

**INTERAMERICAN UNIVERSITY OF PUERTO RICO**  
**METROPOLITAN CAMPUS**  
**COMPUTER SCIENCES AND MATHEMATICS DEPARTMENT**  
**MATHEMATICS PROGRAM**  
**Syllabus**

**I. GENERAL INFORMATION**

**COURSE TITLE:** ..... PRECALCULUS 1  
**CODE AND NUMBER** ..... MATH 1511  
**CREDITS:** ..... 3 credits

All students will take 3 credits in mathematics. The students with a Bachelor's degree in Arts in Secondary Education, Biology, Sciences, Mathematics or Chemistry, Bachelor's in Science or Business Administration and Associate degrees requiring MATH 1500 or MAEG 2140 will have to take **GEMA 1200**.

**II. COURSE DESCRIPTION**

Study of the functions, their algebra and the inverse function with an emphasis on linear, polynomial, rational, exponential and logarithmic functions.

**III. GENERAL OBJECTIVES**

At the end of the course, the student will be able to:

1. Adequately use the concept of function and its properties to model real life situations and to solve problems.
2. Familiarize themselves with graphing elemental functions using displacement and translation techniques.
3. Apply the properties of polynomial and rational functions to solve problems using maximums and minimums.
4. Apply the properties of polynomial and rational functions to solve problems using growth.
5. Know the set of complex numbers and its properties and apply when ever necessary.
6. Integrate the use of technology in a pertinent manner.
7. Understand the use of math in their professional and daily lives.

This course responds to Student Learning Outcomes for the BA in MATH numbers 1,3 and 4.

**IV. COURSE CONTENT**

A. Functions and their graphs

1. Function
  - definition
  - evaluation
  - domain and range
2. Graph of functions
  - even and odd functions
  - increasing and decreasing functions
3. Graphs of special functions
4. Graphing techniques
5. Operations with functions

- B. Polynomial and rational functions
1. The quadratic functions
    - Vertex
    - Intersection with the axis
    - Graph
    - Applications
  2. Polynomial functions
  3. Rational Functions
  4. Real zeros
    - Synthetic division
    - Remainder and factor theorems
    - Rational zeros
  5. Complex numbers
- C. Exponential and logarithmic functions
1. Inverse functions
  2. Exponential functions
    - Evaluation
    - Asymptotes and graphs
    - Applications
    - Base e
  3. Logarithmic functions
    - Change to exponential form
    - Domain and asymptotes
    - Graphs
  4. Properties of logarithms
    - Base e
    - Change of base
  5. Exponential and logarithmic equations

## V. ACTIVITIES

- A. In class lectures
- B. Online quizzes
- C. Special assessment activities
- D. Group work activities
- E. The use of a calculator is required
- F. Communication activities
- G. Word problem applications

## VI. EVALUATION CRITERIA

• 3 Partial Exams	50%
• Cumulative Departmental Final Exam	20%
• Assignments	10%
• Quizzes	10%
• Special assessment activities	10%
Total:	100%

All of the above criteria will be counted towards your final grade.

Grade Scale:

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

## VII. SPECIAL NOTES

### 1. Rights of disabled students:

Any student in need of special services or assistance should request them at the start of the course or as soon as he/she learns about the need by registering at the office of the Coordinator of Services for Students with Disabilities located at the University Orientation Program in charge of Mr. Jose A. Rodriguez (787) 250-1912 Ext. 2306 and 2307.

### 2. Warning about honesty, fraud and plagiarism:

Lack of honesty, fraud, plagiarism and any other inadequate behavior related to the academic endeavor constitute major infringements sanctioned by the General Student Manual. Major infringements, as stated by the General Student Manual, may result in a suspension for more than a year or the permanent expulsion from the university, among other sanctions.

### 3. Use of electronic devices:

All cellular phones and electronic devices must be deactivated because of possible interruptions with the teaching learning process to dissuade the disruption of the academic excellence environment. All emergencies will be managed accordingly. It is prohibited the use of electronic devices that could access, store or send/receive data during evaluations and exams.

### 4. Cumplimiento con las disposiciones del Título IX

La Ley de Educación Superior Federal, según enmendada, prohíbe el discrimen por razón de sexo en cualquier actividad académica, educativa, extracurricular, atlética o en

cualquier otro programa o empleo, auspiciado o controlado por una institución de educación superior independientemente de que esta se realice dentro o fuera de los predios de la institución, si la institución recibe fondos federales.

Conforme dispone la reglamentación federal vigente, en nuestra unidad académica se ha designado un(a) Coordinador(a) Auxiliar de Título IX que brindará asistencia y orientación con relación a cualquier alegado incidente constitutivo de discrimen por sexo o género, acoso sexual o agresión sexual. Se puede comunicar con el Coordinador(a) Auxiliar, George Rivera, Director de Seguridad, al teléfono 787-250-1912, extensión 2147, o al correo electrónico [grivera@metro.inter.edu](mailto:grivera@metro.inter.edu).

El Documento Normativo titulado Normas y Procedimientos para Atender Alegadas Violaciones a las Disposiciones del Título IX es el documento que contiene las reglas institucionales para canalizar cualquier querrela que se presente basada en este tipo de alegación. Este documento está disponible en el portal de la Universidad Interamericana de Puerto Rico ([www.inter.edu](http://www.inter.edu)).

## VIII. Educational Resources

1. Text: Precalculus, 5<sup>th</sup>ed, Educo International 2012

## IX. BIBLIOGRAPHY

\* Stewart J. (2012). Precálculo – Matemáticas para el Cálculo. Sexta Edición. Thomson Editores. México.

\* Blitzer. R. (2014). Precalculus. 5ta Edición. Pearson. Prentice Hall. New Jersey.

\* Dugopolski M. (2012). Precalculus: Functions and Graphs. Fourth Edition Addison- Wesley. New York.

\* Larson, R (2014). Precalculus. Ninth Edition. Brooks/Cole. Cengage Learning.

\* Stewart J. (2012). Precalculus: Mathematics for Calculus. Fourth Edition. Brooks/Cole. California.

\* Sullivan (2016). Precalculus Plus My MathLab. Tenth Edition. Pearson. Addison- Wesley. New York.

\* Schultz E, Briggs, W; Cochran L. (2014). Precalculus eText. Pearson. Addison- Wesley. New York.

B. REFERENCIAS ELECTRÓNICAS \* Khan Academy – Álgebra I:

<http://es.khanacademy.org/math/algebra> \* Khan Academy – Álgebra II:

<http://es.khanacademy.org/math/algebra2> \* Graphing Functions:

<http://www.analyze-math.com/Graphing.html> \* Graphing tool: Padowan Grapher for Windows:

<http://www.padowan.dk/download/> \* Math problems solution tool: Mathway:

<https://www.mathway.com/>

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