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MAT 2377 (Fall 2020)  
Probability and Statistics for Engineers

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**Professor:** A. Smith  
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**Official Course Times:** Monday from 10-11:30 AM and Wednesday from 8:30-10 AM.

**Note:** Classes on Monday, 12 October are cancelled due to Thanksgiving. They will take place on Wednesday, 9 December; classes that day will follow the Monday schedule.

**Course Structure (Big Picture):** As this course will be online, the structure will be a little different from usual. The core loop will be:

1. On your own time, watch short videos covering some basic definitions and examples.
2. Write a short quiz (usually two questions) on the class's video. You will get immediate feedback and unlimited re-do attempts.
3. During scheduled lecture time, discuss the video and go over a variety of questions together.

You will also have a short homework assignment (once a week) and longer exams (twice in the term).

**Urgent Suggestion:** If you feel that you need accommodations, you should contact *Access Services* as soon as possible. Accommodations are not limited to those with physical disabilities. Unfortunately there is a deadline to receive accommodations, so please do not delay.

**Grading:** If your mark on the final examination is less than 40%, the mark on the final exam will be your grade in the course. If your mark on the final is 40% or more, your grade in the course will be calculated as follows:

Midterm	25%
Assignments	25%
Quizzes	10%
Final Exam	40%

- Late assignments and quizzes will not be accepted, as solutions will be posted. To account for the fact that sometimes bad luck or other commitments prevent you from finishing a particular assignment or quiz, the 3 lowest assignment grades and 5 lowest quizzes will be dropped.
- There will be no make-up midterm. If your final exam score is higher than your midterm exam score (and also higher than 40 percent), then your final exam mark will count as your midterm mark.
- If you are unable to write the final exam, then the policies of the Faculty will apply.

**Textbook:** There is no mandatory textbook. To save money, I note that the following textbook contains essentially of the relevant material and is available for free online:

*Probability and Statistics: A Course for Physicists and Engineers* by Mathai and Haubold.

The following textbook also contains essentially all of the relevant material, and is a good alternative:

*Essentials of Probability and Statistics for Engineers and Scientists*, by Walpole, Myers, Myers and Ye.

**Mobius:** You need to obtain a *Mobius* account to be able to do quizzes, homework, and exams. See the following for an introduction to Mobius: [https://mysite.science.uottawa.ca/bdionne/teaching/Mobius\\_en.html](https://mysite.science.uottawa.ca/bdionne/teaching/Mobius_en.html)

At the moment Mobius is not free, but it is much cheaper than most textbooks (and offers substantial benefits).

#### **Office Hours and Other Discussion:**

I encourage students to ask questions (or open discussions) throughout the term. Please don't feel that you can only ask questions about specific homework problems - if you feel that *e.g.* you are missing some foundations, we can work together on that as well.

Here are some venues for asking questions:

1. Questions are welcome (and very much encouraged) during class times.
2. For all text communication besides *personal accommodations* and *office hour requests* I have set up a *Piazza* forum at:

[piazza.com/uottawa.ca/fall2020/mat2377](https://piazza.com/uottawa.ca/fall2020/mat2377)

You should ask all short questions about course content, logistics, and so on in that forum, and I will respond to personal emails by asking you to repost there. I will check Piazza 5 or more times per week throughout the term. Note that Piazza has some other helpful features (e.g. it is also possible to set up polls there, and you can write posts without using your name).

3. If you need any accommodations, please start by writing to the *Student Accommodations* office if appropriate. If not, or if they are not helpful, please email me directly. In either case, please do this *as soon as possible* - it is *vastly* easier to find an appropriate accommodation with more time to work with. **I don't want to make this course unnecessarily stressful, but can't always guess as to what is causing problems. Please tell me!**
4. Since meeting in person is discouraged, I will replace traditional office hours by videoconferencing meetings. To set one up, please send me an email with (i) a list of times that you are available and (ii) a quick summary of what you'd like to discuss. I'll try to accommodate any requests, but the chance of finding a common meeting time goes up if you send a request earlier and list more meeting times. In particular it is hard to schedule in 24 hours and/or with a single possible meeting time.

**Help Center :** The Department of Mathematics and Statistics provides a help center in Mathematics and Statistics. Please visit their website, [http://www.mathstat.uottawa.ca/ugrad/help\\_center\\_en.html](http://www.mathstat.uottawa.ca/ugrad/help_center_en.html), for more information. It is strongly advised not to wait until the eve of a test or an exam before consulting the Help Center because the center could possibly be very busy.

