COURSE LEARNING   OUTCOMES

DEPARTMENT: Mathematics

COURSE #: 34500 **COURSE TITLE: Theory of Numbers** PRE-REQUISITES: A grade of C or higher in MATH 30800 or placement by the Department. . CO-REQUISITES: None HOURS/CREDITS: 3 hrs./ week; 3 credits. DATE EFFECTIVE: 1/7/21 COURSE COORDINATOR: Gautam Chinta	**CATALOG DESCRIPTION** Divisibility, primes, fundamental theorem of arithmetic, congruences, number theory from an algebraic viewpoint, quadratic reciprocity, number theoretic functions, diophantine equations. **Required Text:** Instructor's choice

COURSE LEARNING OUTCOMES
Please describe below all learning outcomes of the course, and indicate the letter(s) of the corresponding Departmental Learning Outcome(s) (see list at bottom) in the column at right.

After taking this course, the student should be able to:	Contributes to Departmental Learning Outcome(s):
1. Write clear and rigorous proofs (or disproofs) of mathematical statements utilizing basic proof techniques.	e1,e2,f,g
2. Understand statements and proofs of basic number theory results, including Fundamental Theorem of Arithmetic, Chinese Remainder Theorem, Fermat's Little Theorem, existence of primitive roots mod a prime and quadratic reciprocity.	e1,e2,f,g
3. Become proficient in using the Euclidean algorithm and solving Linear Congruence Equations.	a,g
4. Collect and use numerical data to form conjectures about the integers.	a,d

COURSE ASSESSMENT TOOLS
Please describe below all assessment tools that are used in the course.
You may also indicate the percentage that each assessment contributes to the final grade.

1. Final exam: 40%

2. In-class exams, quizzes, homework, attendance: 60%

DEPARTMENTAL LEARNING OUTCOMES *(to be filled out by departmental mentor)*

The mathematics department, in its varied courses, aims to teach students to

a. perform numeric and symbolic computations
b. construct and apply symbolic and graphical representations of functions
c. model real-life problems mathematically
d use technology appropriately to analyze mathematical problems
e. state (e1) and apply (e2) mathematical definitions and theorems
f. prove fundamental theorems
g. construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.