

## Acknowledgement

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UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the  $x^w m\acute{a}\theta k^w \acute{a}y\acute{o}m$  (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on knowledge of their culture, history, and traditions from one generation to the next on this site.

## Course Information

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Course Title	Course Code Number	Credit Value
Introduction to Number Theory	MATH 312 (Sec 201)	3

Time and Location:

Lecture	Time	Location
Mon Wed Fri	9:00 to 10:00	Hugh Dempster Pavilion (DMP), room 301

Course webpage:

<http://www.math.ubc.ca/~phamidi/math312/>

## Prerequisites

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One of MATH 220, MATH 226, CPSC 121 (and 9 additional credits of mathematics courses.)

## Contacts

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Course Instructor(s)	Contact Details	Office Location	Office Hours
Sujatha Ramdorai	<ul style="list-style-type: none"> <li>Email: <a href="mailto:sujatha@math.ubc.ca">sujatha@math.ubc.ca</a></li> <li><a href="http://www.math.ubc.ca/~sujatha">www.math.ubc.ca/~sujatha</a></li> </ul>	Math Annex 1201	MW 2-3:30 PM by appointment

## Course Structure

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The course will be lecture-based.

## Schedule of Topics

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Lectures will naturally diverge somewhat from any schedule, so the schedule below may change slightly. Tentative Topics to be Covered:

- Chapter 1: 1.1, 1.3, 1.5
- Chapter 3: 3.1-3.5, 3.7
- Chapter 4: 4.1-4.3
- Chapter 5: 5.1, 5.5
- Chapter 6: 6.1-6.3
- Chapter 7: 7.1-7.3
- Chapter 8: 8.1, 8.4, 8.6
- Chapter 9: 9.1-9.2, 9.3\*, 9.5

\* The starred section (9.3) will not be tested.

Week	Objectives
1 (Jan 06-08-10)	1.1, 1.3, 1.5
2 (Jan 13-15-17)	3.1-3.3
3 (Jan 20-22-24)	3.4, 3.5, 3.7
4 (Jan 27-29-31)	First quiz (Jan 27th), 4.1-4.3
5 (Feb 3-5-7)	5.1, 5.5
6 (Feb 10-12-14)	6.1-6.3
Midterm Break (Feb 17-19-21)	—
7 (Feb 24-26-28)	Midterm (Feb 24th), 7.1
8 (Mar 2-4-6)	7.2-7.3
9 (Mar 9(Holiday)-11-13)	8.1
10 (Mar 16-18-20)	Second quiz (Mar 16th), 8.4, 8.6
11 (Mar 23-25-27)	9.1-9.2
12 (Mar 30- Apr 01-03)	9.3, 9.5
13 (Apr 06-08)	the rest / revision

## Learning Outcomes

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This course is intended as an introduction to the basic concepts in Number Theory, such as prime numbers, factorization, congruences, along with some applications. This course will also show how algebra is used in number theory.

This is a third-year level course in Mathematics and as such, proofs will form an important part of teaching and learning.

## Learning Activities

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Regular reading and working through problems from the text are expected from the students. Students are expected to participate by asking questions in class when they do not understand the material. Students are expected to fully understand the solutions to the exercises that they provide. The homework problems will be mainly taken from the textbook and will be posted on the course webpage.

## Learning Materials

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Textbook: Kenneth H. Rosen, Elementary Number Theory and its applications, Sixth Edition, or any other (possibly free) material of your choice.

The UBC Bookstore will charge students \$177.75 for the new copies of A La Carte LooseLeaf version (A La Carte is 3 holes punched and students only carry whatever chapter they wish to take out of their binder).

UBC Bookstore: <https://shop.bookstore.ubc.ca/courselistbuilder.aspx>

## Assessments of Learning

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There will be two quizzes in class, one midterm exam, one final exam and up to six assignments. The course evaluation will be as follows. The dates are subject to change. Changes to these dates (if any) will be communicated to the students through email and/or information on the course webpage. Students will also be informed of any such changes in the class.

- Final Exam (in class): 50 points
- Midterm Exam (in class) on Monday the 24th of February: 30 points
- Quizzes (30 minutes, in class): 10 points.
  - First quiz on Monday the 27th of January.
  - Second quiz on Monday the 16th of March.
- Assignments: 10 points

There are no make-up midterm, quizzes or assignments in this course. Missing the midterm or any of the quizzes for a valid reason normally results in their weight being transferred to the final exam. Students may ask for up to two extensions for assignments which will be considered at the discretion of the instructor. Without permission, late homework will not be accepted (a mark of zero being assigned). Examples of valid reasons include illness and travel to play a scheduled game for a varsity team. The UBC Vancouver Senate's Academic Concession Policy V-135 applies to all assignments in this course, and students are advised to read this policy carefully.

Examples of reasons that are not valid include conflicts with personal travel schedules or conflicts with work schedules. Any student who misses the midterm is to present a self-declaration form for reporting a missed assessment to the instructor within 72 hours of the midterm date. This policy conforms with the UBC Vancouver Senate's Academic Concession policy V135. Non-attendance at an exam/quiz (without a valid reason) will result in a mark of zero being assigned.

Students are allowed to consult one another over the homework problems, but the submitted solutions must be written by the student. If two students submit virtually identical answers to a question, both are liable to be found guilty of plagiarism.

## University Policies

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UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the <https://senate.ubc.ca/policies-resources-support-student-success> UBC Senate website.

## Learning Resources

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Students may wish to take advantage of Math Learning Centre (MLC):  
<https://www.math.ubc.ca/~MLC/>.

## Copyright

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