INTER-AMERICAN UNIVERSITY OF PUERTO RICO
VICE-PRESIDENCE OF ACADEMIC AND STUDENT AFFAIRS
GENERAL EDUCATION PROGRAM

SYLLABUS

I.   GENERAL INFORMATION

Course tittle	Fundamentals of algebra
Code and number	GEMA 1200
Credits	Three (3)
Term	
Professor	
Place and office hours	
Electronic mail	

II.   DESCRIPTION

Application of the algebra in problem solving, including graphic and symbolic representations. Study of algebraic expressions with integer and rational exponents; and of polynomials, operations and factorization. Resolution of first and second degree equations with rational expressions and radicals, and of linear inequalities. Requires additional hours of virtual open lab.

III.   GOAL(S), COMPETITION(S) AND COMPETITION AREAS

Goal I: Develop a person with humanistic sensitivity, able to contribute to the solution of problems with a collaborative attitude, using research, critical, creative and innovative thinking, in an international context.

Competence #1: Demonstrate a critical, creative, scientific, humanistic, ethical and aesthetic attitude to problem solving, based on the use of research methods, sources of information and technological advances.

Competence #2: Demonstrate capacity and willingness for collaborative work and negotiation.

Competence Areas:
- Critical thinking
- Creative thinking
- Problem solving
- Research
- Collaborative work
- Information management
- Ethical awareness

> **Goal VI:** Develop a person capable of solving problems through scientific thinking, logical and quantitative reasoning and the use of information and communication technologies, in an ethical, critical, creative and innovative way.
>
> **Competence 9:** Apply scientific thinking and logical and quantitative reasoning for decision-making and problem solving.
>
> **Competence 10:** Use information and communication technologies for decision-making and problem solving.
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> **Competence Areas:**
>
> - Problem solving
> - Technological skills
> - Mathematical reasoning

IV. OBJECTIVES

It is expected that, at the end of the course, the student will be able to:

1. Demonstrate understanding of the fundamental concepts of algebra
2. Use the laws of exponents and radicals to simplify algebraic expressions and solve problems.
3. Perform fundamental operations with polynomials, rational and radical expressions.
4. Apply techniques and strategies for solving problems that require the use of equations and inequations in one variable.
5. Apply algebraic strategies and techniques to solve problems in different disciplines.
6. Appreciate the usefulness of mathematics, particularly algebra, science, business and technology.
7. Use the different technological means, which are at our disposal, in an appropriate way for the solution of mathematical problems in particular of algebra.

V. CONTENT

A. Polynomials

1. Basics
2. Evaluation of algebraic expressions
3. Addition and subtraction of polynomials
4. Exponent laws
5. Multiplication
6. Binomial expansion
7. Polynomial division
8. Applications

B. Polynomial factoring techniques

1. Common factor
2. By grouping
3. Square differences
4. Quadratic trinomials
5. Cube addition and difference

     6. Applications

C. Rational Expressions

     1. Rational expression and permitted values
     2. Simplification of rational expressions
     3. Multiplication and division of rational expressions
     4. Addition and subtraction of rational expressions
     5. Applications

D. Radical

     1. Definition
     2. Properties
     3. Operations
     4. Applications

E. Solving first-degree equations and inequations in one variable

     1. Equations
     2. Simple and compound inequalities
     3. Representation of the solution of inequalities in the real line and in interval notation
     4. Equations and inequations with absolute value
     5. Equations with rational expressions
     6. Equations with radicals
     7. Applications

F. Resolution of quadratic equations

     1. Factoring
     2. Quadratic formula
     3. Application problems

VI. ACTIVITIES

1. Collaborative jobs
2. Using educational videos
3. Applications of the topic discussed where the student can relate it to his/her daily life and with other courses from other disciplines.
4. Activities using relevant technology to solve problems and interpret and analyze results.

