# MATH 190: Calculus Survey
2016W Course Outline

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This outline, as well as all course info is available at:

 `www.math.ubc.ca/~colesmp/teaching/M190`

**Course Description:** This 4-credit course will provide students with the basic quantitative skills necessary for an undergraduate degree in forestry. Undergraduate students in forestry take a very broad range of courses many of which require a general understanding of functions or specific mathematical applications. A general understanding of functions will include the following topics; composition, exponential and logarithmic functions, trigonometric functions (sine, cosine, tangent). The students should develop their ability to build up complicated functions from simpler ones or to understand complicated expressions for functions by breaking them down to simpler ones. Covered will be topics from Differential Calculus and Integral Calculus: functions, limits, asymptotes, derivatives (as slope/as rate of change), related rates, Riemann sums, definite and indefinite integrals.
This course would not preclude credit for a later differential calculus course and moreover would provide excellent background for less prepared students who wish to take MATH 100 (or it's equivalents).

**Instructor:** Matt Coles. Office: Auditorium Annex (AA) 137. Email: colesmp@math.ubc.ca

**Labs:** There will be weekly mandatory Labs associated with this course. They will involve instructor/TA driven examples, students solving problems in groups, and time to work on and ask questions about the week's homework.

**Quizzes:** There will be 5 quizzes throughout the year. Missed Quizzes will be given a grade of 0.

**Homework:** In a typical week you will have a written homework assignment. While you are permitted (and encouraged!) to talk to your classmates, the work you submit must be your own. Assignments are collected at the beginning of class on the due date. Late assignments will not be accepted.

To achieve success in this course it is not enough to do only assigned homework. You must also do additional problems each week.

**Resources:** There is no required text for this course. However, having a text book to follow is recommended. James Stewart's: Calculus Early Transcendentals (any edition) is one example. There are also online books available such as Dale Hoffman's: Contemporary Calculus which can be found for free here:

`http://scidiv.bellevuecollege.edu/dh/Calculus_all/Calculus_all.html`

**Clickers:** Clicker questions will be used in class as part of the learning process. While not for marks you are encouraged to bring a clicker and participate.

**Exams:** There will be a Midterm Exam and a Final Exam in this course. The midterm exam is set for October 31 and the final exam will be set at a later date.

**Grading:** Your final grade will be based on Labs (5% for attendance and participation), Homework (10%), Quizzes (15%), Midterm Exam (20%), Final Exam (50%). You must write the final exam to pass the course.

**Academic integrity:** Information on academic integrity may be found in the UBC Calendar. You are responsible for understanding and following the code of academic honesty and standards.

**Topics:** The following page lists the course topics by week.

| Week | Dates | Topics | Notes |
|---|---|---|---|
| 1 | Sept 6-9 | Intro, Functions (lines, polynomials, rational functions, radicals piecewise functions), Composition of Functions | No HW<br>No Labs |
| 2 | Sept12-16 | Trigonometric Functions(radians, unit circle) | Labs start |
| 3 | Sept 19-23 | Exponential and Logarithmic Functions, Inverse Functions | |
| 4 | Sept 26-30 | Limits and Asymptotes | |
| 5 | Oct 3-7 | Definition of the derivative | |
| 6 | Oct 10-14 | Rules of differentiation (power, product, quotient, chain) | |
| 7 | Oct 17-21 | More Chain Rule/Related Rates | |
| 8 | Oct 24-28 | Related Rates/Review | No HW |
| 9 | Oct 31-Nov 4 | Definition of the integral, sigma notation | Midterm Oct 31 |
| 10 | Nov 7-11 | Definite and indefinite integrals | |
| 11 | Nov 14-18 | Integration by substitution, exponential and natural log functions | |
| 12 | Nov 21-25 | Integration word problems, integration by parts | |
| 13 | Nov 28-Dec 2 | Review | No HW |