Outline Syllabus for Number Theory, spring 2014

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Course Code: MA-211

Course Title: Number Theory

Module Rating: 3 Cr. Hours

1. Prime Numbers

* The sieve of eratostheness
* Perfect numbers, Mersenne primes, Fermat numbers
* Theorems related to prime numbers

1. Divisibility

* Divisibility of primes
* Divisbility of primes
* The Euclidean algorithm, The equation άx + by = c

1. Congruence’s

* Divisibility tests
* Linear congruence’s, Techniques for solving άx = b(mod m)
* The Chinese remainder theorem
* Finding the day of the week

1. Numerical functions

* Sigma and tau functions, Fermat and Mersenne numbers, the Euler and Möbius functions.

1. Congruence equations

* Chinese Remainder Theorem, linear congruence’s, theorems of
* Euler, Fermat and Wilson, RSA cryptographic encoding, polynomial
* congruences, quadratic residues and reciprocity.
* Advance Topics

Recommended Books

**1.** Adler, Andrew, Cory, John E. The Theory of Numbers, Jones and Barttlet Publishers, Boston, 1995. (Text Book)

**2.** Kenneth, H. Rosen, Elementary Number Theory and Its Applications Pearson Addison Wesley Publishers, Boston, 2005

**3.** Tom M, Apostol, Introduction to Analytic Number, Springer, New York, 1980.

**4.** Burton, D.M. Elementary Number Theory McGraw Hill, 2000.

1. Elementary Number Theory by Vanden Eynden **(Text Book)**

**Office Hours during semester 2014**

**Tuesday 12:00-1:20, 2:40-5:00.**

**Thursday 12:00-1:20, 2:40-5:00.**

**Friday 10:00-12:00.**