MA 405: Number Theory (3-1-0:4)

Divisibility,greatest common divisor, least common multiple, Euclidean algorithm,primes,fundamentaltheorem of arithmetic, primes in arithmetic progressions,Mersenne primes, Fermat primes,conceptsof congruence and its elementary properties, complete residue systems,reduced residue systems, linear congruences in one variable, simultaneouslinearcongruences, Chinese Remainder theorem, Fermat's theorem, Euler'sphi-function, Euler's theorem and Wilson's theorem.

Arithmetic function, multiplicative functions: definitions and basic examples, numberof divisors and sum of divisors functions: characterization of even perfectnumbers, greatest integer functions, Moebius function, Moebius inversion formula, recurrence functions, Fibonacci numbers and their elementary properties.

Diophantine equations, linear Diophantine equations, Pythagorean triples, sum of two, three and four squares.

Continued fractions, simple continued fractions, representation of rational and irrational numbers as simple continued fractions, Pell's equation.

Text Books and References

1.I. Niven and H. S. Zuckerman,"An Introduction to the Theory of Numbers", Wiley Eastern Ltd.
2. D. M. Burton, "Elementary Number Theory", Tata McGraw-Hill.
3. G. A. Jones and J. M.Jones, "Elementary Number Theory", Springer Science & Business Media.
4. H. Davenport, "The Higher Arithmetic: An Introduction to the Theory of Numbers", Cambridge University Press.