Tennessee Technological University
Mathematics Department

MATH 4050/5050: Number Theory

I.   COURSE DESCRIPTION FROM CATALOG:
Properties of integers, division algorithms, prime numbers, Diophantine equations, congruences. Lec. 3. Cr. 3.

II.   PREREQUISITE(S):
Consent of instructor

III.   COURSE OBJECTIVE(S):
This course serves as an introduction to elementary number theory for senior/graduate students in mathematics/mathematics education.

IV.   STUDENT LEARNING OUTCOMES:
Upon successful completion of the course students will understand the concepts of and be able to do computations involving divisibility, prime numbers, modular arithmetic, linear and polynomial congruences, primitive roots, quadratic congruences, and arithmetic functions; understand the Fundamental Theorem of Arithmetic, the Chinese Remainder Theorem, and the major theorems of Euler, Fermat, Lagrange, and Wilson in number theory along with the Law of Quadratic Reciprocity and the Moebius Inversion Formula; and be able to prove simple results using the aforementioned theorems along with other elementary results in number theory.

V.   TOPICS TO BE COVERED:
It should thoroughly treat the basic properties of integers to include the infinitude of primes, divisibility, congruences, quadratic residues through the Fundamental Theorem of Arithmetic, Chinese Remainder Theorem and Quadratic Reciprocity Law. It should introduce arithmetic functions and generating functions and, to a lesser extent, topics and problems on the distribution of primes and solutions of Diophantine equations.

VI.   ADDITIONAL INFORMATION:
Graduate credit is earned on the basis of additional work required by the instructor per TTU Graduate Catalog.

VII.   POSSIBLE TEXTS AND REFERENCES:
 Elementary Number Theory, by David Barton
Elementary Number Theory, by Jones & Jones

VIII. ANY TECHNOLOGY THAT MAY BE USED:
Maple

Last Revised 12/14/16

IX.   STUDENT ACADEMIC MISCONDUCT POLICY:
Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at Policy Central.

X.   DISABILITY ACCOMMODATION:
Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.