VII. SUGGESTED ASSESSMENT

Criteria	Score	% of the Final Note
3 Partial exams	300	51
Final exam	100	20
Quizzes	100	15
Assignments	100	10
Assessment, tutorials, attendance	100	4
Total	700	100

The note scale will be as follows:

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90 – 100   A
80 -  89   B
70 -  79   C
60 -  69   D
 0 -  59   F
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VIII.   SPECIAL NOTES

A. Auxiliary Services or Special Needs

Any student who requires ancillary services or special assistance must apply at the beginning of the course or as soon as they become aware that they are needed, through the corresponding registration at the University Guidance Office of the Enclosure. This process must be carried out by registering with the office of the Professional Counselor, Coordinator of Services to Students with Disabilities. Its office is located in the University Orientation Program on the first floor of the Campus. The counselor for the Science and Technology Division is Prof. M. Cabellos located on the 4th floor.

B. Honesty, Fraud and Plagiarism

Dishonesty, fraud, plagiarism and any other inappropriate behavior in relation to academic work constitute major violations punished by the General Student Regulations. Major infractions, as provided by the General Regulations of Students, may result in the suspension of the student from the University for a defined time greater than one year or the permanent expulsion of the University, among other sanctions.

C. Use of Electronic Devices

Cell phones and any other electronic devices that may disrupt teaching and learning processes or alter the environment leading to academic excellence will be disabled. Pressing situations will be addressed, as appropriate. The operation of electronic devices that allow access, storage or sending data during evaluations or examinations is prohibited.

D. Compliance with the provisions of Title IX

The Federal Higher Education Act, as amended, prohibits sex discrimination in any academic, educational, extracurricular, athletic or other program or employment, sponsored or controlled by an educational institution whether it is done on or off the premises of the institution, if the institution receives federal funds.

As provided in applicable federal regulations, our academic unit has appointed an Assistant Title IX Coordinator who will provide assistance and guidance in connection with any alleged incident constituting gender discrimination, sexual harassment or sexual assault. You can contact the Assistant

Coordinator, George Rivera, Director of Security, at 787-250-1912, extension 2147, or email grivera@metro.inter.edu.

The Regulatory Document entitled Rules and Procedures for Dealing with Alleged Violations of the Provisions of Title IX is the document containing the institutional rules for channeling any complaint that is filed based on this type of allegation. This document is available on the portal of the Inter-American University of Puerto Rico (www.inter.edu).

IX. EDUCATIONAL RESOURCES

A. <u>Textbook</u>
   Sharma, M., Sharma L., Rivera A. (2010). Algebra, Educo International. USA

B. Internet Resources

   1. https://es.khanacademy.org (Select Algebra I theme)
   2. www.virtualnerd.com (Select Algebra theme)
   3. www.themathpage.com (Select the "Skill in Algebra" theme)
   4. www.ixl.com/math (Select Algebra theme)
   5. www.aulafacil.com/cursos/t667/ciencia/matematicas/algebra
   6. https://www.sosmath.com (Select Algebra theme)
   7. https://coolmath.com (Select Algebra theme)
   8. https://www.symbolab.com/solver
   9. https://www.mathway.com

X. BIBLIOGRAPHY

Allen R. Angel (2013) <u>Intermediate Algebra</u>. Eighth Edition, Pearson Education of Mexico QA154.2 . A5318 2013

Aufmann, Richard N. (2013) <u>Intermediate Algebra</u>. Eighth Edition, CENGAGE Learning QA154.3 . A84418 2013

Barnett, Raymond A. (2011) <u>College Algebra with Trigonometry</u>. 9th edition, Mc Graw - Hill Publishing
QA154.3 . B368 2011

Blitzer, Robert (2013) <u>Introductory and Intermediate Algebra for College Students</u>, 4th edition, Pearson
QA152.3 . B65 2013

Blitzer, Robert (2013) <u>Intermediate Algebra for College Students</u>. 6th edition, Pearson
QA154.2 . B55 2013

Dugopolski, Mark (2012) <u>Intermediate Algebra</u>. 7th edition, Mc Graw - Hill Publishing QA154.2 . D84 2012

Tussy, Alan, Gustafson David, Koenig Diane (2013) Basic <u>Mathematics.</u> Fourth edition, CENGAGE Learning QA39.3 . T8718 2013

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