

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		Bachelor

Course information

Course#	Course title	Prerequisite
0250453	History of Mathematics	Euclidean Geometry 1 + Number Theory
Course type		Class time
☐ University Requirement ☐ Faculty Requirement ☒ Major Requirement ☒ Elective ☐ Compulsory		** *** - ***
Degree / NQF Level	Room #	
	☐ 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
	0%	33%	67%

Course Description

This course consists of a brief overview of the development of mathematics from ancient civilizations till today. It contains a selection of famous mathematicians, famous books, and famous theorems that played great roles in the development of mathematics. The selection is expected to contain Greek mathematicians (such as Euclid, Archimedes, Apollonius, Diophantus, etc.), mathematicians from medieval Islam (such as al-Khwarizmi, Abu Kamil, al-Khayyam, al-Kuhi, Thabit, etc.), and European mathematicians (such as Fermat, Euler, Gauss, etc.). History of mathematics from medieval Islam may be emphasized, and a selection of papers written in that period may be included in the course.

Course Learning Outcomes

Number	Outcomes	Corresponding Program outcomes *
Knowledge		
K1	Understand the main theorems studied in the course e. g., Pythagorean Th., Fundamental Th. of Calculus, Fundamental Th. of Algebra, and the methods of construction the Number Systems.	K _p 1
K2	The student should be able to use the tools from logic and modern branches of mathematics to construct the Natural, Integer, Rational, Real, and Complex Numbers.	K _p 2
Skills		

S1	Students will apply the studied methods to solve different problems in Finite Geometric Series, Conic Sections, Casting out specific numbers.	Sp1
S2	Students will apply the studied methods to solve different equations, quadratic, cubic, and quartic.	Sp1
Competencies		
C1	Students will develop the ability to communicate their mathematical reasoning and problem-solving processes effectively, both in writing and orally.	Cp1
C2	Students will develop the ability to communicate with their colleagues during the preparation of their presentations.	Cp2

* According to learning outcomes of the faculty of pharmacy.

Learning Resources

Course textbook	An Episodic History of Mathematics Mathematical Culture Through Problem Solving, Steven G. Krantz, The Mathematical Association of America, 2nd ed. 2010.
Supporting References	- Mathematical Thought from Ancient to Modern Times, V. 3, Morris Kline, Oxford University Press, 1972. - The History of Mathematics: An Introduction, David M. Burton, McGraw-Hill, 7th ed. 2011. - A Concise History of Mathematics, Dirk J. Struik, Dover Publications, Inc. New York, 4th ed. 1987. - Episodes from the Early History of Mathematics, A. Aaboe, Mathematical Association of America, Washington, D.C., 1964. - History of Mathematics, C. B. Boyer and U. Merzbach, John Wiley & Sons, New York, 1988
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	Part I: The Ancient Greeks and the Foundations of Mathematics: Pythagoras	Lecture		Ch 1
3	Euclid, Archimedes	Lecture		Ch 1
4	The Concept of Limit: Infinite Sums and Limits, Finite Geometric Series, Some Useful Notation.	Lecture		Ch 2
5	The Mystical Mathematics of Hypatia : What is a Conic Section?	Lecture	HW	Ch 3
6	Part II: The Islamic World and the Development of Algebra- al-Khwarizmi,	Lecture		Ch 4
7	Omar al-Khayyam and the Resolution of the Cubic	Lecture	Quiz	Ch 4
8	The Geometry of the Arabs: Generalized Pythagorean Th. Thabit ibn-Qurra. Nasir al-Din al-Tusi.	Lecture	Midterm	Ch 4
9	A Little Arab Number Theory: Casting Out Nines, Casting out Elevens Formula for generating pairs of amicable numbers Thabit ibn Qurra.	Lecture		Ch 4

10	Part III: European mathematicians, Solving Equations: The Cubic Equation-Cardano	Lecture		Ch 5
11	Fourth-Degree Equations and Beyond- Ferrari . The Work of Abel and Galois .	Lecture	HW	Ch 5
12	The Fundamental Th. of Calculus- Isaac Newton	Lecture		Ch 8
13	Carl Friedrich Gauss : The Prince of Mathematics	Lecture	Quiz	Ch 10
14	The Foundations of Analysis- Cauchy How to Construct the Real Numbers	Lecture	presentati ons	Ch 12
15	The Number Systems: Natural Numbers, Integers, Rational Numbers, Real Numbers, Complex Numbers.	Lecture	presentati ons	Ch 17
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 represent monomials in complex variable during studying the Fundamental Theorem of Algebra visually, 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 studied 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, S1, S2
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 main theorems studied in the course e. g., Pythagorean Th., Fundamental Th. of Calculus, Fundamental Th. of Algebra, and the methods of construction the Number Systems.	Lecture	Exam Quiz Homework
K2	The student should be able to use the tools from logic and modern branches of mathematics to construct the Natural, Integer, Rational, Real, and Complex Numbers.	Lecture	=
Skills			
S1	Students will apply the studied methods to solve different problems in Finite Geometric Series, Conic Sections, Casting out specific numbers.	Lecture	=

S2	Students will apply the studied methods to solve different equations, quadratic, cubic, and quartic.	Lecture	=
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 Policies

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.