

Math 2565 Course Outline

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Abstract

As you continue your study of calculus in this course (Math 2565), you likely have many questions, such as: “Why are we learning this if the computer can do it for us?” and “Is this on the test?”

This outline is intended to serve as a roadmap, to guide you through the various components of the course.

1 Introduction to Math 2565

Welcome to Math 2565, Accelerated Calculus II. We pick up more or less where Accelerated Calculus I leaves off, with integration. In a lot of ways, the material on integration is outdated: why spend weeks learning to solve integration problems that a computer can do in seconds? The best answer (aside from the fact that someone has to be able to program the computer) seems to be, “Because we like solving l’il puzzles.”¹

There are many of us in this class, coming from many different backgrounds and situations. If the “default settings” for the class don’t work for you, please don’t hesitate to ask for accommodation. Not everyone has reliable high speed internet, or a computer they can bring to class. Not everyone is able to attend scheduled classes without work/family/life getting in the way. But everyone deserves a fulfilling, enjoyable learning experience in each class.

I am committed to making our Math 2565 classroom. I expect all of you to make the same effort. Everyone is welcome. We are learning this material together, as a class. You should see yourselves as colleagues, not competition.

We begin with some introductions: to the university, to the staff, and to the course.

1.1 Welcome to the University of Lethbridge

Oki, and welcome to the University of Lethbridge. Our University’s Blackfoot name is Iniskim, meaning Sacred Buffalo Stone. The University of Lethbridge acknowledges and deeply appreciates the Siksikaitapii peoples’ connection to their traditional territory. We, as people living and benefiting from Blackfoot Confederacy traditional territory, honour the traditions of people who have cared for this land since time immemorial. We recognize the diverse population of Aboriginal peoples who attend the University of Lethbridge and the contributions these Aboriginal peoples have made in shaping and strengthening the University community in the past, present, and in the future.

¹twitter.com/sbagley/status/1478224506409742339?s=20

As usual, everything you need to know for the course will flow through our Moodle² learning management system. Make sure you check in regularly to keep on top of what's happening in the course.

Don't hesitate to reach out if you have questions. I'll do my best to answer all of your course-related questions as quickly as possible. (See Section 4.1, p. 8 for details on how to get in touch.) If you have questions that are not related to the course, you can ask those too, and I'll try to answer, or to direct you to someone who can. Some resources can be found on the University's Health and Safety website³.

1.2 Course staff and contact information

My name is Sean Fitzpatrick⁴. I can be reached via email at sean.fitzpatrick@uleth.ca⁵. I'm doing both the "lectures" and the tutorials.

Student (office) hours: you will be able to book appointments, alone or in groups, using a Calendly provided on Moodle. Please feel free to make frequent use of these hours. They're intended as an opportunity for you to get help, or for whatever else you want to discuss.

1.3 Course description

Math 2565 is a second semester in single variable calculus. We cover techniques and applications of integration, differential equations, sequences and series, and parametric curves. There's also a short introduction to functions of several variables at the end.

Compared to Math 1565, this course moves *fast*. Of the three courses in the Accelerated stream, Math 2565 has by far the most content. This means that we will not always cover every single detail in class; I expect you to read the book, or watch the videos it includes.

Spring 2023 is expected to remain fully "in-person", but it is worth noting that local COVID transmission in Lethbridge is just as high as it was a year ago, so I will try to accommodate remote participation.

In comparison to a "traditional" in person class, you should expect

- More emphasis on:
 - Conceptual understanding
 - Discussion
 - Context (the whole "what is this good for?" routine)
 - Being generally swell human beings
- Less emphasis on:
 - Memorization (because how am I gonna stop you from looking stuff up, anyway?)
 - Routine computational proficiency (let's be honest: the computer can do this better than us most of the time)
 - Tests and exams (so I can spend more time teaching and less time as the Math Police)

²moodle.uleth.ca

³www.uleth.ca/services-for-students/health-safety

⁴www.cs.uleth.ca/~fitzpat

⁵<mailto:sean.fitzpatrick@uleth.ca>

2 Essential course information

This section covers essential course information, including the meeting times, textbook, and grading scheme.

