Mathematics 3356

Mathematical Problem Solving

Lakehead University, winter term 2013

Course Outline

Instructor: Dr. Andrew P. Dean

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Office Hours: TBA

Text: There is no assigned textbook. As a result, attendance and lecture notes are very important

Prerequisite: Math 2232 (and hence Math 1272) and a love of mathematics

Outline: The course is divided into two sections. The first half will deal with techniques that are basic to all of mathematics (e.g. drawing a figure, proof by contradiction, considering extreme cases …). The second half will deal with applying knowledge from different branches of mathematics (e.g. geometry, Calculus, algebra , probability…) to solve interesting, theoretical and practical problems. The aim will be to hone your problem solving skills and to illustrate connections between different areas of mathematics. Class participation and the ability to work with others will be very important. This course is suppose to be fun!

Learner outcomes:

- **Students will be better at solving diverse problems in mathematics**

- **Techniques that have been learnt in other classes will be reinforced by applying them to specific problems**
- **Students will learn to attack problems from multiple approaches**
- **Students will learn that being wrong is sometimes the right approach**
- **Students will learn how to work in a collaborative team**
- **Research skills will be increased**
- **Confidence with approaching difficult mathematical problems will improve**
- **Students will learn how to create problems to challenge students from elementary school to senior high school**

Important Dates:

- **January 19th , Final date to register**
- **March 9th , Last day to withdraw without academic penalty**
- **February 18th -23rd , Study week**
- **March 21, Mathematics competition**
- **April 9th, Last day of classes**
- **April 12 -24th, Examination period**

Evaluation:

- **Assignments**   **20%**
- **Midterm**   **20% (Feb. 13th in class)**
- **Participation**   **10%**
- **Questions for math competition**   **10%**
- **Final (take home)**   **40%**

Important: Students may work on assignments together but individual assignments are to be handed in. Assignments are to be typed, written in ink (blue or black) or with a dark pencil. Students will be invited to discuss their level of participation prior to March 9th.