Pure Math 450/650 Winter 2017
Fourier Series and Lebesgue Measure

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Class meets: MWF 9:30–10:20 in MC 4045

Website: www.math.uwaterloo.ca/∼krdavids/PM450.html

Textbooks: These will be available in the bookstore.
- *Real analysis and applications: theory in practice*
  by K.R. Davidson and A.P. Donsig
- *An Introduction to Lebesgue Integration and Fourier Series*
  by H.J. Wilcox and D.L. Myers

Other reference books: The book by Seeley is very inexpensive. The last three books are more advanced, but are standard texts. Folland and Royden are commonly used as texts for PMath 451/651.
- *An Introduction to Fourier Series and Integrals* by R. Seeley
- *An introduction to harmonic analysis* by Y. Katznelson
- *Real Analysis* by G.B. Folland
- *Real analysis* by H.L. Royden

Course Outline
- Existence and uniqueness of solutions of ODEs
- The steady state heat problem and Fourier series
- Fourier series of continuous functions
- Introduction to Lebesgue measure
- Fourier series of $L^p(\mathbb{T})$ functions

Grading
- There will be approximately 6 assignments.
- There is no midterm exam.
- Undergraduates: Assignments 40%, Final Exam 60%.
- Math grad students have to give a talk and write a short paper
  Assignments 40%, Talk and paper 10%, Final Exam 50%.
- Graduate students in other faculties: the talk and paper is optional.

The University Senate mandates that every course outline must contain the following text.

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. Refer to

www.uwaterloo.ca/academic-integrity/

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://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70.

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://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71.

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 grounds for an appeal should refer to *Policy 72, Student Appeals*,

http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Students with disabilities: The *AccessAbility Services*, located in the new addition to Needles Hall, Room 1401, 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 Access Ability Services at the beginning of each academic term.