2.1 Course website

The primary course website is Moodle¹. On Moodle, you can expect to find:

1. Links to important resources, like this syllabus, and the textbook.
2. Links to key course activities, including the online homework, and the discussion forum. (The links will log you into those services automatically.)
3. Details about your grades and assessments.
4. A weekly topics schedule.

In case there's a day when Moodle isn't working properly and you need access to course materials, you can find some of them (like this syllabus) on my personal website². The textbook for this course (and many others) is available on our Open Textbook Server³.

2.2 Scheduled classes

Class meetings are Tuesday and Thursday in UHall C756 from 12:00 — 1:15 pm. Tutorials run on Wednesday in UHall B543, at either 10:30 am or 4:30 pm, depending on your section.

Depending on suitability of classroom technology, I will try to provide hybrid instruction for our classes. This means I will have Zoom open during class, and will mostly use a tablet and projector, rather than the board. Where applicable (i.e. when I'm speaking) I will record class.

If circumstances prevent you from attending class during the scheduled time, you will have access to the recordings and the textbook. We use **Campuswire** as a course communication platform. One of its nice features is the ability to set up chat rooms for students who want to work together, but can't make it to class.

Classes will consist mostly of *active learning*. The textbook already contains pre-recorded video for most content. Our "lectures" will be used for quizzes, assignments, and Q&A. Every Tuesday, we will take some time for homework Q&A, and then you'll be given an assignment to work on. Thursday classes will be used for a quiz. (See Subsection 2.4, p. 4 below for details.)

2.3 Course textbook

Our course textbook is APEX Calculus⁴, by Greg Hartman. This book is an **open education resource** (OER). That means that the book is fully free, both in terms of cost, your freedom to use and share the book however you see fit.

If getting the book for free somehow feels wrong, or you worry you're missing out by not buying anything, here are two great books you can buy:

1. Mathematics for Human Flourishing⁵, by Francis Su

¹moodle.uleth.ca

²www.cs.uleth.ca/~fitzpat/teaching.html

³opentext.uleth.ca

⁴opentext.uleth.ca/apex-accelerated/part-calculus-II.html

⁵www.chapters.indigo.ca/en-ca/books/mathematics-for-human-flourishing/9780300237139-item.html

2. Change is the Only Constant⁶, by Ben Orlin

Neither of these books are in any way needed for the course. But they're cool books, and they're about math. (The second is even about Calculus!) So if you feel like you need to spend money on a book, you can. (Or I don't know, go to the library or something.)

2.4 Grading scheme

The various graded components of the course are explained below. At first it will seem like there's a lot to do! But most items are small, and many can be done during class time.

Tutorials (15%) Tutorials will more like a lab in their structure. Each tutorial will have an assignment, and many of these will involve the computer. In particular, we will learn how to use some basic Python code to assist us in solving calculus problems. Any computer work will be done via the University's Syzygy^a Jupyter hub, which you can access via any web browser.

^auleth.syzygy.ca

Online Homework (15%) Every week, you will be assigned a set of online homework problems, to help develop proficiency with the computational procedures in the course. Homework will be delivered through the **WeBWorK** online homework system. See Subsection 3.1, p. 6 for details.

Assignments (20%) There will also be written assignments each Tuesday. You will have time to work on them during class, and assignments will be done in groups. A typical assignment will consist of one or two problems that are slightly less routine than the online homework. ^a Once an assignment is marked, you will be allowed to submit revisions to any problems where mistakes were made. Here is a fictitious (but possibly informative) grading rubric for assignments:

- A: wow, they clearly discussed this as a group, and nailed down all the key points! I also appreciate how the work is legible and relatively free of frustrated scribbling.
- B: everyone had something to say, but I'm not sure they all agreed. There's an obvious mistake that someone should have caught, suggesting that nobody thought to read it over before submitting.
- C: most of the details are there but this was clearly done in the last hour before the deadline. Also, it looks suspiciously like one person did all the work.
- D: looks like parts (a), (b), (c), and (d) were each done by a different person, and then arranged randomly on the page.
- F: nothing submitted. Or work is a crude drawing of what appears to be an integral attacking a kitten.

^aIn certain cases where group work could impose undue hardship on an individual student, I am willing to consider exceptions to group work.

