



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MATH-196	Calculus II	6
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
MATH-195	Computer Science	Fall/Spring
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Mathematics	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
1 <sup>st</sup> Cycle	Dr. Marios A. Christou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face-to-face	NA	None

### Course Objectives:

The main objectives of the course are to:

- Introduce the use of L'Hospital's Rule in the evaluation of limits.
- Introduce Provide students with all the necessary techniques for advancing in integration and differentiation.
- Provide students with the fundamentals of sequences and infinite series.
- Introduce students in the applications of integration and differentiation.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Evaluate limits using L'Hopital's Rule.
2. Calculate the derivatives and integrals of inverse trigonometric functions.
3. Use various integration methods. Evaluate proper and improper integrals.
4. Make use of the sequences and the infinite series.
5. Be able to decide if a series converges or diverges.
6. Use Maclaurin and Taylor Approximations.
7. Be able to evaluate volumes using integration.

**Course Content:**

1. Chapter 1
  - a. L'Hopital's Rule, indeterminate forms.
  - b. Derivatives and integrals involving inverse trigonometric functions.
  
2. Chapter 2: Principles of Integral Evaluation
  - a. An overview of integration methods
  - b. Integration by parts
  - c. Integrating trigonometric functions
  - d. Trigonometric substitutions
  - e. Integration using partial fractions.
  - f. Improper integrals.
  
3. Chapter 3: Infinite Series
  - a. Sequences
  - b. Monotone sequences.
  - c. Infinite series and convergence tests.
  - d. Maclaurin and Taylor approximations.
  - e. Power series
  
4. Applications of the definite integral
  - a. Area between two curves.
  - b. Volumes using integration.

**Learning Activities and Teaching Methods:**

Lectures, Handouts, Assignments and In-class Exercises

**Assessment Methods:**

Final Examination, Midterm Examinations, Assignments and Participation.

**Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Calculus	Anton, Bivens, and Davis	Wiley (10 <sup>th</sup> Ed.)	2013	978-111809248-4

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Calculus	James Stewart	Thomson/Brooks/Cole	2013	978-1285740621