

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

**I. GENERAL INFORMATION**

**COURSE TITLE:** ..... FUNDAMENTALS OF ALGEBRA

**CODE AND NUMBER** ..... GEMA 1200

**CREDITS:** ..... 3 credits

**ACADEMIC TERM**.....

**PROFESSOR:** .....

**OFFICE HOURS:**.....

**PHONE:** ..... (787) 250-1912 EXT. 2230

**E-MAIL:**.....

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**

Application of algebra to problem solving, including graphic and symbolic representations. Study of algebraic expressions with whole and rational exponents. Simplification and factorization of algebraic expressions. Binomial expansion. Real and logarithmic exponents. Equations with rational expressions, radicals, exponents or logarithms. Linear and quadratic inequalities. Linear equations in two variables and its graphs. Requires additional time in an open lab.

**III. (A) GENERAL OBJECTIVES**

1. Apply the properties of the real number system to problem solving.
2. Use the laws of exponents and radicals to simplify algebraic expressions and solve problems.
3. Solve basic operations with polynomials and rational expressions.
4. Apply problem solving strategies and techniques that use equations and inequalities in one variable.
5. Solve situational/application problems using linear equations in two variables and their graphs.
6. Apply algebraic strategies and techniques for solving problems in different disciplines.
7. Appreciate the use of math, particularly algebra, in science, business and technology.
8. Use different technological methods, in an appropriate and ethical manner, for the solution of mathematical problems.

## IV. COURSE CONTENT

- A. Introduction
  - 1. The system of Real numbers
  - 2. Properties of Real numbers
  - 3. Order of operations and absolute value with real numbers
  - 4. Applications
  
- B. Solving Linear equations and inequalities
  - 1. Simplify algebraic expressions
  - 2. Solve linear equations in one variable
  - 3. Solve literal equations
  - 4. Solve ratios and proportions
  - 5. Solve linear inequalities
  - 6. Solve equations and inequalities with absolute value
  
- C. Solve linear equations in two variables and interpret their graphs
  - 1. Cartesian coordinate plane
  - 2. Linear equations in two variables and their graphs
  
- D. Exponents and Polynomials
  - 1. Laws of exponents
  - 2. Add, subtract and multiply polynomials
  - 3. Divide polynomials
  - 4. Special Products
  
- E. Factoring techniques for polynomials and quadratic equations
  - 1. Common factor
  - 2. Grouping
  - 3. Difference of squares
  - 4. Quadratic trinomials
  - 5. Sum and difference of cubes
  - 6. Applications: Solve quadratic equations and inequalities using factoring techniques
  
- F. Rational expressions
  - 1. Evaluate rational expressions
  - 2. Simplify rational expressions
  - 3. Multiply and divide rational expressions
  - 4. Add and subtract rational expressions
  - 5. Applications: Solve equations with rational expressions
  
- G. Radicals
  - 1. Definition
  - 2. Properties
  - 3. Operations
  - 4. Applications
  
- H. Solve second degree equations and inequalities
  - 1. Factoring
  - 2. Quadratic formula
  - 3. Quadratic inequalities
  - 4. Applications

## 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

## VI. EVALUATION CRITERIA

• Partial Exams	55%
• Cumulative Departmental Final Exam	25%
• Assignments	10%
• Quizzes	10%
Total:	100%

**All exams, all partials and final, will be supervised at the CIT.**

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 (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

- A. **Text Book:** Sharma, M., Sharma L., Rivera A. (2010) Algebra, Educo International. USA
- B. **Audiovisual Resources:**
  - 1. Textbook support materials
  - 2. Support from internet resources
  - 3. Movies: Stand and Deliver, Goodwill Hunting and A Beautiful Mind.
- C. **Bibliographic References**

Ángel, A. (2013). Álgebra intermedia. Séptima edición. Prentice Hall. México.

Angel, Allen R. / Runde Dennis (2011) Intermediate Algebra for College Students (8th Edition) (The Angel Developmental Algebra Series) Prentice Hall, Upper Saddle River, NJ ( ISBN 0321620917 ISBN13 9780321620910)

Barnett, Raymond A./ Ziegler, Michael R / Byleen, Karl E. (2011) College Algebra: Graphs and Models 4nd edition, McGraw-Hill Boston, MA. (ISBN 0072424281)

Bello, Ignacio ( 2011) Introductory Algebra: A Real-World Approach, 4nd edition

McGraw-Hill (ISBN 0072831057)

Bittinger, M.I. & Ellenbogen, D.J., (2014). Intermediate Algebra; Concepts and Applications. Ninth Edition, Addison Wesley. Boston, MA.

Blitzer, Robert (2013) Introductory and Intermediate Algebra for College Students 6nd edition, Prentice Hall, Upper Saddle River, NJ (ISBN

0131492594)

Dugopolski, M. , (2013). Intermediate álgebra. Sixth Edition, Addison Wesley. Boston, MA.

Gustafson, D. (2015). Álgebra intermedia. 712ma edición, International Thomson, Cengage Learning Editores - México.

Hubbard, E./ Robinson, R. (2015). Intermediate Algebra Discovery and Visualization. Fifth Edition Houghton Mifflin

Lial, Margaret L. /Hornsby, John. McGinnis, Terry (2015). College Algebra, 9/E Pearson - Boston, MA. (ISBN-10: 0321574974, ISBN-13: 9780321574978)

Martin-Gay, K. Elayn (2014) Intermediate Algebra 5rd edition, Prentice Hall, Upper Saddle River, NJ. (ISBN 0131868306)

Tussy, Alan S./ Gustafson R. David (2013) Intermediate Algebra, 5th Edition

Brooks/Cole, Cengage Learning (ISBN-13: 9781111567675)

#### D. Recursos en Internet

Proyecto MSEIP UIPR Recinto de Guayama, <http://mseip.guayama.inter.edu> Curso de Algebra Elemental Student Star [http://www.galeon.com/student\\_star/conten.html](http://www.galeon.com/student_star/conten.html)

Ecuaciones Lineales UIPR Recinto de Bayamón  
<http://facultad.bayamon.inter.edu/ntoro/ecuaw.htm> Ecuaciones Lineales – video  
<http://www.youtube.com/watch?v=9XGWjhbZVWE>

Resolver Ecuaciones Cuadráticas por factorización. Video  
<http://www.youtube.com/watch?v=FTAyKcvWFnY&feature=related>

Factorización: Trinomio de forma:  $ax^2+bx+c$  - video  
[http://www.youtube.com/watch?v=\\_YpSJt3\\_\\_qI&feature=fvwrrel](http://www.youtube.com/watch?v=_YpSJt3__qI&feature=fvwrrel)

Factorización: Factor común – HD -video  
<http://www.youtube.com/watch?v=ZfUnHbYX7ag&feature=relmfu>

Clase de Factorización-Video  
<http://www.youtube.com/watch?v=EOu6NinhUY&feature=related>

Tipos De Factorización – Video  
<http://www.youtube.com/watch?v=Ni3vAmMMbaQ&feature=fvwrrel>

**Revised: March 2018 / Dr. Milly Varas**