⁶www.chapters.indigo.ca/en-ca/books/change-is-the-only-constant/9780316509084-item.html

Quizzes (30%) Quizzes will take place every Thursday, during class time. The quiz format will be as follows:

- *Individual Quiz.*

Each quiz will be short: two or three questions covering material from that week. (Expect problems similar to the online homework.) You will have 30 minutes to write the quiz.

- *Group Quiz.*

After a 5 minute break (to collect quiz papers and organize groups) there will be a 20 minute group quiz. The group quiz will typically include the same questions as the individual quiz.

- *Discussion.*

Once the group quiz is complete, we'll have about 20 minutes left to discuss the quiz, or any other problems from the week (for example, the online homework).

Your score on each quiz will be the 80% individual and 20% group, unless your individual score is better than your group score, in which case you score will be 100% individual.

Quiz accommodations: students who write with the Accommodated Learning Centre are encouraged to schedule their quiz *before* class, so that they do not miss out on the group stage of the quiz. If this is not possible, we can discuss alternate arrangements.

Remote access: if you are unable to attend class in person (for whatever reason) I will arrange for you to access the quiz remotely. As long as at least two students are writing remotely, we will try to make arrangements for the group quiz as well.

Final Exam (20%) We will have a scheduled, cumulative, in-person final exam. Details will be provided on Moodle toward the end of the semester. Final exams are scheduled by the Registrar about one month into the term.

Regrading policy:

- All graded work can be revised and resubmitted for extra credit. Corrections should be submitted within one week of work being returned, and you can earn back up to 50% of the points you lost by making corrections. (For tutorials, you can earn back 100% of the points you lost.)
- A resubmission form will be provided via Moodle for submitting your revisions. If you'd like to discuss your feedback first, we can discuss corrections during student hours. For group work, emails (or student hour appointments) should include the whole group.
- Corrections are based on *feedback*: to revise a question, you must first attempt the question. (Don't leave anything blank.)

Other grading policies:

- In each grade category I will drop your lowest score. This includes an assignment or test you missed completely, whether due to illness or the generally overwhelming burden of trying to learn during a pandemic.

- Students are expected to abide by University regulations regarding academic honesty. Use of resources (online or otherwise) is permitted, as long as these are properly cited. Getting someone else to do your work for you is not permitted.
- If we determine that you cheated on an assignment or test (through plagiarism, copying, online “study” sites, etc.) you will receive a grade of zero on that grade item, and you will not be able to drop that grade item as your lowest grade in that category.

Each of the grade components above will be assigned a numerical score. These will be added to get a score out of 100. Your score out of 100 is converted into a letter grade according to the following table.

Table 2.1 Conversion of percentage scores to letter grades in Math 2565

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	F
98-100	93-97	90-92	86-89	80-85	77-79	73-76	68-72	64-67	60-63	50-59	0-49

3 Technology elements

Our class is run in a blended format, with both online and in-person elements. This section provides details on the different pieces of technology we use.

3.1 Online homework

Online homework is delivered via WeBWorK. WeBWorK is an open source homework system that I maintain on a local server. This service is provided to you free of charge, and your data never leaves campus.¹

The value of WeBWorK is that questions are automatically graded, providing you with immediate feedback on your work. This is an excellent source of guided practice.

To access WeBWorK: simply click the relevant link in Moodle. You will be signed in automatically — there is no user name or password. But keep in mind that if your session times out due to inactivity, you have to return to Moodle to log in again.

Submitting answers: WeBWorK has an automatic preview feature. The mathematics in your answer will be rendered as you type. (You can turn this off in the user settings if you don’t like it.) If everything looks good, click the Submit button. The system will immediately respond with “Correct” or “Incorrect”. If your answer is correct, there is nothing more to do: your answer has been recorded, and you have credit for that problem. If your answer is incorrect, you get to try again. (*Exception:* I typically do not give unlimited attempts for true/false and multiple choice questions.)

Other notes:

- Some questions are “scaffolded” — there are multiple parts, and you need to complete one part before being allowed to access the next. For these, you want to click the Preview Answers button, rather than Submit, to check your work and move on to the next step.
- If you need to include scientific units in an answer, the automatic equation rendering can cause trouble. There’s a little tool bar on the right hand side that lets you switch to *text mode* to enter units.

