HANDONG
UNITWIN FELLOWSHIP

# COURSE SYLLABUS 

| Professor's Information |  |
| :--- | :--- |
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| Course Information |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Course Name | History of the development of mathematical | Prerequisite Course | Mathematical logic and |  |
| Course Date | $2022-09-01$ | $\sim$ 2022-12-29 | Course Language | Ukrainian |
| Keyword | Angle trisection, | Greek mathematicians, | History of mathematic, Doubling the cube, |  |

## Course

Description
(100 ~200 words)

Course Goals and Objectives
(Approximately
100 words)

Methods of mathematical research are used in a wide variety of fields of knowledge. In this course you will see firsthand many of the results that have made what mathematics is today and meet the mathematicians that created them. The course provides an overview of some of mathematical ideas during the history, say classical problems of ancient Greek mathematics lead to involved mathematical theories including transcendent numbers or Galois theory; chinese double regula falsi method transforms to modern Newton-Raphson method of finding roots of nonlinear equations; babylonian ideas of solving quadratic equations turns out be utilized in modern algebra; arabic tables of approximate values of trigonometric functions are useful nowadays in deep procedures of numerical mathematics and so on. All of these is explained in the corresponding lectures of the course.
The course will survey major mathematical developments beginning with ancient Greeks
Mathematics did not arise in a vacuum, and students should know the origin of the basic mathematical ideas as well as the modern treatment of these ideas in connection with the original ones. After this course students will demonstrate their knowledge of basic mathematical-historical facts; they will demonstrate understanding of the development of mathematical ideas and mathematical thought.
Course topics covered include geometry, number theory, algebra, trigonometry, analytic geometry, probability, and calculus. This course aims to deepen student understanding of modern mathematics by contrasting it with mathematics from ancient. After completing the course a student will:

- Gain an understanding of the historical and biographical context of several most important
(The format : Title, Author/Editor, Publisher, Year of Publication)

1. A History of Mathematics, 2nd Ed., Carl B. Boyer, Revised by Uta C. Merzbach/ Wiley, NY, 1991.
2. A History of Mathematics: An Introduction, Victor J. Katz/ Pearson, 2009
3. Mathematics and Its History, John Stillwell/ Springer (2010)
4. IA History of Mathematics, R. Mankevich/ Lych,(2011)
5. A concise history of mathematics, Struik D., vol. 1 and 2/ Dover, New York (1948)

History of the development of mathematical ideas more focused on mathematics than the same class would be if it were in the history department. Prerequisites include knowledge of basic definitions of mathematical analysis, linear algebra, and probability theory.

Course
Requirements and Grades

Weekly Schedule

| Week | Main Topics |
| :---: | :---: |
| Week 1 | The Origins of Mathematics. |
| Week 2 | Mathematics in Early Civilizations |
| Week 3 | Ancient Greece mathematics |
| Week 4 | The famous problems of antiquity. |
| Week 5 | Doubling the cube, Squaring the circle |
| Week 6 | Straightedge and compass construction. The basic constructions |
| Week 7 | Angle trisection |
| Week 8 | Geometric construction of the square root and other generalizations |
| Week 9 | Constructing regular polygons. Gauss-Wantzel theorem. |
| Week 10 | History of the origin and development of linear and square equations |
| Week 11 | Cardano, Tartaglia, and the solution to the cubic equation |
| Week 12 | Number Theory and the Queen of Mathematics |
| Week 13 |  |
| Week 14 |  |
| Week 15 |  |
| Week 16 |  |

