Philadelphia University	PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	**Approval date:**
Faculty of Science		**Issue:**
Department of Math		**Credit hours: 3**
Academic year 2025/2026	**Course Syllabus**	**Bachelor**

Course information

Course#	Course title	Prerequisite
0250467	**Modern Euclidean Geometry 2**	**Euclidean Geometry 1**

Course type			Class time	Room #
☐ University Requirement	☐ Faculty Requirement		WT 18:45-20:00	MS Teams
☒ Major Requirement	☒ Elective	☐ Compulsory		
Degree / NQF Level	☐ Diploma degree (6)	☒ Bachelor degree (7)		

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
Ahmad Hamdan	819	2341	SM 09:45 – 11:00 ST 09:45 – 11:00	ahamdan@philadelphia.edu.jo

Course Delivery Method

Course Delivery Method			
☐ **Physical**	☒ **Online**	☐ **Blended**	
Learning Model			
Precentage	**Synchronous**	**Asynchronous**	**Physical**
	50%	**50%**	**0%**

Course Description

This course presents the concept of triangle center, the four traditional triangle centers, circumcenter, incenter, centroid, orthocenter; Fermat-Torricelli point, well-known theorems in Euclidean geometry: Ptolemy's theorem, Ceva's theorem, Menelaus's theorem, Napoleo's theorem, the Euler line theorem, Pascal's theorem, Morley's trisector theorem, and Gauss-Bonet theorem.

Course Learning Outcomes

Number	Outcomes	Corresponding Program outcomes *
	Knowledge	
K1	Understand the concept of the center of a triangle, and study the most remarkable theorems in Euclidean geometry.	**K_p1**
K2	The student should be able to use the tools from logic and modern branches of mathematics as trigonometry and algebra, mastery of different methods of proofs.	**K_p2**
	Skills	
S1	Students will apply the studied theorems to solve different problems in geometry.	**S_p1**
S2	The student should be able to use the geometry of triangles and circles in real-life problems.	**S_p2**

S3	The student should be able to use software (e.g., GeoGebra) to transform problems in triangles, circles, and Platonic solids visually as needed.	**S_p4**
Competencies		
C1	Students will develop the ability to communicate their mathematical reasoning and problem-solving processes effectively, both in writing and orally.	**C_p1**
C2	Students will develop the ability to communicate with their colleagues during the preparation of their presentations.	**C_p2**

* According to learning outcomes of the faculty of pharmacy.

Learning Resources

Course textbook	• Euclidean and Non-Euclidean Geometries Development and History. Marvin Jay Greenberg, W. H. Freeman and Company-New York, 3rd ed. 1993, • Euclidean and Non-Euclidean Geometries – Part A (Informal Lecture Notes), Mowaffaq Hajja, 1st ed., 2011.
Supporting References	• Classical Geometry- Euclidean, Transformational, Inversive, and Projective. I. E. Leonard, J. E. Lewis, A. C. F. Liu, and G. W. Tokarsky, John Wiley & Sons, Inc. 1st 2014, • Geometry, from Euclid to Knots, S. Stahl, Prentice Hall, 1st 2003. • Introduction to Geometry, H. S. M. Coxeter, John Wiley & Sons, Inc. 2nd ed. 1969. • Geometry for College Students, I. M. Isaacs, American Mathematical Society, 1st ed. 2001.
Supporting websites	• GeoGebra: https://www.geogebra.org/
Teaching Environment	☐**Classroom** ☐ **laboratory** ☒**Learning platform** ☐**Other**

Meetings and Subjects Timetable

Week	Topic	Learning Methods	Tasks	Learning Material
1	Explanation of the study plan for the course, and what is expected to be accomplished by the students.	Lecture		Course Syllabus
2	What is a Center?	Lecture		
3	The Circumcenter	Lecture		
4	The Incenter	Lecture		
5	The Centroid	Lecture	HW	
6	The Orthocenter	Lecture		
7	The Theorems of **Ceva** and **Menelaus**	Lecture	Quiz	
8	Applications of Ceva's Theorem	Lecture	Midterm	
9	A Fifth Triangle Center (The Fermat-Torricelli Point)	Lecture		
10	Other Constructions of the Fermat-Torricelli Point	Lecture		
11	Top 10 Beautiful Theorems in Euclidean Geometry: **Pythagorean** Theorem, **Ptolemy's** Theorem,	Lecture	HW	
12	**Napoleon's** Theorem, the **Euler Line** Theorem,	Lecture		
13	**Pascal's** Theorem, **Euclid's** Algorithm,	Lecture		
14	**Morley's** Trisector Theorem, **Gauss-Bonet** Theorem.	Lecture	Quiz	

15	Presentations	Lecture		
16	**Final Exam**			

* Includes: Lecture, flipped Class, project-based learning, problem-solving based learning, collaborative learning

Course Contributing to Learner Skill Development

Using Technology
• Students will use mathematical software (e.g., GeoGebra) to transform problems related to triangles, circles, and Platonic solids into visual problems, enhancing their programming and analytical skills for academic and practical applications.
Communication Skills
• Group projects and discussions foster collaboration, communication, and teamwork skills
Application of Concepts Learnt
• Students apply geometric concepts to real-world problems, strengthening their problem-solving skills.

Assessment Methods and Grade Distribution

Assessment Methods	Grade Weight	Assessment Time (Week No.)	Link to Course Outcomes
Midterm Exam	**30%**	**8**	**K1, K2, S1**
Various Assessments *	**30%**	**Continuous**	**All course outcomes**
Final Exam	**40%**	**16**	**K1, K2, S1, S2**
Total	**100%**		

* Includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
	Knowledge		
K1	Understand the concept of the center of a triangle, and study the most remarkable theorems in Euclidean geometry.	Lecture	**Exam Quiz Homework**
K2	The student should be able to use the tools from logic and modern branches of mathematics as trigonometry and algebra, mastery of different methods of proofs.	Lecture	=
	Skills		
S1	Students will apply the studied theorems to solve different problems in geometry.	Lecture	=
S2	The student should be able to use the geometry of triangles and circles in real-life problems.	Lecture	=
S3	The student should be able to use software (e.g., GeoGebra) to transform problems in triangles, circles, and Platonic solids visually as needed.	Collaborative learning	=
	Competencies		
C1	Students will develop the ability to communicate their mathematical reasoning and problem-solving processes effectively, both in writing and orally.	Collaborative learning	**Homework**
C2	Students will develop the ability to communicate with their colleagues during the preparation of their presentations.	Collaborative learning	**Presentation**

* Includes: Lecture, flipped Class, project-based learning, problem-solving-based learning, collaborative learning
** Includes: quiz, in-class and out of class assignments, presentations, reports, videotaped assignments, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum passing grade for the course is 50 % and the minimum final mark recorded on the transcript is 35%.
Missing Exams	• Missing an exam without a valid excuse will result in a zero grade to be assigned to the exam or assessment. • A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week of the exam or assessment due date. • A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date.
Attendance	The student is not allowed to be absent more than 15% of the total hours prescribed for the course, which equates to six lecture days (M, W) and six lectures (S, T). If the student misses more than 15 % of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, s/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college, then withdrawal grade will be recorded.
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, and violating intellectual property rights.