

## C&O 434/634 — Combinatorial Designs

MW 16:00-17:20, E2 1736

**Instructor:** Prof. Kevin Purbhoo

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**Course Webpage:** <http://www.math.uwaterloo.ca/~kpurbhoo/co634/>

**Topics:** Balanced incomplete block designs, symmetric designs, Hadamard matrices, planes, latin squares and orthogonal arrays, resolvable designs, difference sets, pairwise balanced designs, t-designs, the Witt designs.

**Prerequisite:** PMATH 336 or 346; cumulative overall average of at least 80%.

**Text:** D. Stinson, “Combinatorial Designs: Constructions and Analysis”.

**Homework:** Homework will be due roughly every 3 weeks. You are expected to do all assignments, even if you do not do all the problems on the assignment. C&O 634 students will be held to a higher standard than C&O 434 students. Extensions for homework may be granted under reasonable circumstances, but must normally be requested at least two days before the assignment is due. Where no extension has been granted, I will accept late homework up to one week after the official due date, but it will receive a maximum of 80% credit.

**Tests:** There will be two written tests, held in class. Each test will be about 40 minutes long (half of class period). Tests dates are (tentatively) Monday February 10, and Monday March 16.

**Final Exam:** The final exam will be an oral exam, to be held during the final examination period. The date/time of your exam will be scheduled toward the end of term.

**Marking scheme:** Final marks will be calculated as follows:

$$50\% \text{ homework} + 15\% \text{ tests} + 35\% \text{ final exam}$$

Where appropriate, adjustments may be made to raw marks, before this formula is applied.

**Collaboration policy:** You may discuss the homework problems and even work together to solve problems. However, your solutions must be written up individually, and you may not use any shared notes or anyone else’s individual work (including from any online sources) to assist in writing up your own solutions. Every homework assignment must include a detailed account of any collaboration.

**Policy on missed exams:** If you miss a test or exam without a legitimate reason (e.g. illness or with permission), you will receive a mark of zero. For the final exam, even though this is not a written exam, standard policy applies: I will reschedule your oral final exam only if term work has been completed to satisfactory standards.

**Avoiding academic offenses:** Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need 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, TA, academic advisor, or the Undergraduate Associate Dean. For information on categories of offenses and types of penalties, students should refer to Policy #71, Student Academic Discipline,

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

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance,

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

**Note for students with disabilities:** AccessAbility Services, 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 AccessAbility at the beginning of each academic term.