MAT315: Introduction to Number Theory
Winter 2024-25
University of Toronto

I. Instructor and Teaching Assistants

Course Instructor
Name: Asvin G.
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Office Hours: By appointment.

I. Course Overview

Course Description
Elementary topics in number theory: arithmetic functions; polynomials over the residue classes modulo m, characters on the residue classes modulo m; quadratic reciprocity law, representation of numbers as sums of squares

Prerequisites
MAT223H1/ MATA23H3/ MAT223H5/ MAT240H1/ MAT240H5, MAT235Y1/ MAT235Y5/ (MAT232H5, MAT236H5)/ (MATB41H3, MATB42H3)/ MAT237Y1/ (MATB41H3, MATB42H3, MATB43H3)/ MAT237Y5, MAT246H1/ CSC236H1/ CSC240H1)/ MAT157Y1/ MAT157Y5/ (MAT157H5, MAT159H5)/ MAT247H1/ MAT247H5

Course Objectives
An introduction to number theory as a field and laying the groundwork for further study of both algebraic and analytic number theory.

Textbooks/ Course Readings
We will loosely follow the textbook: A Classical Introduction to Modern Number Theory, by Ireland and Rosen. You can go to the following link for the textbook:
https://www.uoftbookstore.com/adoption-search-results?ccid=5905123&itemid=418897

How this course is organized:
This course will consist of two weekly one-hour lectures.

If you are facing financial hardship, you are encouraged to contact your college or divisional registrar (https://future.utoronto.ca/current-students/registrars/) to apply for an emergency bursary.

II. Evaluation/ Grading Scheme

Mark Breakdown
Homework 25%, Midterm 25% and Final 50%.

Assignments
There will be 10 assignments, of which the three with lowest grades will be dropped (late submissions will receive a mark of zero). You can work in groups of 3-4 students if you would like but each person should return their own assignment and mention the group members.

Each assignment will be due on the Wednesday of the week, starting from Jan 22. The midterm week won't have an assignment.

Term Test
There will be a mid term test in class on Monday Feb 10. If you have a valid reason for missing this test and inform me of it within 72 hours of the test, I will grade you based on your assignments and final exam (with a split of 1:2 for the weighting).

Final Assessment
The final assessment will be held during the final assessment period in April 2024 and will be scheduled by the registrar. Information about the format will be provided during the Summer semester.

III. Course Policies

Policy on Missed Term Work

There will be a 10% penalty on late submissions for assignments for each additional delayed day, up to a week.

Students who are absent from class for prolonged periods and who require consideration for missed academic work _should contact the instructor_ and _verify their absence(s) through either the Absence Declaration tool, Verification of Illness or Injury (VOI) form, College Registrar Letter, or Letter of Academic Accommodation from Accessibility Services, as appropriate to their situation_.
https://www.artsci.utoronto.ca/current/academics/student-absences

The absence declaration can be used once per term. Outside of the one time absence declaration use, students must adhere to the alternate processes for absences listed above, as well as the missed work policy as set out in each course's syllabus.

If you miss a term test or the final assessment, then you must inform your course Instructor within 72 hours of the test. No exceptions. If your request is approved, you may receive an accommodation.

Re-marking Policy

A student who believes an individual item of work has been incorrectly or unfairly marked may ask the person who marked it for a re-evaluation. With evidence to back their appeal, students should make such requests as soon as reasonably possible after receiving the work back, but no later than 2 weeks after it was returned.

Plagiarism Detection Tool

A plagiarism detection tool may be used for detecting plagiarism in some of the written work submitted in this course. Normally, students will be required to submit their written work to the university's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their work to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the this tool's service are described on the Centre for Teaching Support and Innovation web site: https://teaching.utoronto.ca/resources/plagiarism-detection/

Email Policy

Should you have a question that is not answered on the course site (please check there first!) please note that all communications with the Course Instructor or TA's must be sent from your official utoronto email address, with the course number included in the subject line. If these instructions are not followed, your email may not be responded to. Please write in a professional manner.

IV. Institutional Policies and Support

Academic Integrity

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/codebehaviour-academic-matters-july-1-2019) . If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to your Course Instructor. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources (for example, the University of Toronto website on Academic Integrity http://academicintegrity.utoronto.ca/).

Accessibility

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges

a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. Students with diverse learning styles and needs are welcome in this course. If you have a disability that may require accommodations, please feel free to approach your Course Instructor and/or the Accessibility Services office as soon as possible. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Link to Accessibility Services website: https://studentlife.utoronto.ca/department/accessibility-services/

Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Important Academic Dates & Deadlines
The academic dates include enrolment dates, drop deadlines, exam periods, petition deadlines and more.
https://www.artsci.utoronto.ca/current/dates-deadlines/academic-dates

Other Academic and Personal Supports
- Writing Centre https://writing.utoronto.ca/writing-centres/arts-and-science/
- U of T Libraries https://onesearch.library.utoronto.ca/
- Student Code of Conduct: https://governingcouncil.utoronto.ca/secretariat/policies/code-studentconduct-december-13-2019
- Feeling Distressed? https://studentlife.utoronto.ca/task/support-when-you-feel-distressed/
- Academic Success Centre https://studentlife.utoronto.ca/department/academic-success/
- College/Faculty Registrars https://future.utoronto.ca/current-students/registrars/