ÉCOLE SECONDAIRE
WINDSOR
SECONDARY SCHOOL

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COURSE OUTLINE

SUBJECT: Calculus 12

BIG IDEAS:

The concept of a limit is foundational to Calculus.	Differential calculus develops the concept of instantaneous rate of change.	Integral calculus develops the concept of determining a product involving a continuously changing quantity over an interval.	Derivatives and integrals are inversely related.

CURRICULAR COMPETENCIES:

Students are expected to be able to do the following:

Reasoning and analyzing

- Develop **thinking strategies** to solve puzzles and play games
- Explore, **analyze**, and apply mathematical ideas using **reason**, **technology**, and **other tools**
- **Estimate reasonably** and demonstrate **fluent, flexible, and strategic thinking** about number
- **Model** with mathematics in **situational contexts**
- **Think creatively** and with **curiosity and wonder** when exploring problems

Understanding and solving

- Develop, demonstrate, and apply conceptual understanding of mathematical ideas through experimentation, **inquiry**, and problem solving
- **Visualize** to explore and illustrate mathematical concepts and relationships
- Apply **flexible and strategic approaches** to **solve problems**
- Solve problems with **persistence and a positive disposition**

Communicating and representing

- **Explain and justify** mathematical ideas and **decisions** in **many ways**
- **Represent** mathematical ideas in concrete, pictorial, and symbolic forms
- Use mathematical vocabulary and language to contribute to **discussions** in the classroom
- Take risks when offering ideas in classroom **discourse**

Connecting and reflecting

- **Reflect** on mathematical thinking
- **Connect mathematical concepts** with each other, other areas, and personal interests
- Use **mistakes** as **opportunities to advance learning**

CONTENT:

Students are expected to know the following:

- Functions and graphs (pre-calc 12 review)
- Limits:
  - left and right limits
  - limits to infinity
  - continuity
- Differentiation:
  - rate of change
  - differentiation rules
  - higher order, implicit
  - applications
- Integration:
  - Approximation of area under a curve
  - Fundamental theorem of calculus
  - Methods of integration
  - applications

RESOURCE MATERIALS:

Calculus: Graphical, Numerical, Algebraic
Locally developed supplemental packages
Direct entry scientific calculator required, Graphing Calculator Recommended

POLICIES AND PROCEDURES:

1) PREPARATION FOR CLASS

It is the student's responsibility to arrive for each class **on time** with their notebook, pencils, calculator, and textbook. Good work habits, effort, regular attendance, and completion of assignments contribute to successful achievement.

2) ABSENCES

Missing classes for any reason will have an impact on learning, assessment, and evaluation. Students absent from class, whether excused or unexcused, are solely responsible for obtaining and completing any missed assignments, work, or homework. **Your teacher is not required to make special arrangements for unexcused absences.**

a) Students absent for illness, medical appointments, and other emergencies **must** contact their teacher **on the day they return to school** to submit overdue assignments, schedule missed tests or quizzes, and to receive missed work.

b) Students absent for school related activities (ex. field trips, work experience, sports trips, etc.), **must** inform their teacher of this absence **well in advance** of the activity, in order to receive specific instructions on work that will be missed and the rescheduling of missed tests and quizzes.

c) Students absent for any other reason, including family vacations, are considered **unexcused.** Any work, tests, or quizzes missed for these absences may result in receiving a **zero** for that activity.

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(Student signature) (Parent / Guardian signature)