

Course Outline

PMATH 740/440 – Fall 2017

Analytic Number Theory

Lecture Time: MWF 8:30-9:20am MC 4064
Instructor: Yu-Ru Liu
Office: MC 5316
Email: yrliu@uwaterloo.ca
Office hours: Tuesdays, 1:30-3:30pm

Course Description The following topics will be covered in the course: Möbius function, von Mangoldt function, Abel's summation, Riemann's zeta function, prime number theorem, ω and Ω functions, quadratic reciprocity, primitive roots, characters, L -functions, Dirichlet's Theorem, and assorted topics.

Textbook No textbook is required. The following books are good references for the course:

- (1) Introduction to Analytic Number Theory (by T. Apostol; Springer)
- (2) Multiplicative Number Theory (by H. Davenport; Springer)
- (3) An Introduction to the Theory of Numbers (by G. H. Hardy and E. M. Wright; Oxford University Press)

Assignments There are 3 assignments to be handed in. Each assignment is due at the beginning of the class on designated Wednesdays.

Final Exam There will be a 2.5 hour final exam hold during the examination period.

Final Grade Calculation Assignments 45%; Final Exam 55%.

Academic Integrity In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility, check <http://www.uwaterloo.ca/academicintegrity> for more information.

Grievance A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>.

When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline,

<http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>.

For typical penalties, check Guidelines for the Assessment of Penalties,

<http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Appeals A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

Note for Students with Disabilities The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.