**Official Description of the Course :** A concise survey of: combinatorial analysis; probability and random variables; discrete and continuous densities and distribution functions; expectation and variance; normal (Gaussian), binomial and Poisson distributions; statistical estimation and hypothesis testing; method of least squares, correlation and regression. The emphasis is on statistics and quality control methods for engineers.

**Prerequisite:** MAT 1320 or MAT 1330. MAT 1322 or MAT 1325 or MAT 1332 is corequisite to MAT 2377 The courses MAT 2377, MAT 1371, MAT 1372, MAT 2371, MAT 2375, MAT 2378, MAT 2379, ADM 2303, ECO 3150, HSS 2381, PSY 2106 cannot be combined for credits.

**Homework and Quizzes:** Homework and quiz will be available on Brightspace,

and deadlines are also listed on Brightspace when they are posted. All homework and quizzes are posted at least two weeks before their deadlines; they can be completed early (and I strongly suggest handing in homework a little early to avoid surprises).

Other accommodations are available for those who need them, if you write to me sufficiently far in advance that they can be implemented.

**Midterm:** The midterm will be held in class time on November 2. You may use your notes and calculators.

**FINAL EXAM :** The exam of three hours will be held during the examination period and will cover all subject matter seen during the semester. It is your responsibility to determine the date, place and time of the final exam. Do not rely on your friends. An error from them could cause you many troubles. In addition, never write an examination, especially a final exam, if you are sick. We can not take this into account after the fact. Check the regulations on this issue in the regulations of the Faculty of Sciences, see <https://science.uottawa.ca/en/students-etudiants/examens.html>.

#### **FAQs:**

Some FAQs, cribbed from other courses and previous versions of this course:

1. **I really crashed my car - why don't you believe me and let me hand in homework late?** I do believe you! This is a big course and being a student is hectic - I expect that, *every single day*, there are probably *several* students who have a *really good reason* that they can't hand in homework. Moreover, some of them are too sick (or just too shy) to write to me about it. Unfortunately, I really need to grade homework and give solutions at *some* point, and any particular day will necessarily be at least a little unfair to *someone*.

The fairest approach I have heard of is to let every individual student judge what their own most important crises are, and miss a few homeworks at those times without penalty. I also allow students to turn in homework quite early. This should be enough for short-term crises. **If you think that this won't work for you (e.g. due to a chronic condition), you should reach out to me.**

2. **Why are we using Mobius?** The main motivation: Mobius lets me send you lots of little quizzes and get you feedback *immediately*. Frequent practice and feedback is critical for learning mathematics well, and programs like Mobius allow for the largest volume of feedback.

A second motivation: in online courses, cheating on a typical exam is very easy. This is a problem for all of us who want the credential to mean something. Many anti-cheating measures, such as webcams, are very intrusive. Mobius makes it harder (though not impossible) to cheat on exams, *without* any real inconvenience to non-cheating students.

3. **Why do we have homework at all?** Homework and quizzes are meant to be a gentle nudge to learn the course material (and check your understanding of it) over time.
4. **Why is the main content not delivered “live”?** We expect that a substantial group of students will have major obstacles to being consistently available (e.g. internet failure, care for family, and so on). The core content needs to be available to such students.

**Academic Fraud:**

Academic Regulation 14 defines academic fraud as “any act by a student that may result in a distorted academic evaluation for that student or another student. Academic fraud includes but is not limited to activities such as:

1. Plagiarism or cheating in any way;
2. Submitting work not partially or fully the student’s own, excluding properly cited quotations and references. Such work includes assignments, essays, tests, exams, research reports and theses, regardless of whether the work is written, oral or another form;
3. Presenting research data that are forged, falsified or fabricated;
4. Attributing a statement of fact or reference to a fabricated source;
5. Submitting the same work or a large part of the same piece of work in more than one course, or a thesis or any other piece of work submitted elsewhere without the prior approval of the appropriate professors or academic units;
6. Falsifying or misrepresenting an academic evaluation, using a forged or altered supporting document or facilitating the use of such a document;
7. Taking any action aimed at falsifying an academic evaluation.”

**Notice against sexual violence**

The University of Ottawa will not tolerate any act of sexual violence. This includes acts such as rape and sexual harassment, as well as misconduct that take place without consent, which includes cyberbullying. The University, as well as various employee and student groups, offers a variety of services and resources to ensure that all uOttawa community members have access to confidential support and information, and to procedures for reporting an incident or filing a complaint.

**Drop Date:** November 20. See uOttawa academic calendar for other important dates.

**Note that this syllabus is subject to modification. Modifications will be announced in class and/or on Brightspace.**