

# COURSE OUTLINE for 2022-23

## Pre-Calculus 11

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**Teacher:** Dr. Paramvir Singh  
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**Classes:** Monday – Friday  
**Room :** C003

### COURSE OVERVIEW

Pre-Calculus 11 is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into post-secondary programs that require the study of theoretical calculus, such as sciences or engineering. Topics presented in this course include expressions and equations, trigonometry, reciprocal functions, quadratic functions and equations, systems of equations and inequalities (including quadratic). This course has nine units. They are:

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|---------------------------------------|--|
| 1. Trigonometry                       | 6. Absolute Value and Reciprocal Functions |
| 2. Quadratic Functions                | 7. Systems of Equations                    |
| 3. Quadratic Equations                | 8. Linear and Quadratic Inequalities       |
| 4. Radical Expressions and Equations  | 9. Investing and Borrowing Money           |
| 5. Rational Expressions and Equations |  |

### COURSE EVALUATION

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|--------|------|
| 1. L4+ | 100% |
| 2. L4. | 98%  |
| 3. L4- | 93%  |
| 4. L3+ | 86%  |
| 5. L3  | 80%  |
| 6. L3- | 72%  |
| 7. L2+ | 66%  |
| 8. L2. | 60%  |

9. L1 50%

10. L1- Failing

### **COURSE OBJECTIVES**

In this course, students will:

- continually refine their own learning and understanding to create the best learning experiences for them and their peers.
- develop their problem-solving and reasoning skills and strategies to view the world from a mathematical perspective.
- improve their abilities to communicate mathematics in many modes and forms.
- expand their curiosity about mathematics and mathematical ideas.
- become contributors to the classroom community to advance classroom learning.

### **GOALS & PRINCIPLES**

By the end of the course, students will be able to:

- develop reasoning and strategies to generalize algebraic relationships through abstract thinking.
- extend the meanings of and connections between operations on polynomial functions with rational exponents.
- realize that quadratic relationships are prevalent in the world around us.
- use proportional reasoning to solve indirect measurement problems in trigonometry.

### **ASSESSMENTS**

- **Short Written Reflections**

Students will write short written pieces produced at the end of every unit of learning. These written reflections are open-ended and can go anywhere from what was learnt to lingering questions to hardest problems to explaining how problems were solved to knowing how they come to know when an answer is correct. These reflections can be thought of as ongoing mathematics learning ‘autobiography’. These short reflections can be written during class times, if necessary. These reflections will allow me to

analyze students' thinking throughout the course and to also critically examine how students are learning. These reflections will be evaluated for completeness and depth of thought exhibited in the writing.

- **Problem Solving Tasks**

I will select mathematical tasks that are typically challenging for grade 9 – 12 students. These tasks will explore a wide range of mathematical problems from different branches of mathematics. The goal here is for students to learn mathematics through problem-solving activities in small multi-grade groups in order to become more confident and competent problem-solvers.

- **Assignments**

- **Quizzes**

- **Unit Tests**

### **ATTENDANCE & PARTICIPATION**

Participation is essential to successful completion of this course. Students' active participation is integral to their own learning and to the learning of others. I expect students to actively engage in the classroom learning experiences and make connections with other areas of study. Some of the attendance and participation criteria are:

- regular attendance
- arriving on time for class and staying throughout
- preparedness (required materials, assignments)
- politeness, respect, and consideration for the learning of others
- attentive listening, regardless of who is speaking or presenting
- participation in collaborative activities

### **RECOMMENDED RESOURCES**

- Students looking for an extra resource should look at [Centre for Education in Mathematics and Computing](#) from U of Waterloo.
- Also, for review and enrichment there are outstanding Mathematics videos and assignments on the website: [Khan Academy](#)

- For some different resources for different grade levels please check out this site: [Waterloo University](#)
- For Canadian Contest exam information from the University for Waterloo please see this site: [Canadian Challenge Mathematics Exams](#)
- <https://www.mathhelp.com>
- <http://www.mathispower4u.com/>
- <https://www.mathsisfun.com/>

### **RECOMMEDED TECH TOOLS**

- [GeoGebra](#)
- [Desmos](#)

### **USEFUL APPS**

- **Photomath**
- **Mathway**
- **Microsoft Math**
- **Microsoft Office 365**
- **QR Scanner**
- **Adobe Scan**
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