¹Okay, this is not entirely true. Since faculty are expected to teach from home, your data does travel from campus to my house via the university VPN.

- At the bottom of each page is an “Email Instructor” button. If you are stuck on a problem, or if you think there is an error in the programming (it happens!) you can use this to let me know. WeBWorK will send me an email with your message, along with a link to the exact version of the problem you were working on. Often I can figure out where you’re going wrong by looking at your answer.

Please *do not* use the email button to ask me how to solve a problem. That’s what the discussion forum is for. It should only be used after you’ve made several attempts at the problem, or if you see an error message of some sort.

- Your score on WeBWorK updates automatically with Moodle once per day. If you have just completed an assignment, don’t expect to see this reflected immediately in the Moodle gradebook.

The students who do well in this course are the ones who start their problem sets early. Please do not wait until the due date to begin: it leaves you no time to ask questions! The most effective way to use WeBWorK is to read the relevant portion of the textbook, try the problems, and then ask for help on the ones you’re stuck on.

Oh, and please do not wait until you’ve made 50 unsuccessful attempts at a problem to ask for help. If you haven’t figured out a question after 5 or 6 attempts, set it aside, and come back to it a bit later. If you still can’t figure it out, go the discussion forum.

3.2 Jupyter and Syzygy

The University of Lethbridge has access to an online Jupyter hub called **Syzygy**, which is available at <https://uleth.syzygy.ca/>². You can sign into Syzygy using your U of L credentials.

Tutorial assignments will often take the form of a computer lab. These will be delivered as a Jupyter notebook. A link will be provided on Moodle that takes you to Syzygy and automatically downloads the notebook.

3.3 Crowdmark

Quizzes and assignments will be submitted through Crowdmark. For in-person quizzes, I will upload the work for you. For assignments (and quizzes done remotely), you will upload your own work. Like WeBWorK, Crowdmark is connected to Moodle, so you just have to click a link in Moodle to access your assessment and submit your work. Unlike WeBWorK, Crowdmark lets you do your work using pencil and paper. For ease of reference, I’ve placed advice for using Crowdmark³ on a separate page.

Basic advice:

- Start each question on a clean sheet of paper.
- Use a scanner, or a scanning app on your smartphone. PDF is best, but JPG and PNG files are also supported.
- When you submit, make sure your pages are in order, and rotated correctly.

3.4 Zoom and other video

I will attempt to provide a Zoom link for each class, for students who cannot attend in person.

²uleth.syzygy.ca/

³www.cs.uleth.ca/~fitzpat/crowdmark.html

3.5 Using OneNote

OneNote will be used for class presentations, and can also be used for student collaboration.

Students will have access to OneNote through their Office 365 accounts, and I will also provide a link on Moodle.

4 Course policies

This section deals with questions about communication, accommodations, missed tests, and other exceptional (yet common) cases.

4.1 Communication

The following communication channels are available in this course:

1. *Forums.*

There will be a primary course Q&A forum using Campuswire¹. Use of Campuswire is not mandatory (some of you may have privacy concerns) but it is strongly encouraged.

Campuswire has a primary class feed, that serves as a Q&A forum. There is support for mathematical notation, code highlighting, and remaining anonymous to your peers when you post.

For groups of students who want to be able to communicate outside of class, it is also possible to set up chat rooms in Campuswire. These can be made private, so that only those who are invited have access.

Campuswire should be your primary communication channel. In particular, any questions about homework and course content should be asked there, since I can reply there with mathematical notation. You will also get a much faster reply on the forum than you will from email. If you have a question you don't want to ask publicly, you can send a direct message instead.

To access Campuswire, use the signup link and PIN code provided on Moodle. But note that to sign up this way, you will need to use your U of L email address. If you prefer not to provide your school email address to a third party company, you can ask me to send you an invite to a different email address.

2. *WeBWorK.*

There is one exception to the “put all homework questions on Campuswire” rule: in our WeBWorK online homework system, there is an “Email Instructor” button you can click to send feedback. This is useful if you think there's an error in the question, or if you've tried it several times and can't figure out why you're wrong. That email comes with a link I can use to jump directly to your version of the question, and see what answers you've tried. See Subsection 3.1, p. 6 for details.

