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| **NAME** | Haideh Ghaderi |
| **PRACTICAL/TUTORIAL GROUP** |  |

Unit Course book

**History of Mathematics**

**Course code: MthP318HM**

Unit Coordinator

Haideh Lotfolla Ghaderi

2012/2013



**Soran University**

**Faculty of Science**

**Department of Mathematics**

**Stage 3**

**Course Description:**

This course is an attempted introduction to the history of mathematics that can serve as a textbook for a one-semester undergraduate course which meets three hours a week. Consequently, the treatment is restricted principally to “elementary” mathematics, that is, mathematics through the beginnings of calculus. It is the author’s conviction that the history of a subject cannot be appreciated properly whit out at least a fair acquaintance with the subject itself.

The historical material in this book is presented roughly in chronological order, and the reader will find that a knowledge of simple arithmetic and of high school algebra, geometry, and trigonometry is in general sufficient for a proper understanding of the first nine chapters. A knowledge of the rudiments of plane analytic geometry is needed for chapter 10, and a knowledge of the basic concepts of the calculus is required for chapter 11 and 12. Any concepts or developments of a more advanced nature appearing in the book are, it is hoped, sufficiently explained at the points where they are introduced. A certain amount of mathematical maturity is desirable, and whether nine, ten, or all twelve chapters are to covered will depend upon class time and the students previous preparation.

An important innovation in the treatment is the inclusion of problems. At the end of each chapter, a set of problem studies, with each problem study containing a number of associated problems and questions, is found. It is felt that by discussing a number of these problem studies in class, and working others as home assignments, the course will become more concrete and meaningful for the student, and the student’s grasp of a number of historically important concepts will become crystallized. For example, no better appreciation and understanding of numeral systems can be gained than by actually working with these systems. And rather than just tell a student that the ancient Greeks solved equations geometrically, let him solve some by the Greek method; in so doing he will not only thoroughly understand the Greek method, but he will achieve a deeper appreciation of Greek mathematical accomplishment. Thus it is hoped that the student will learn much of his history, as well as some interesting in mathematics, from these problem studies. Some of the problem studies concern themselves with historically important problems and procedures, others furnish valuable material for the future teacher of either high school or college mathematics, and still others are purely recreational. Of course, there are many more problem studies than can be covered in any one semester, and they are of varying degrees of difficulty. This permits an instructor to select problems according to his students’ abilities and to vary his assignments from year to year. At the end of the book is a collection of suggestions for the solution of many of the problem studies.

There is often some difficulty experienced in pronouncing the Hindu and Arabian names.

The history of mathematics, even that of elementary mathematics, is so vast that only an introduction to the subject is possible in a one-semester course. The interested student will want to consult further literature. accordingly, to each chapter has been appended a bibliography dealing with the material of that chapter. An additional general bibliography, given immediately after the final chapter, applies to every, or almost every, chapter.

It must be realized that the bibliography makes no pretense to completeness and is intended merely to serve as a start in any search material.

Few periodical references have been furnished; important references of this sort are very numerous and will soon be encountered by an inquiring student. The references given are generally accessible and in English.

**Homework:**

Solution of problem in for each History of Mathematics subject in this course. Presentation of Problems: When you come into class, you should be prepared to it. One person will present each problem and then we will all discuss it.

**Quiz:** Each quiz will be an equivalent percentage to one homework set.

**Email:**

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**Staff associated with the unit:**

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**Soran University**

**Department of mathematics**

**Unit: History of Mathematics**

**Credit 3**

**Method of Assessment:**

1 x 3 h lectures per week.

