

MATH 444: MATHEMATICAL RESEARCH AND WRITING January 2022

SCHEDULE: Section 202, 12:30-2:00 TTh Room MATH ANNEX 1102. Attendance will be important. Initial two weeks will be online.

INSTRUCTOR: Richard Anstee Office: Math Annex 1114, cell 778-323-6105
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OFFICE HOURS: 2:00-3:00 TTh plus office hours on W. I will try to be flexible arranging zoom meetings but would prefer Tuesday, Wednesday and Thursday. Sometimes I will initiate these meetings with you.

WEBSITE: <https://personal.math.ubc.ca/~anstee/math444/math444.html>

TEXT: None

OUTLINE: This course does not focus on any particular content. The students will be choosing content to present. I will initially be choosing some material from Combinatorics, Geometry, Number Theory, Graph Theory to discuss.

GRADING: 50% from assignments, in class presentation, and classroom participation and 50% project (no final exam!)

ONLINE/IN PERSON FORMAT: We expect be having in-person lectures. We will begin with online classes (zoom sessions) for the first two weeks and UBC may announce an extension to this. We expect be having in-person lectures for the majority of term. Attendance is important (even on zoom). We can arrange zoom sessions for group meetings outside of the Tuesday, Wednesday, Thursday time frame.

COURSE PHILOSOPHY: This course can be described as a capstone course. It gives students a chance to use their mathematical abilities to explore a topic of their choosing. I recommend MAA Monthly or Mathematics Magazine or College Mathematics Journal as sources for interesting articles to explore. The group project provides a 'research' experience and as such has been designated as a course to fulfil the Arts degree (B.A.) research intensive course requirement. I hope the Mathematics is fun. The course asks for careful and precise presentations. This skill is one of the byproducts of a Mathematics education and is appreciated by employers.

IN CLASS PRESENTATIONS: 10% There will be about 2 in class presentations by students. This will be done with the aid of beamer (Latex based package) using Zoom if we are forced to be online.

ASSIGNMENTS: 35% of grade. There will be a variety of assignments including one due the second class.

CLASS PARTICIPATION: 5% of grade. classroom participation; peer evaluations etc.

PROJECT: 50% of grade. The project will be done in groups of 2 or 3 students. More details will be forthcoming as deadlines approach. Suggestions for finding suitable projects will be given but you are invited to consider journals such as MAA Monthly or Mathematics Magazine or College Mathematics Journal as sources. The groups must be chosen by February 10 and an written outline of topic chosen submitted to me by March 3. I will provide advice on the scope of your project. A progress report (draft of report) will be due March 22 for which I will be provide lots of feedback. The project itself is due March 31 (some flexibility is available if arranged with me in advance). Consultation with me is encouraged at **all** stages. Organizing the timeline for the project can be a challenge so work together in your group to discuss any timing difficulties such a important midterms. I mark the written project on a variety of criteria; see the handout on the project overview.

PLAGIARISM: The students are reminded of the plagiarism policies of UBC (see Academic Misconduct). You will need to cite sources. For this course: short passages from cited sources are allowed (should be indicated using quotation marks). Longer passages must be digested by you in some way and put into your own words (and still cited). Don't copy examples, create your own. Don't copy motivations, write your own. etc. I'm not interested in you submitting a mostly copied version of someone else's work for assignments/projects. Ask me if you are confused whether something is plagiarism.

MISSED WORK: From time to time students may be unable to finish assignments or deliver talks. Examples of valid reasons include illness and travel to play a scheduled game for a varsity team. Examples of reasons that are not valid include conflicts with personal travel schedules or conflicts with work schedules. Any student who misses work is to present to their instructor the Department of Mathematics self-declaration form for reporting a missed assessment within 72 hours of the midterm date. This policy conforms with the UBC Vancouver Senate's Academic Concession Policy V-135 and students are advised to read this policy carefully. There is a new procedure allowing a self declaration concerning term work. It is available once per course. Apart from that exceptional situation do the following: please contact me before class time on the due date, and given your reasons for the missed work. Assuming the reasons are legitimate, I will note that you will be missing the assignment. In cases where the missed work has been allowed, your grade is computed out of a smaller number than 100 and then scaled appropriately to get a grade out of 100. For example, if an assignment counts 5% and a student informs me in advance of legitimate reasons for missing the midterm, the student would have a grade computed out of 95 and then this would be scaled to a grade out of 100 by multiplying by $100/95$. Without advance notice (to me by email or phone message to Math Office etc) the default will be a grade of 0 in the missed work. A student must finish a significant amount of term work in order to pass the course. Three missed assignments will be the limit in this course.