MATH 202: THEORY OF NUMBERS

In Workflow

1. MATH Committee Chair (taylorlm@csus.edu)
2. MATH Chair (kelce@skymail.csus.edu)
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9. Catalog Editor (catalog@csus.edu)
10. Registrar's Office (wlindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Fri, 30 Sep 2022 06:29:40 GMT
   Lisa Taylor (taylorlm): Approved for MATH Committee Chair
2. Fri, 30 Sep 2022 17:52:04 GMT
   Kimberly Elce (kelce): Approved for MATH Chair
3. Wed, 05 Oct 2022 22:15:08 GMT
   Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Wed, 05 Oct 2022 23:47:43 GMT
   Shannon Datwyler (datwyler): Approved for NSM Dean

New Course Proposal

Date Submitted: Fri, 30 Sep 2022 06:12:48 GMT

Viewing: MATH 202 : Theory of Numbers

Last edit: Fri, 30 Sep 2022 06:12:47 GMT

Changes proposed by: Lisa Taylor (101035034)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Lisa Taylor	taylorlm@csus.edu	916-278-7075

Catalog Title:
Theory of Numbers

Class Schedule Title:
Theory of Numbers

Academic Group: (College)
NSM - Natural Sciences & Mathematics

Academic Organization: (Department)
Mathematics & Statistics

Will this course be offered through the College of Continuing Education (CCE)?
No

Catalog Year Effective:
Fall 2023 (2023/2024 Catalog)

Subject Area: (prefix)
MATH - Mathematics

Catalog Number: (course number)
202

Course ID: (For administrative use only.)
203245

Units:
3

Is the only purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?
No

In what term(s) will this course typically be offered?
Fall, Spring

Does this course require a room for its final exam?
Yes, final exam requires a room

This course complies with the credit hour policy:
Yes

Justification for course proposal:
A pillar of our graduate program in mathematics is to offer depth in the core and breadth in the electives. This course will serve as an elective in an area that is not currently addressed, which will contribute to the breadth in our graduate program.

Course Description: (Not to exceed 80 words and language should conform to catalog copy.)
Divisibility properties of the integers, primes, modular arithmetic, Chinese Remainder Theorem, quadratic reciprocity and quadratic forms, arithmetic functions, the Möbius inversion formula, and Diophantine equations. Possible additional topics include elliptic curves, algebraic numbers, primes in arithmetic progressions, the geometry of numbers, p-adic numbers, primality tests, modular forms, and encryption.

Are one or more field trips required with this course?
No

Fee Course?
No

Is this course designated as Service Learning?
No

Is this course designated as Curricular Community Engaged Learning?
No

Does this course require safety training?
No

Does this course require personal protective equipment (PPE)?
No

Does this course have prerequisites?
Yes

Prerequisite:
Math 110A or equivalent; Math 110B is recommended.

Prerequisites Enforced at Registration?
No

Does this course have corequisites?
No

Graded:
Letter

Approval required for enrollment?
No Approval Required

Course Component(s) and Classification(s):

Seminar

Seminar Classification

CS#05 - Seminar (K-factor=1 WTU per unit)

Seminar Units

3

Is this a paired course?

No

Is this course crosslisted?

No

Can this course be repeated for credit?

No

Can the course be taken for credit more than once during the same term?

No

Description of the Expected Learning Outcomes and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Articulate basic number theoretic concepts and ideas; in particular the generalizations of these ideas to other Euclidean domains such as the Gaussian integers and polynomials over a field.	assignments midterm exams final exam
2	Perform computations using the tools of number theory in the integers.	assignments midterm exams final exam
3	Analyze and create examples and counterexamples of algebraic structures that share, or do not share, number theoretic properties with the integers.	assignments midterm exams final exam
4	Demonstrate fluency in number theoretic definitions and theorems by using them to solve problems and write technical proofs in the subject.	assignments midterm exams final exam
5	Communicate ideas in number theory in a sophisticated manner through discussion and/or presentation.	assignments midterm exams final exam

Attach a list of the required/recommended course readings and activities:

MATH 202 approved readings activities 2022 9-28.pdf

For whom is this course being developed?

Majors in the Dept

Is this course required in a degree program (major, minor, graduate degree, certificate?)

No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals

Graduate (Masters) Learning Goals:

Critical thinking/analysis
Communication
Information literacy
Disciplinary knowledge

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Is this a Graduate Writing Intensive (GWI) course?

No

Please attach any additional files not requested above:

MATH 202 Syllabus approved 2022 9-28.pdf

Key: 14613