

# PMATH 330 - Introduction to Mathematical Logic

## Fall 2019

- Instructor: Dino Rossegger
- Office: MC 5313
- E-mail: `dino.rossegger@uwaterloo.ca`
- Teaching Assistants:
  - Luke Maclean: `lrmaclean@uwaterloo.ca`
  - Wilson Poulter: `wrppoulter@uwaterloo.ca`
- Lectures: MWF 8:30 – 9:20
- First lecture: September 4<sup>th</sup>
- Lectureroom: MC 4040
- Midterm test: October 21<sup>st</sup> (in class)
- Grading scheme:
  - 20% Assignments
  - 20% Midterm
  - 60% Final exam

You will need the following to obtain a positive grade:

1. Your overall grade must be at least 50%,
2. your assignment grade must be at least 50%,
3. and your final exam grade must be at least 50%.

In case one of the above points is not met your final grade will be the minimum of your overall grade, assignment grade, and final exam grade. In all other cases, your final grade will be the overall grade.

- Course description:

This course is an introduction to mathematical logic. The notions of logical consequence and formal proof will be introduced and discussed. The first part of the course deals with those notions in the context of propositional logic. At first the syntax and semantics (via truth tables) of propositional logic will be discussed, then two proof systems for propositional logic will be introduced. At last we will look at applications of propositional logic in computer science.

The topic of the second part is first order logic. At first we again introduce the syntax and semantics (via interpretations) of first order logic. We then introduce two proof systems for first order logic and discuss their completeness theorems.

- Required Texts:

The course notes will be made available on learn and will be continuously updated as we go through the material.

- Assignments:

There will be weekly assignments via Crowdmark (around 10 in total). Usually these assignments will be due every Friday, 8:29 am with the first due on September 13<sup>th</sup>. Late submissions will not be accepted. I will drop your worst assignment grade!

- Piazza and Office Hours:

We will use a Piazza forum for this course which will be regularly moderated by me and the TA's. I encourage you to post your questions and discuss course related topics there. I will not answer questions which might be interesting for a general audience by email, instead post at the piazza forum (This especially includes questions about the material covered in the course). Please use this link to enroll to the piazza forum: [https://piazza.com/uwaterloo.ca/fall2019/pmath330\\_drossegg\\_1199](https://piazza.com/uwaterloo.ca/fall2019/pmath330_drossegg_1199). If for any reason you can not use piazza or want to discuss personal matters you can also come to my office hours: M 3.30 pm – 4.30 pm, W 10.00 am – 11.30 am.

**Academic Integrity:** In order to maintain a culture of academic integrity, member of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Refer to Academic Integrity website (<https://uwaterloo.ca/academic-integrity/>) for details.

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) Student Petitions and Grievances, Section 4. When in doubt, please contact the department's administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g. plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71 (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>)

71) Student Discipline. For typical penalties check Guidelines for the Assessment of Penalties (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/guidelines/guidelines-assessment-penalties>).

**Appeals:** A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) [www.adm.uwaterloo.ca/infosec/Policies/policy72.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm).

**Note for Students with Disabilities:** AccessAbility Services (<http://uwaterloo.ca/disability-services/>), located in the new addition to Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the office at the beginning of each academic term.