
CALCULUS I in Fall 2020 (MA1030B)

Course Code	MA1030B	Professor(s)	Alexandra Svoronou
Prerequisites	None	Office Number	PL 1st floor
Class Schedule	M: 14:30-16:05 in PL-1 W: 12:40-16:05 in PL-1	Office Hours	by appointment (via Teams or Zoom), Wed 4:15pm-5pm
Credits	4	Email	asvoronou@aup.edu
Semester	Fall 2020	Office Tel. Ext.	650

Course Description

This course provides an introduction to the mathematical foundations of quantitative problem solving in economics and business.

MA-1030 introduces differential and integral calculus. Each student will gain an appreciation of the strengths and limitations of mathematical model-building and, therefore, of the scientific method itself.

After having followed this course, the students should:

- Understand the concept of “function” in both its graphical & algebraic dimensions,
- Understand the notions of “limit” and of “continuity” and their relevance with respect. to functions,
- Be able to differentiate & integrate polynomials, rational, logarithmic & exponential functions,
- Have knowledge of what is meant by “local extrema” & “inflection points”: know how to evaluate them
by differentiation and how to interpret them in applications,
- Have knowledge of the other building block of Calculus, Integration (by substitution & by parts), and have the ability to evaluate and interpret integrals,
- Acquire the ability to extend this knowledge further to partial derivatives
- Develop related models & understand the various applications in Economics & other fields,
- Be able to follow further courses in Mathematics & related fields.

Course Learning Outcomes

Develop a positive approach to mathematics.

Appreciate the use of mathematics in modeling the world.

Reason with quantitative information – in words, numbers and graphs and charts.

Clearly communicate quantitative information in words, in numbers and with graphs.

Develop strategies for solving problems.

Understand concepts behind differential calculus, including calculation of derivatives using various techniques.

Understand concepts behind integral calculus, including calculation of definite and indefinite integrals using various techniques.

Show competency in using both algebraic and geometric interpretations of the concepts of calculus.

Be able to apply the techniques (including linearization and optimization) of differential and integral calculus to problems in other disciplines.

General Education

The general education program at AUP consists of four requirements: Speaking the World, Modeling the World, Mapping the World, and Comparing Worlds Past and Present.

This course can be used to fulfill the GENED requirements and as such has the following learning outcomes:

Learning outcomes of the general education in Mathematics:

LO1A: Develop a positive approach to mathematics •

LO1B: Appreciate its use in modeling the world

LO2: Reason with quantitative information – in words, numbers and graphs and charts

LO3: Clearly communicate quantitative information in words, in numbers and with graphs

LO4: Develop strategies for solving problems

Course Outline

Topics will include:

PART 1.

- Functions: domain, range. Inverse functions

PART 2

- Limits, continuity
- Derivatives : differentiation using limits, differentiation techniques
- Graphs using derivatives, asymptotes, applications
- Exponential and logarithmic functions, learning, logistic curves

PART 3

- Integration : Area under and between curves, integration techniques,

The Fundamental theorem of Calculus

- Applications of integration in Economics

Improper integrals (if time permits)

PART 4 (if time permits)

Functions of several variables, partial derivatives.

Textbooks

This course doesn't have any textbook.

Attendance Policy

Students studying at The American University of Paris are expected to attend ALL scheduled classes **if time zone allows them(because of COVID 19 situation)**, and in case of absence, should contact their professors to explain the situation. It is the student's responsibility to be

aware of any specific attendance policy that a faculty member might have set in the course syllabus. The French Department, for example, has its own attendance policy, and students are responsible for compliance. Academic Affairs will excuse an absence for students' participation in study trips related to their courses.

Attendance at all exams is mandatory.

IN ALL CASES OF MISSED COURSE MEETINGS, THE RESPONSIBILITY FOR COMMUNICATION WITH THE PROFESSOR, AND FOR ARRANGING TO MAKE UP MISSED WORK, RESTS SOLELY WITH THE STUDENT.

Whether an absence is excused or not is ALWAYS up to the discretion of the professor or the department. Unexcused absences can result in a low or failing participation grade. In the case of excessive absences, it is up to the professor or the department to decide if the student will receive an "F" for the course. An instructor may recommend that a student withdraw, if absences have made it impossible to continue in the course at a satisfactory level.

Students must be mindful of this policy when making their travel arrangements, and especially during the Drop/Add and Exam Periods.

Grading Policy

Assignments: 15%

Quizzes: 35%

Final exam: 40%

Participation; 10%

Assignments will form an important supplement to the lectures as well as test the student's understanding of the material discussed in class. Late homework will not be accepted unless there is a valid excuse.

70- 80 >>C

80- 90>>B

90 -100>>A

Other

Cell phones should be turned off during the class.