**Examination and Grading:**

Month’s exam: 10%

Classroom participation and assignments and homework 30%

Final exam: 60%

**Marking System:**

The grades for each piece of assessed work are as follows:

* 90-100 % is excellent
* 80-89% is very good
* 70-79% is good
* 60-69% is a moderate pass
* 50-59% is a pass
* <49% is a fail

**Unit Timetable/Content**

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| **University Academic Week** | **Lecture Title & Content** | **Assessments** |
| 1st week | Numeral system, Primitive Counting, Number Bases, Written Number Systems, Simple Grouping Systems, Multiplicative Grouping Systems. |  |
| 2nd week | Ciphered Numeral Systems, Positional Numeral Systems, Early Computing, The Hindu-Arabic Numeral System, Arbitrary Bases. |  |
| 3rd week | Problem solving sessions |  |
| 4th week | Babylonian and Egyptian Mathematics, The Ancient Orient, BABYLONIA: Sources, Commercial and Agrarian Mathematics, Geometry, Algebra, Plimpton. |  |
| 5th week | EGYPT: Sources and Dates, Arithmetic and Algebra, Geometry, A Curious Problem in the Rhind Papyrus. |  |
| 6th week | Problem solving sessions |  |
| 7th week | Problem solving sessions and exam. |  |
| 8th week | Pythagorean Mathematics, Birth of Demonstrative Mathematics, Pythagoras and the Pythagoreans, Pythagorean Arithmetic, Pythagorean Theorem and Pythagorean Triples. |  |
| 9th week | Discovery of Irrational Magnitudes, Algebraic Identities, Geometric Solution of Quadratic Equations, Transformation of Areas, The Regular Solids, Postulational Thinking. |  |
| 10th week | Problem Studies |  |
| 11th week | Duplication, Trisection, and Quadrature, The Period from Thales to Euclid, Lines of Mathematical Development, The Three Famous Problems. |  |
| 12th week | The Euclidean Tools, Duplication of the Cube, Trisection of an Angle, Quadrature of the Circle, Chronology of . |  |
| 13th week | Impossibility of Solving the Three Famous Problems with Euclidean Tools, Compasses or Straightedge Alone. |  |
| 14th week | Problem solving sessions |  |
| 15th week | Problem solving session  Second examination |  |
| 16th week | Euclid’s Elements, Alexandria, Euclid, Euclid’s “Elements”, Content of the ”Elements”. |  |
| 17th week | Logical Shortcoming of the “Elements”, Non-Euclidean Geometries, Axiomatics, Sequel to Euclid, Euclid’s Other Works. |  |
| 18th week | Problem solving session  Third examination |  |
| 19th week | Greek Mathematics after Euclid, Historical Setting, Archimedes, Eratosthenes, The Prime Numbers, Apollonius, Greek Trigonometry, Heron, Diophantus, Pappus, The Commentators. |  |
| 20th week | Problem solving session |  |
| 21st week | Hindu and Arabian Mathematics, General Survey, Number Computing, Arithmetic and Algebra, Geometry and Trigonometry, Contast between Greek and Hindu Mathematics. |  |
| 22nd week | ARABIA: The Risa of Moslem Culture, Arithmetic and Algebra, Geometry and Trigonometry, Some Etymology, The Arabian Contribution. |  |
| 23rd week | Problem solving sessions.  Fourth examination. |  |
| 24th week | European Mathematics,The Dark Ages, The period of Transmission, Fibonacci and the Thirteenth Century, The Fourteenth Century, The Fifteenth Century. |  |
| 25th week | The Early Arithmetics, Beginning of Algebraic Symbolism, Cubic and Quartic Equations, Francois Viete, Other Mathematicians of the Sixteenth Century. |  |
| 26th week | Problem solving |  |
| 27th week | Problem solving  Fifth examination |  |

* **Note that, Tutorials will be arranged by your lecturer during the class.**

**Tutorials & Assessments :**

Attendance at tutorials & Assessments is necessary in order to gain marks for the given exercise.

**Recommendation :**

Keeping a wall diary is recommended to enter all deadline dates so you can see what assignments are due in. It is also essential to leave yourself sufficient time to complete the work.

**Recommended Reading &References***:*

1.Howard Eves;” An Introduction of the History of Mathematics. University of Maine.

2.Cajori, Florian;” A History of Mathematical Notations. 2 Vols. Chicago: Open Court Publishing, 1925-29.

3.Van Der Wrerden, B.L., Science Awakening Translated by Arnold Dresden. New York: Oxford University Press, 1961.