3. *Email.*

You can email me for questions that aren't related to course content. For example, if you have to miss class, or a test, you can email me to let me know.

¹campuswire.com/

4.2 FAQ

1. *I don't think I can attend the classes regularly. Can I still take the course?*

Short answer: yes. I recognize that not all students have access to the same technology. If your home internet is unreliable, attending Zoom sessions could be a challenge. If you can't attend synchronous sessions, I will arrange alternatives for graded work done asynchronously. I will also try to connect you with other students in the same situation, so that you still have a group you can work with.

2. *What happens if I get sick?*

I'll do my best to be accommodating of any illness that interrupts your studies. There is no need to provide details of the illness. If you miss a week or more of work, please get in touch to make a plan for catching up. One of the biggest challenges in math is that once you fall behind, it's difficult to catch up on your own.

3. *What exactly does academic honesty mean?*

In short, that any work you represent as your own, is your own. Much of your work can be done in groups, but not all of it. I will assume that you have access to a calculator, including online tools (like Symbolab²) that give you step-by-step solutions.

Use of these tools is acceptable, but take care that you are not overly reliant on them. What is not acceptable is having someone else do your work for you. This includes tutors, classmates, friends, family members, and online "homework help" sites. If you find yourself submitting an assignment without having learned the material, there is a good chance you have committed an academic offence.

Penalties for academic dishonesty are outlined in the Academic Calendar³. Depending on the severity of the offence, penalties for a first offence can range from a grade of zero on an assessment, to an F in the courses. Academic offences are also reported to the Dean of Arts & Sciences. They keep a record of each offence, and students with multiple offences can be subject to supplementary discipline.

4. *Does that mean I'm not allowed to get help with my homework?*

Not at all! But keep in mind that your course instructors will be available for help, free of charge. (OK, maybe not free of charge, but you've already paid for it with your tuition.) I will be responding on the discussion forum regularly. There will be time to ask questions in every class, and there will office hours. The Student Success Centre will also be running free help sessions (details TBA).

Some of you may still decide to pay for tutoring, and that's fine. But you have a duty to disclose sources of help on an assignment, and the individual tests are still tests, even if you won't have someone watching over your shoulder.

You should probably avoid the various paid "homework help" websites. Most of these don't offer help. They offer worked solutions for a price. Getting those solutions won't help with your understanding. More importantly, the people working for these sites are paid (poorly) per solution, and they often provide incorrect and/or badly written work. (We saw plenty of examples of this last Spring, and yes, all those students now have discipline reports on file.)

5. *I missed a test! What do I do? Do I get a zero?*

²www.symbolab.com/

³www.uleth.ca/policy/resources/student-discipline-policy-academic-offences-undergraduate-students

First, contact me as soon as possible for any missed test. There are *five* tests, and I only count *four* towards your grade. As long as you only miss one test, there is no penalty. This is true regardless of your reason for missing the test.

6. *Do I need a doctor's note?*

No. This wastes health care resources and your time. (That was my answer before the pandemic, and it's doubly so now.) Just email me to say you were sick. However, if you miss more than one test due to illness, we'll need to meet to discuss how to adjust your grade.

7. *I receive learning accommodations. What arrangements can I make?*

First, make sure that you have registered with the University's Accommodated Learning Centre⁴. No need to let me know: they notify me of every student with accommodations.

If there are any adjustments I can make to facilitate your learning, please do not hesitate to get in touch with me. All students deserve an equal opportunity to learn. Note that the HTML textbook is designed with accessibility in mind, and should work with screen readers. However, I regret that we have not had the time (or paid help) necessary to add elements such as alt-text descriptions for images. It's on the to-do list, but that list is long, and growing.

8. *Life intervened and I can't keep up this week. What do I do?*

Send me an email. Extensions are usually granted as long as they're granted ahead of time. Online homework extensions need to be in place before solutions become available. Book an appointment with me as soon as you feel like you're falling behind and I'll do my best to get you up to speed.

⁴www.uleth.ca/ross/accommodated-learning-centre