

Course Information for MATH 5818 Graph Theory Fall 2020

Instructor: [Jason Z. Gao](mailto:zgao@math.carleton.ca), email: zgao@math.carleton.ca

Online Lectures: Tuesday and Thursday 13:05--14:25, using BigBlueBotton (BBB) in cuLearn. The lectures will be recorded and posted on cuLearn so that you can review them later. Lecture starts on Sep. 10.

Online office hours (tentative): Tuesday and Thursday 11:00--12:00

Course Description: MATH 5818 [0.5 credit] (MAT 5166)

Paths and cycles, trees, connectivity, Euler tours and Hamilton cycles, edge colouring, independent sets and cliques, vertex colouring, planar graphs, directed graphs. Selected topics from one or more of the following areas: algebraic graph theory, topological graph theory, **random graphs**.

Prerequisite: MATH 3855 or permission of the School.

Textbook: J.A. Bondy and U.S.R. Murty, *Graph Theory*, Graduate Texts in Mathematics 244, Springer (2008) (ISBN 978-1-84628-969-9).

The following are some useful references.

- D.B. West, *Introduction to Graph Theory*, Prentice-Hall, 1996 ISBN 0-13-227828-6, QA166.W43
 - Reinhard Diestel, *Graph Theory*, Graduate Texts in Mathematics, Volume 173, Springer-Verlag, Heidelberg, ISBN 978-3-642-14278-9
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Evaluation

- Final Exam 50%
- Assignments (2) 30%
- Midterm test 20%. To be held on **Nov 05 (Thursday) during the lecture period**.

Assignments will be posted on cuLearn; in due time solutions will also be posted. Late assignments will not be accepted. There will be no make-up midterm; if you miss the midterm, then its weight will be shifted to your final exam. Students taking this course as a graduate course may also take it as a comprehensive exam. In order to pass the comprehensive a final exam mark of 70% is required; see the graduate calendar for details.

This course uses cuLearn, **Students from University of Ottawa may need to obtain a Carleton student number (and email) first from the office of graduate studies in order to access cuLearn and online lectures.**

For help and support, go to <http://carleton.ca/culearn/students>. Any unresolved questions can be directed to Computing and Communication Services (CCS) by phone at 613-520-3700 or via email at ccs_service_desk@carleton.ca.

Below is a tentative biweekly lecture schedule

Material	Approx. # of weeks
1.1-1.5; 2.1-2.4 Graphs and subgraphs	2
3.1-3.5;4.1-4.3;5.1-5.4;9.1-9.4. Connected graphs, trees, nonseparable graphs, connectivity.	2
10.1-10.5;11.1-11.2;12.1-12.3 Planar graphs, the four-color problem, stable sets and cliques.	2
13.1-13.4; 14.1-14.4,14.7. The probabilistic methods, vertex colorings.	2
16.1-16.4; 17.1-17.2, Matchings, edge colorings.	2
18.1-18.5; 21.1-21.7. Hamilton cycles, integer flows and coverings, Tutte polynomials	2
Total	12

Academic accommodation

You may need special arrangements to meet your academic obligations during the term.

For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website:

<http://www2.carleton.ca/equity/>

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website:

<http://www2.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at

<http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/>

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/eq>