

INTER-AMERICAN UNIVERSITY OF PUERTO RICO
METROPOLITAN CAMPUS
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER AND MATHEMATICS SCIENCES
SYLLABUS

I. GENERAL INFORMATION

Course title : GEOMETRY THEMES
Code and number : MATH 2380
Credits : THREE (3)
Requirements : MATH 2251
Academic term :
Teacher :
Office hours :
Phone : 787-250-1912 ext. 2230
Email :

II. DESCRIPTION OF THE COURSE

Notions of mathematical logic, nature of the demonstration; Euclidean geometry selection: finite geometries, geometric transformations, sets. Fundamental notions of non-Euclidean geometries; hyperbolic, elliptical and projective geometry; geometric topology. Requirement: MATH 2251.

III. OBJECTIVES OF THE COURSE

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

1. Understand the basic concepts of the different types of geometries.
2. Demonstrate theorems and geometric principles using the necessary knowledge.
3. Solve problems using definitions, axioms, theorems and principles of Euclidean geometry.
4. Model real life situations using definitions, axioms, theorems and principles of Euclidean geometry.

5. Use the technological advances that facilitate daily tasks and the world of work.
6. Communicate appropriately using the relevant mathematical language.
7. Appreciate the importance of geometry as a legacy of the past, present and future in the history of mankind.

This course covers the competencies of the Bachelor of Arts in Mathematics Program (111): 1, 2, 3, 4, 5, 6, 7 y 8

IV. COURSE CONTENT

1. Troubleshooting
 - a. Strategies
2. Geometric shapes and measurement
 - a. Terms not defined
 - b. Polygons and circles
 - c. Measure angles
 - d. Three-dimensional shapes
3. Logic notions
 - a. Statements
 - b. Connectors
 - c. Arguments
4. Perimeter, area and volume
 - a. Perimeter, circumference
 - b. Area formulas
 - c. Volume
5. Reasoning and congruence of triangles
 - a. Demonstrations in geometry
 - b. Congruence of triangles
6. Parallel lines and quadrilaterals
 - a. Parallel lines theorems
 - b. Quadrilaterals
7. Similarity
 - a. Ratio and proportion (review)
 - b. Similar triangles
 - c. Applications
8. Circles
 - a. Central and inscribed angles
 - b. Strings
 - c. Secants and tangents
9. Transformations
 - a. Isometries and congruence
 - b. Similarities and similarity

10. Non-Euclidean geometry
 - a. Postulate of the parallels
 - b. Elliptical geometry
 - c. Hyperbolic geometry
 - d. Projective geometry
11. Geometric topology

ACTIVITIES

- Active participation in conferences and discussions
- Practice exercises in the classroom
- Communication activities (reading and writing in the classroom)
- Use of relevant technology to interpret and analyze relationships and geometric figures.
- Solution of application problems
- Collaborative learning
- Reflective Diary, emails, "three minutes papers", "Surveys", etc
- Design creative models to scale using manipulatives such as plans, origami figures, tessellation posters, etc.
- Make demonstrations relevant to the topics of the course using various techniques.

V. EVALUATION CRITERIA

Score of the Final Score

Two partial exams	100	40%
Final exam	100	20%
Assignments (including demonstrations)	100	10%
Short tests	100	10%
Creative project	100	20%
TOTAL	500	100%

The grade curve will be:

90 - 100	A
80 - 89	B
65 - 79	C
55 - 64	D
0 - 54	F

VI. SPECIAL NOTES

A. Auxiliary services or special needs

All students requiring auxiliary services or special assistance must request them at the beginning of the course or as soon as they acquire knowledge of their needs, through the corresponding register, in the Orientation Program.

B. Honesty, fraud and plagiarism

The lack of honesty, fraud, plagiarism and any other inappropriate behavior in relation to academic work constitute major infractions sanctioned by the General Student Regulations. Major infractions, as provided in the General Student Regulations, may result in the suspension of the University for a defined period of more than one year or permanent expulsion from the University, among other sanctions.

C. Use of electronic devices

Cell phones and any other electronic device that could disrupt teaching and learning processes or alter the environment conducive to academic excellence will be disabled. The pressing situations will be addressed, as appropriate. The use of electronic devices that allow accessing, storing 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 discrimination on the basis of sex in any academic, educational, extracurricular, athletic or any other program or employment, sponsored or controlled by a higher education institution regardless of whether it is performed inside or outside the premises of the institution, if the institution receives federal funds. As provided by the current federal regulations, a Title IX Assistant Coordinator has been designated in our academic unit to provide assistance and guidance in relation to any alleged incident constituting discrimination based on sex or gender, sexual harassment or sexual assault. You can contact the Auxiliary Coordinator at telephone 787 250-1912, extension 2262, or email griverar@metro.inter.edu

The Normative Document entitled Rules and Procedures to Address Alleged Violations of the Provisions of Title IX is the document that contains the institutional rules to channel any complaint filed based on this type of claim. This document is available on the website of the Inter-American University of Puerto Rico (www.inter.edu).

VII. EDUCATIONAL RESOURCES

Text: Musser, Trimpe & Maurer (2008). College Geometry Second edition. Pearson. New Jersey

The use of a graphic calculator is required (NOT programmable).

Recommends the TI 84 that has the CABRI program.

VIII. BIBLIOGRAPHY

1. Alexander, Daniel C. & GERALYN M. KOEBERLEIN. (2007) Elementary Geometry for College Students. Houghton Mifflin Company. 4th Edition.
2. Beem J. (2006). Geometry Connections. Pearson Education.
3. Smart, James. (1998). Modern Geometries. Thomson Brooks/Cole.
4. Stahl, Saul. (2003). Geometry from Euclid to Knots. Pearson Education.
5. Venema G. (2005). Foundations of Geometry. Pearson Education.

IX. INTERNET REFERENCES

<http://www.obkb.com/dcljr/euclid.html>

<http://www.geom.umn.edu/docs/reference/CRC-formulas/>

<http://www.geom.umn.edu/docs/education/institute91/handouts/handouts.html>

<http://www.geom.umn.edu/education/math5337/>

<http://math.about.com/library/weekly/aa031503a.htm>

<http://www.aaamath.com/geo.htm>

<http://www.mathsisfun.com/geometry/index.html>