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**COURSE INFORMATION**  
**MATH 4301 (Honours Seminar) 2011-12**

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Working under the guidance of an approved faculty advisor, students will independently study an area of mathematics. Students will write a paper (approximately 20 pages) and will give a presentation (20 minutes long) describing the research conducted.

Time TTh 4:00–5:30  
Place Ryan Building 3027  
Coordinator Adam Van Tuyl  
Office: RB 2015  
Text *(as needed)*  
Email [avantuyl@lakeheadu.ca](mailto:avantuyl@lakeheadu.ca)  
Web Page [http://flash.lakeheadu.ca/~avantuyl/courses/2011\\_12\\_math4301.html](http://flash.lakeheadu.ca/~avantuyl/courses/2011_12_math4301.html)

**Notes on class time.** Except during the first couple of weeks, we will not be meeting in class. However, please keep the above times free every week. All presentations will take place during this time slot. You will also arrange to meet with your faculty advisor on regular basis. You may want to use this time slot to meet with him or her.

**Notes on faculty advisor.** Each student will work with a faculty member of the Department of Mathematical Sciences. Students are asked to contact faculty members individually to determine if the faculty member would be willing to act as a supervisor. Your grade in the course will be decided by your faculty advisor and the course coordinator (in 2011-2012, this will be Dr. Adam Van Tuyl). In the case that this is the same person, another faculty member will be assigned as a “second reader”.

**Notes on topic.** As part of the Honours Seminar, you will pick an area of mathematics that interests you. We are not expecting you to produce original mathematics. Instead, we want you to learn how to pick a new topic in mathematics and identify some of the key problems and results in a particular area. Your topic for independent study will be based upon a variety of sources (e.g. textbooks, journal articles). The only restriction on your choice of topic is that you pick an area of mathematics not directly covered in any course you took at Lakehead University.

There is some flexibility on the type of project you can undertake. For example, if you are interested in programming, and you can find someone to supervise you, you can tackle a computational problem. It is suggested that you pick a topic that interests you.

We have examples of projects from previous years. If you would like to see a copy, please contact the course coordinator.

**Marking Scheme.** Students grades will be based upon following rubric. A description of each item is found below.

<b>Task</b>	<b>Points</b>
Submit a Topic Proposal	5
Present a 5-10 minute talk	5
Submit Draft outline	5
Submit Draft	5
Provide a Peer-Review Report of fellow student's Draft	5
Submit Second Draft	5
Practise Presentation	5
Provide a Peer-Review Report of fellow student's Presentation	5
Submit Final Report	30
Give Presentation	30
<b>Totals</b>	<b>100</b>

Here are some further details on the above list.

**1. Topic Proposal.** Each student will write a one page paper that contains the following information: 1) name, 2) faculty advisor, 3) title of project, 4) book(s) to be used in the project, and 5) a one-to-two paragraph summary of what you want to learn and why. The topic of your proposal should be an area of mathematics not directly covered in any course you took at Lakehead University, and needs to be approved by your advisor. The proposal will be submitted to both the coordinator and the advisor.

A copy of your proposal will be shared with all other students in the course (if they come across information that would be helpful to your project, they can pass it on to you).

**2. 5-10 minute talk.** At the end of first semester, you will present a short 5 to 10 minute talk on your topic. For example, you could talk about your problem, or an interesting result. You will also discuss your future goals for the project.

**3. Draft Outline.** You will provide your advisor and the coordinator with an outline of your project. It should include a complete bibliography.

**4. Submit First Draft.** You will provide your advisor and the coordinator with the first draft of your project. They will provide timely feedback. You will also need to provide one more copy for the next step of the process (see below).

**5. Peer-review of another student's draft.** You will critically read another student's draft (to be assigned randomly) and provide up to two pages of feedback for your fellow student. A copy of your feedback will also go to your advisor and the coordinator.

**6. Submit Second Draft.** You will provide your advisor and the coordinator with a second version of your project. This version will incorporate the feedback from the advisor, coordinator, and fellow student. This version will be a close approximation of the final version.

**7. Practise Presentation.** You will give a practise version of your talk for the coordinator, your advisor, and one fellow student. They will provide you with timely feedback.

**8. Peer-reviewed of another student's talk.** You will give feedback to another student on their practise talk. You will also provide a copy of your written feedback to your advisor and the coordinator.

**9. Final Project.** Using all feedback accumulated, the student will provide the coordinator and the advisor with a copy of their final project.

**10. Presentation.** The student will give a 20 minute presentation on their project.

**Further notes:**

- Every assignment must contain the course number, your name, and your student ID.
  - All material that is to be handed in should be typed up using L<sup>A</sup>T<sub>E</sub>X, single sided, and stapled.
  - Meeting deadlines are important. You will lose 1 point for every day (weekends counting as one) that you are late.
  - All students will be expected to attend Department Colloquiums, provided they have no other conflict.
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**Tentative Schedule.** We will use the following schedule, which is subject to change. Changes to this schedule will be announced in class or via email (and posted on the class web page). Items in **BOLD** are requirements of the project.

Sept. 12, 2011	First semester begins
Sept. 13, 2011	Introduction to course and expectations
Sept. 15, 2011	Introduction to L <sup>A</sup> T <sub>E</sub> X(I)
Sept. 20, 2011	Introduction to L <sup>A</sup> T <sub>E</sub> X(II)
Sept. 22, 2011	Introduction to online tools (MathSciNet,arXiv), referencing
Sept. 30, 2011	<b>Proposal of Topic Due</b>
Oct. 10, 2011	Thanksgiving (No classes)
Oct. 27, 2011	<b>Draft Outlines Due</b>
Nov. 1, 2011	Introduction to math presentations
Nov. 3, 2011	Introduction to using Beamer in L <sup>A</sup> T <sub>E</sub> X
Nov. 29, 2011	<b>Mini-talks (I)</b>
Dec. 1, 2011	<b>Mini-talks (II)</b>
Dec. 5, 2011	First semester ends
	<b>First Draft Due</b>
Jan. 6, 2012	Second semester begins
Jan. 19, 2012	<b>Peer Review of fellow student's draft Due</b>
Feb. 16, 2012	<b>Second Draft Due</b>
Feb. 20-24, 2012	Reading Week (No classes)
Feb. 27-March 2, 2012	<b>Arrange a Practise Session with advisor, coordinator, and one other student; also, attend another student's talk</b>
March 8, 2012	<b>Peer Review of fellow student's practise talk due</b>
March 27, 2012	<b>Final Talks I</b>
March 29, 2012	<b>Final Talks II</b>
April 3, 2012	<b>Final Talks III</b>
	<b>Final Project Due</b>
April 5, 2012	Second semester ends