Course Code: IAM 415

Course Name: Elementary Number Theory

Course Credit: 02

Course Instructor: Prof. Rakesh Kumar

Credits Equivalent: (One credit is equivalent to 10 hours of lectures / organized classroom activity / contact hours; 5 hours of laboratory work / practical / field work / Tutorial / teacher-led activity and 15 hours of other workload such as independent individual/ group work; obligatory/ optional work placement; literature survey/ library work; data collection/ field work; writing of papers/ projects/dissertation/thesis; seminars, etc.)

Course Objective: The main objective of this course is to introduce the concept of elementary Number Theory and their properties.

Course Outcome:

By the end of the course students will be able:

CO^1: To work on the divisibility theory in the integers.
CO^2: To know a more efficient avenue for testing the numbers as roots of Diophantine equation.
CO^3 : To explore the concept of Prime numbers and their distribution.
CO^4: To explore the theory of congruences along with famous Fermat's & Wilson's theorems.

Attendance Requirements

Students are expected to attend all lectures in order to be able to fully benefit from the course. A minimum of 75% attendance is a must, failing which a student may not be permitted to appear in examination.

Evaluation Criteria:

Mid Term Examination: 20

End Term Examination: 60

Internal Assessment: 20

Course Contents:

Unit I: The Division Algorithm, The Greatest Common Divisor, The Euclidean Algorithm, The Diophantine Equation. **(10 Hours)**

Unit II: The Fundamental Theorem of Arithmetic, Basic Properties of Congruences, Linear

Congruences and the Chinese Remainder Theorem, Fermat's Little Theorem and Pseudo-primes, Wilson's Theorem. **(10 Hours)**

Prescribed Text Books:

1. David M. Burton: Elementary Number Theory, Seventh Edition, McGraw Hill, 2009.
2. Kenneth H. Rosen, Elementary Number Theory and its Applications, 6th ed., Pearson, 2014

Suggested Additional Readings:

1. Baker A.: A Concise Introduction to the Theory of Numbers, First Edition, Cambridge University Press, 1984.

Course Articulation Matrix MTH 510- NUMBER THEORY

Course Outcomes	Prog. Outcomes 1	Prog. Outcomes 2	Prog. Outcomes 3	Prog. Outcomes 4	Prog. Spec. Outcomes 1	Prog. Spec. Outcomes 2
CO1	3	1	1	1	3	2
CO2	2	1	2	2	2	1
CO3	3	2	1	1	3	2
CO4	2	2	2	2	2	2

1. Partially Related
2. Moderately Related
3. Highly Related