Course outline for Mathematics 458 using text The History of Mathematics, fifth edition, author David Burton, publisher McGraw-Hill, 2003

Chapter and topics	Approximate weeks
Ch. 1, Early Number Systems and Symbols Emphasize a few systems and augment with more material on bases other than ten. Avoid getting bogged down.	1
Ch. 2, Mathematics in Early Civilizations Be sure to cover unit fraction use from Egypt and base sixty use in Babylonia. Include false position and the Egyptian methods for multiplication and division.	1
Ch. 3, The Beginnings of Greek Mathematics Omit 3.5, the quadratrix of Hippias. Include a few proofs of the Pythagorean Theorem, irrationality proofs, Pythagorean triples. State the classical impossiblilites among constructions, but do not spend too much time on them.	1
Ch. 4, The Alexandrian School: Euclid Quickly survey Euclidean geometry and number theory and some of the results of Eratosthenes and Archimedes. Plan ahead and choose wisely; one could spend half a semester on this chapter if one so desired. It may be useful to mention some of Ch. 11 here; if so, spend a little more time than is mentioned at the right.	1.5
Ch. 5, The Twilight of Greek Mathematics: Diophantus Cover Diophantine equations, the Chinese Remainder Theorem, square root algorithms, the Hipparchus/Ptolemy table of chords. As time permits, cover magic squares, circles of Apollonius, rational roots of polynomials, and the Arabian method of completing the square. As in Ch. 4, plan ahead and watch time.	2
Ch. 6, The First Awakening: Fibonacci Cover the *Liber Abaci* and the Fibonacci sequence. If one has not already spent time on the Golden Ratio, now is a good time. A possible extra topic, motivated by the coverage of the Fibonacci sequence, is difference equations.	1
Ch. 7, The Renaissance of Mathematics: Cardan and Tartaglia Cover the cubic formula and at least some of its colorful history. Omit section 7.4, on the quartic formula, or assign it as an out-of-class topic.	0.5
Ch. 8, The Mechanical World: Descartes and Newton Cover the development of logarithms, quickly survey Kepler's results, and survey the work of Descartes and Newton. Include Newton's method of fluxions for tangent lines and the Barrow/Fermat/Pascal subtangent approach. Discuss the FTOC and briefly cover the Newton vs. Leibniz dispute.	1.5
Ch. 9, The Development of Probability Theory: Pascal, Bernoulli, and Laplace Survey this topic fairly quickly; do not turn the course into Math 441. The problem of the points, Pascal's triangle, and some mention of the Bernoulli family are all important. The reading in 9.3 is very long, and it is recommended that one cover little more than the idea of expected value. The St. Petersburg paradox is a very good item.	1
Ch. 10, The Revival of Number Theory: Fermat, Euler, and Gauss Ch. 11, Nineteenth-Century Contributions: Bolyai and Lobachevsky Ch. 12, Transition to the Twentieth Century: Cantor and Kronecker Ch. 13, Extensions and Generalizations: Hardy, Hausdorff, and Noether Instructor will have to decide which of these to include, and to what depth. There is not enough time to do them all justice. It is certainly important to do at least some on the role of axiomatics and some crucial developments related to them, including at least some mention of Gödel's theorem.	2.5
Testing and review	1
	(Total 14)