will receive a mark of zero for that submission.*

For this course, when the file format is not specified, you must submit the document *in PDF format*.

Just as important as the file format is making sure your document is submitted to the correct dropbox and that it is readable. I recommend downloading your submissions to make sure they have been uploaded and are 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. If you have a phone or tablet with a camera you can use one of many applications (e.g. Tiny Scanner) that photograph and convert paper documents to PDF.

Make sure the documents you submit are readable. Grayscale scans are usually easier to read than two-level (B/W).

Embedding Content

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

- scans or photographs of other printed or hand-written 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 (e.g. open in Notepad++ and use Plugins / NppExport / Copy RTF to clipboard and paste into your word processor)

Significant Figures

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.

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. Note that you must click "Submit" after uploading your file. You should receive an e-mail confirmation. You may want to check that your document can be downloaded and is readable. Do not add comments when submitting your documents as I won't be able to see them.

In most cases only PDF files will be retrieved from the dropbox (e.g. `.doc` or `.jpg` files won't be seen or marked). Unfortunately, the web site will not warn you if you submit a file in the wrong format. **If you submit an assignment or lab report in the wrong file format you will receive a mark of zero for that submission.**

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 submissions until the time I collect them. So if you're not finished an assignment or lab report by the deadline I recommend submitting the incomplete version and updating it later if you get a chance.

Feedback

Marked submissions will be uploaded to the course web site. They will be available in the "feedback" column of the Dropbox section. Typically each comment indicates something for which a mark was deducted.

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 try to 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.

Accommodations for Disabilities

From http://www.bcit.ca/drc/:

> . . . if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Disability Resource Centre (located

in SW1 room 2360, bcit.ca/drc, 604 451-6963) as soon as possible. The DRC staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. . . .

Plagiarism

Plagiarism means taking credit for the work of someone else. Read the BCIT Student Guide to Plagiarism if you are not clear on the topic. Briefly, do not copy or paraphrase *anything* without attributing the source.

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.").

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

If asked, help your classmates find their own solutions, do not share your solution with them.