

# Waterloo-Oxford District Secondary School

## Mathematics Department

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### Student Course Outline: MCV 4UI 2020

#### Prerequisite

MHF 4UI: Advanced Functions, Grade 12, University Preparation (may be taken concurrently)

#### Textbook

Harcourt Mathematics 12 Geometry and Discrete Mathematics  
 McGraw-Hill Calculus and Advanced Functions

#### Teacher

Mr. V. Folino [vittorio\\_folino@wrdsb.ca](mailto:vittorio_folino@wrdsb.ca) <http://teachers.wrdsb.ca/folinov/mcv-4ui/>

#### Units of Study

Unit	Weight	Title	Essential Skills
1	10	Introduction to Vectors	<ul style="list-style-type: none"> <li>Represent vectors in two-space algebraically and geometrically.</li> <li>Use various properties (addition, multiplication etc.) of vectors to perform operations required to solve problems arising from real-world applications (force, ground velocity etc.)</li> </ul>
2	12	Algebraic Vectors and Applications	<ul style="list-style-type: none"> <li>Represent vectors in three-space algebraically and geometrically.</li> <li>Understand the result of performing the dot product and cross product on two vectors.</li> <li>Perform operations of addition and subtraction, scalar multiplication on vectors in three-space to solve problems arising from real world applications. (torque, work done etc.)</li> </ul>
3	10	Lines in a Plane	<ul style="list-style-type: none"> <li>Use scalar, vector and parametric equations to represent lines in two-space and three-space.</li> <li>Solve problems involving the intersection of lines as well as distance from a point to a line in three-space.</li> <li>Identify different geometric configurations of lines in three-space (skew, parallel, collinear)</li> </ul>
4	13	Equations of Planes	<ul style="list-style-type: none"> <li>Use scalar, vector and parametric equations to represent planes in three-space.</li> <li>Identify different geometric configurations of lines and planes in three-space (intersection in a line, coincident, intersection as a point)</li> <li>Solve problems involving intersection and distance of a line and a plane in three-space.</li> </ul>
5	9	Limits and Rates of Change	<ul style="list-style-type: none"> <li>Understand graphical and numerical examples of limits.</li> <li>Determine and describe the average and instantaneous rate of change of a function.</li> <li>Understand continuity and how to evaluate limits that have an indeterminate form.</li> </ul>
6	13	Derivatives	<ul style="list-style-type: none"> <li>Make connections between the numerical, graphical and algebraic representations of a function and its derivative.</li> <li>Follow derivative rules to determine the derivatives of polynomial, sinusoidal, exponential, rational and radical functions.</li> <li>Use the key features of a function and its first and second derivatives to sketch various types of curves.</li> <li>Use derivatives to solve optimization problems arising from real-world applications.</li> </ul>
7	17	Extreme values, Curve sketching and Optimization	
8	9	Exponential Functions	
9	7	Derivatives of Trigonometric Functions.	

#### Reporting

Progress Reports: April 27<sup>th</sup>, 2020

Parent-Teacher Interviews: April 8<sup>th</sup>, 2020

Final Exams: June 18 – June 24, 2020

Wonderland Trip: Tuesday, May 19<sup>th</sup> (TBD)

**Parents and students are encouraged to contact the teacher whenever they have a concern or question.**

## Supplies

- Three ring binder with paper.
- Pencils, erasers, pens, ruler.
- Scientific Calculator: must have trigonometric functions (sin, cos, tan) and no you cannot use your cell phone calculator.
- Graph paper (you may purchase your own or from your teacher when graphing units arise)

## Evaluation *(see important note below regarding missed unit tests)*

Course Content (Tests, Quizzes, Assignments)	70%
Final Examination	30%

## Expectations

Food/Drink: There is no food or drink (with the exception of water) allowed in the classroom.

Cell Phones: The use of cell phones during class time is detrimental to the academic climate, takes valuable time away from instruction and creates disciplinary problems. All cell phones are to be “off and away” in the classroom. Seriously, **I DO NOT** want to see your cell phone. Technically, they are banned from my classroom.

Homework: Mathematical skills are developed in the classroom and strengthened with homework. Homework must be completed daily. If you have trouble completing your homework or understanding a topic, see your teacher for extra help. Do not let difficulties drag on until the end of a unit.

Attitude: Come to class with a positive attitude. Be diligent in your work, attentive during lessons, volunteer ideas, ask questions and work quietly and cooperatively. Come prepared with all required materials, be on time and be prepared to work for the entire period. Work to the best of your ability and respect the rights of others to learn.

Absences: When you are absent (valid or not), it is entirely up to you to find out what you missed (see your Unit Outline), complete the tasks, and come to class with any questions about the work. When possible, make arrangements prior to your absence.

Students are expected to write missed quizzes/tests on the first day back to school. See your teacher to write your test. Do not wait until the next math class.

**Unit tests** are considered major components of the course and must be completed to earn this credit:

In the event of a missed unit test, the teacher will:

- Speak with the student to negotiate a new test date.
- Communicate with the student’s parent or guardian about the missed test.

Tests not completed after the negotiated date will be designated as incomplete. The essential learning skills required for this test will still need to be demonstrated in order to earn the course credit.

Extra Help: I am happy to provide extra help, just please ask ahead of time.

**Welcome to Grade 12 Calculus and Vectors and Good Luck!**