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)**
Academic term	
Professor	
Office hours	
Phone	**787-250-1912 EXT. 2230**
Email	

II. DESCRIPTION

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.PROFILE OF COMPETENCES

The Bachelor of Arts in Mathematics Program is designed to develop general competencies, linked to core courses, which allows the student to:

- Integrate logical reasoning, analysis, problems solving, and mathematical processes in a variety of pure and applied contexts.
- Communicate mathematical knowledge in a correctly and creative manner.
- Affirm the importance of having a proactive attitude towards mathematics, the ethical values of the profession, and cultural and linguistic diversity in the labor environment.

IV.OBJECTIVES

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.

V.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

VI. ACTIVITIES

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

VII. EVALUATION CRITERIA

Criteria	Score	% Score of the Final
Two partial exams	100 c/u	40%
Final exam	100	20%
Assignments (including demonstrations)	100	10%
Short tests	100	10%
Creative project	100	20%
Total	**600**	**100%**

A. The grade curve will be:

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

VIII. SPECIAL NOTES

A. Auxiliary services or special needs

Students who requires auxiliary services or special assistance must request it at the beginning of the course or as soon as they know they need it, through the corresponding registration in the office of the professional counselor, Dr. María de los Ángeles Cabello, located in the Program of University Orientation, Ext. 2306. Email mcabello@metro.inter.edu

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 based on of sex in any academic, educational, extracurricular, athletic activity 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 titled 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).

E. Course requirements

1. It is a requirement that the student have access to a computer with Internet and the MS Office applications programs, compatible with the IBM system.

2. If the course offering is online or hybrid with remote virtual meetings, the exams are answered guarded with RESPONDUS or RPNow. It is the student's responsibility to find out about it. To use the applications, you must have access to a computer with a camera and microphone and good Internet service. Respondus or RPNow does not work on mobile devices and neither does it work with satellite Internet. You should read more information in the General Information link on the Blackboard home page, in particular the links:

- Student authentication
- Authentication process as a student in distance courses
- "RPNow" for exams or tests guarded

Any questions in this regard the student should contact the professor or staff at the Center for Distance Learning and Technological Development (CAADT)

IX. 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.

X. REFERENCES

A. 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.

B. INTERNET REFERENCES

http://www.obkb.com/dcljr/euclid.html
http://www.geom.umn.edu/docs/reference/CRC-formulas/
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