Graduate-student orientation

Combinatorics & Optimization
Fall 2017
People

• Melissa Cambridge (MC 5116): Graduate Coordinator

• Chaitanya Swamy (MC 5118): Associate Chair for Graduate Studies

• Dana Hociung (MC 5103): Assistant to the Chair

• Jochen Konemann (MC 5106): Chair
Your first term at UW

- Taking courses
- Getting started on research
- Working as a Teaching Assistant (TA)
- Graduate Skills seminar
- Other department/faculty seminars
- Applying for external scholarships
- Social events
Your first term at UW

Three important activities (compulsory):

• Complete Graduate Academic Integrity Module (within first 8 weeks)

• Complete CMAHRO TA Orientation: Harassment & Discrimination Module

• Attend Faculty Graduate TA Training: Thursday, Sep 7, 4:30-7:15pm, MC 4021
  (register for CTE254 (section 0002) by Sep 6, 2017 at https://myhrinfo.hrms.uwaterloo.ca/)
Courses

• How many courses should I take in the Fall term?
  3 or 2  consult your advisor

• When should I register for my courses?
  in the first week of classes

• Which courses should I take?
Choosing your courses

Take into account:
• Your background and interests
• Your course requirements
• For Ph.D students, which comprehensive exams you plan to take

Plan ahead! And CONSULT YOUR ADVISOR
Planning ahead

Not all C&O courses are offered every year, but Core C&O courses are.

Four out of six C&O core courses offered this term:

• CO 642: Graph theory
• CO 650: Combinatorial optimization
• CO 681: Quantum information processing
• CO 685: Public-key cryptography
ALSO offered this term:

• CO 602: Fundamentals of optimization
• CO 739: Topics in combinatorics (Dave Wagner)
• CO 749: Topics in graph theory (Bruce Richter)
Courses in upcoming terms

WINTER 2018 (tentative):

• CO 634: Combinatorial designs
• CO 630: Algebraic enumeration
• CO 663: Convex optimization and analysis
• CO 687: Applied cryptography
• CO 739: Topics in combinatorics (Ashwin Nayak)
• CO 750: Topics in combinatorial optimization
  (Laura Sanita)
• Two other topics courses by L. Postle and K. Yeats
Courses in upcoming terms

WINTER 2018 (tentative):

- CO 634: Combinatorial designs
- CO 630: Algebraic enumeration
- CO 663: Convex optimization and analysis
- CO 687: Applied cryptography
- CO 739: Topics in combinatorics (Ashwin Nayak)
- CO 750: Topics in combinatorial optimization (Laura Sanita)
- Two other topics courses by L. Postle and K. Yeats
SPRING 2018 (tentative):

• CO 671: Semidefinite optimization

Courses NOT offered this academic year (i.e. in F17, W18, S18) include: CO 644 (Algebraic graph theory), CO 646 (Matroid theory), CO652 (Integer programming)
C&O course requirements

• Masters (thesis option):
  2 **CORE** C&O courses + 1 other C&O course
  + 1 other course

• Masters (research paper option):
  3 **CORE** C&O courses + 1 other C&O course
  + 3 other courses

• Ph.D: 4 **CORE** C&O courses + 1 other C&O course
  + 3 other courses
Comprehensive exams

Ph.D students need to write **ONE** comprehensive exam each from **TWO** of the following categories:

- Combinatorial enumeration, Graph theory
- Discrete optimization, Continuous optimization
- Quantum computing, Cryptography

The exams are held each summer *(June/July)*. They must be taken within 4 terms of starting the Ph.D program.
Closely associated with these exams are the C&O **CORE** courses:

- Combinatorial enumeration: CO 630
- Graph theory: CO 642
- Discrete optimization: CO 650
- Continuous optimization: CO 663
- Quantum computing: CO 681
- Cryptography: CO 685
Research

Your research project will be chosen by you and your advisor.

Meet with your advisor **REGULARLY** and **FREQUENTLY**!
Teaching Assistantship (TAship)

Your Teaching Assistantship is not “just” a job.

It’s an important part of your training and academic experience.

We expect you to do a **GOOD** job, not just an **OK** job.

Workload is **5 hours per week (ON AVERAGE)** from Sep 1 – Dec 31.

**REMINDER:** Faculty Graduate TA Training:
Thursday, Sep 7, 4:30-7:15pm, MC 4021
TA duties may include:

• Grading assignments and exams
• Holding office hours for individual student help
• Proctoring exams for your assigned course
• Teaching tutorial sessions
• Math Tutorial Center
• Coordinating and supervising undergraduate markers
• Pool proctoring of other exams in the Math faculty
Interactions with students

• **Know the Material**
• **Give Hints** instead of telling students the solution
• **Encourage** students to discover solutions themselves
• **Be Punctual**
• **Include Comments** and indicate specific errors and when grading
• **Be Consistent** in grading
Graduate skills seminar
(or just Grad seminar)

• Required for all new Masters and Ph.D students
• Coordinated by Dave Wagner
• Mondays at 3:30pm in MC 6486
Other seminars

- **Tuttle Colloquium**: Fridays 3:30pm. The regular seminar of the C&O department – should plan to attend.

- **Faculty of Math seminars**: occasional. Distinguished invited speakers.

- Seminars in your area.

Seminars for the coming week are announced the preceding Friday in an email from the Math faculty.

Seminars are also listed at:
https://www.math.uwaterloo.ca/~wnotice/notice_prgms/wreg/view_notice.pl
External scholarships

• NSERC (Government of Canada): for Canadian citizens and Permanent Residents

• OGS (Ontario Government): open to all

• Melissa will forward application details when they become available
Social events

• **Welcome Lunch for new graduate students:** Thursday, Sep 21 at 1pm in MC 5501

• **C&O cookie time:** Tuesdays, Fridays at 3pm in the Math lounge

• **C&O potluck dinner:** Winter term (details: TBA)

• **C&O picnic:** Spring term (details: TBA)
Problems?

Who may be able to help?

• Graduate coordinator: Melissa Cambridge, MC 5116
• Your advisor
• Your fellow graduate students:
  – Jamie de Jong (MC 5127) is the grad-student representative: common issues can be brought to his attention
  – Justin Toth (MC 5023B) is the MFCF computing rep.
• Graduate chair: Chaitanya Swamy, MC 5118
  office hours: T 1-2pm
• University services (Counseling services, International student experience team, Ombudsman etc.)
Have a great time!
Courses in upcoming terms

Winter 2017:

- **CO 630**: Algebraic enumeration
- **CO 663**: Convex optimization and analysis
- **CO 652**: Integer programming
- **CO 644**: Algebraic graph theory
- **CO 749**: Topics in graph theory (P. Haxell)
- **CO 750**: Topics in combinatorial optimization (L. Sanita)
- **CO 769**: Topics in continuous optimization (L. Tuncel)
- **CO 781**: Topics in quantum information (A. Nayak)