

Philosophy of Geometry

Tuesdays, 11:35am–1:25pm, Leacock 927

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Course description. Tradition has it that the phrase ‘Let no one ignorant of geometry enter’ marked the entrance to Plato’s Academy and Euclidean geometry was hailed as a paradigm of epistemic certainty by modern philosophers for the next two millennia. However, developments in mathematics in the 19th century, like the rise of projective and non-Euclidean geometries and the quest for higher standards of rigour, challenged the previous conception of absolutely certain knowledge, based on self-evident axioms and principles of reasoning. As a result, philosophical positions had to be reconsidered and adapted. In this seminar we will explore some of these historical developments and philosophical reflections on geometry. We will address general questions in philosophy of mathematics, such as regarding the nature of mathematical objects (points, lines), mathematical knowledge, and mathematical truth. In addition, we will think about questions that are more specific to geometry, such as what geometry is about (e. g., space or figures), limitations of diagrammatic reasoning, analytic and synthetic approaches to geometry, the justification of ‘ideal’ elements like points at infinity, empiricist foundations of geometry, the role of intuition, and the relation between pure geometry and its applications.

Prerequisites. Phil 310 Intermediate Logic (or equivalent). Seminars are open only to graduate students and final year Philosophy Majors, Honours and Joint Honours students, except by written permission of the instructor.

Reading materials will be made available on myCourses and in the library course reserve.

Requirements & grading. It is required that students attend the seminar and participate in the discussions. Participants will be required to lead one or two seminar meetings. This includes selecting suitable readings of source material, preparing a short handout, and giving a 20-minute presentation at the beginning of the meeting. A list of topics (with relevant literature) will be provided at the first meeting (January 7) and dates for the presentations will be determined at the second meeting (January 14).

The *final grade* depends on weekly reading questions (20%), in-class presentation (incl. selection of readings and preparation of a handout) (40%), and a 5000–6000 word term paper (40%). Late papers will be downgraded at a rate of 1/3 of a grade per day (e. g., from A- to B+, C to C-), including weekend days/holidays. Requests for extensions will be considered only when requested at least 24 hours before the paper is due and substantiated at the time of request by a doctor’s note.

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“Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.”

“In accord with McGill University’s Charter of Students’ Rights, students in this course have the right to submit in English or in French any written work that is to be graded.”

“In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.”