

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

I. GENERAL INFORMATION

COURSE TITLE: PRECALCULUS II
CODE AND NUMBER MATH 1512
CREDITS: 3 credits

II. COURSE DESCRIPTION

Study of the trigonometric and inverse trigonometric functions. Study of analytic trigonometry of complex numbers; of linear and non linear systems of equations; of inequalities; of matrices; of determinants and polar coordinates. Prerequisite MATH 1511

III. GENERAL OBJECTIVES

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

1. Use trigonometric functions in the Cartesian coordinate plane and the polar plane.
2. Apply graphing techniques for trigonometric functions.
3. Apply analytic trigonometry in problem solving
4. Solve operations with matrices.
5. Solve systems of linear and non linear equations and inequalities using diverse methodologies.
6. Solve application problems using systems of equations.
7. Integrate technology in a pertinent manner.
8. Communicate making use of appropriate and pertinent mathematical language.
9. Appreciate the importance of mathematics in the daily and professional life.

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

IV. COURSE CONTENT

A. Trigonometric Functions

1. Angles and their measures
2. Trigonometric functions and the unit circle
3. Properties of Trigonometric functions
 - Basic identities
 - Domain and range
4. Graphs of sine and cosine
 - Domain and Range
 - Intersections with the axis
 - Amplitude, period, Phase shift
5. Graphs of Tangent, cotangent, secant and cosecant

B. Analytic trigonometry

1. Inverse trigonometric functions
2. Trigonometric Identities
3. Formulas for sum and difference of angles
4. Formulas for double and half angles

5. Trigonometric equations
6. Trigonometric form of complex numbers

C. Applications

1. Trigonometry of the right triangle
2. Law of sines
3. Law of cosines

D. Analytic Geometry

1. Polar coordinates

E. Systems of Equations

1. 2x2 systems of linear equations
 - Graphing
 - Substitution
 - Elimination
2. 3x3 systems of linear equations
3. Matrices
4. Determinants and the Cramer Rule
5. Nonlinear systems of equations
6. Systems of inequalities

V. ACTIVITIES

- A. Active Participation in class lectures and discussions
- B. Online quizzes
- C. Special assessment activities
- D. Group work activities and collaborative learning
- E. Pertinent use of technology
- F. Communication activities (emails, 3 minute papers, surveys, etc...)
- G. Word problem applications

VI. EVALUATION CRITERIA

• 3 Partial Exams	51%
• Cumulative Departmental Final Exam	20%
• Assignments	10%
• Quizzes	10%
• Special assessment activities	9%
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.

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).

VIII. Educational Resources

1. Text: Precalculus, 5thed, Educo International 2012
2. Scientific calculator

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 Editio. Pearson. Addison- Wesley. New Cork.

* 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.analyzemath.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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