

Econ-447: Economics of Information and Uncertainty¹

Time and place	Tuesdays and Thursdays, 08:35-10:00 in SADB 1/12
Instructor and TAs	<u>Instructor information</u> : Julian Karaguesian; Email: Julian.karaguesian@mcgill.ca ; Office: Leacock 438 (Office hours: TTH 10:15-11:15, and by appointment).
Pre-requisites	Background in economics is important, such as with ECON-208, 209, 230 and 250. Contact me via email or in class (or office hours) for possible exceptions.
Subject matter	<p>This course is an upper-level undergraduate course on the economics of information and uncertainty. There will applications to microeconomic, macroeconomics, institutional economics, and other sub-branches of the discipline (e.g., game theory).</p> <p>One objective of this course is to introduce new ideas and theories of information – in this new Age of Information – and their implications for traditional (i.e., Neoclassical) approaches to the economics of information and uncertainty. Key concepts, paradigms and theories from <i>Neoclassical information economics</i> – including asymmetric Information, Moral Hazard, Adverse Selection, and Signaling – will be discussed, as they are more relevant than ever. The same is true for certain central concepts of the economics of uncertainty, including risk aversion and riskiness, risk-sharing, state-contingent contracts, markets for contracts, etc.</p> <p>At the same time, however, these concepts will be presented in the context of both traditional and modern perspectives on information and uncertainty. Yuval Harari's book, <i>Nexus</i>, has been chosen for this course to provide both an historic context for information and its evolution through different eras of <i>Homo sapiens</i>' economic society, and for a 21st vision of (or perspective on) information</p> <p>Another objective of this course is therefore to critically examine the primary paradigms and models of micro <i>and</i> macroeconomics through the prism of modern interpretations of information and uncertainty, and the implications for policy. In fact, while this course will be interwoven with traditional and new economic and information (and uncertainty) theories, at no time will it stray from the central theme: what are the implications for economic policy of (i) the exponential growth of data and other forms of information, and (ii) recognizing that risk and uncertainty are fundamentally different phenomena.</p>

¹ The structure of this syllabus draws heavily from those prepared by Professor William Watson.

<p>Subject matter...</p>	<p>Part of the critical examination of the primary paradigms of economics through the prism of new approaches to information and uncertainty will involve the exploration of four critical concepts or phenomena, which are:</p> <ul style="list-style-type: none"> • Emergence • Non-Ergodicity • Computational Irreducibility, and, • Radical Uncertainty. <p>ECON-447 will also examine the increasing <i>entropy</i> of information – the breakdown of highly-ordered forms of information into less-ordered (more chaotic) and unpredictable forms – and implications for both the discipline of economics itself (economic science) and for policymaking (economic engineering, so to speak). In so doing, we will examine the linkages between information and uncertainty – e.g., does more information reduce uncertainty in economic decision-making, or does it raise uncertainty (what I called the <i>tipping point of too much information</i>).</p> <p>ECON-447 will also explore the concept of uncertainty in an age of change – climate and wider ecological derangement, technological, political and geopolitical – and the associated linkages between rising uncertainty and key economic variables, such as interest rates, inflation, government spending, insurance, productivity, etc.</p> <p>Time-permitting, we'll also examine the impact of the exponential growth of information in modern economic society on brain health and, by extension, on productivity and overall economic performance. There is a large and growing literature on brain health in the Digital / Information Age</p> <p>Maths: any maths (algebra, calculus, statistical thermodynamics) will be done from scratch in class, fully explained – with no one left behind.</p>
<p>Required course materials and readings</p>	<p>Required and suggested readings will start being posted by the first lecture. Required readings will comprise a mixture of academic literature, OECD and IMF economic analysis documents of member countries, and articles from the <i>Financial Times</i>, <i>Wall Street Journal</i>, <i>Economist</i>, <i>Globe and Mail</i>, etc.</p>
<p>Evaluation²</p>	<p>Grading: (1) Midterm – 25 per cent (27 February 2025); (2) Assignment / Term Paper / Presentation – 25 per cent (TBC by 13 January); (3) Final – 50 per cent. April Final Exam TBC by Exams Office.</p>
<p>Course delivery, communications, and classroom</p>	<p>This course will be taught in-person in accordance with all of <u>McGill's COVID-19 and other health and safety guidelines</u>.</p>

² Please inform me if you are on a special scholarship and there are timing conflicts with exams.

<p>participation and etiquette</p>	<p>This course is lecture heavy. Attendance is recommended. Please feel free to question all that you are presented, not only on technical grounds, but also on logical grounds.</p> <p>Please check <i>mycourses</i> regularly for announcements, updates, new content, etc. For special announcements or unforeseen events, I may email the whole class directly. Please email me only if there is something urgent that you need to communicate, and not to ask about exam dates, etc. (as such things will be posted on <i>mycourses</i>). In the first instance, use office hours should you need or want to discuss anything related to the substance of the course.</p> <p>I realize many have hectic schedules and that it's a busy planet, but please do your best to arrive on time and stay through until the end to minimize class disruption. Please keep all your devices turned off during class.</p>
<p>Academic Integrity</p>	<p>McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. McGill's policy on Academic Integrity can be found here.</p> <p>L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le guide pour l'honnêteté académique de McGill</p>
<p>Language of submission</p>	<p>In accord with McGill University's Charter of Student Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.</p> <p>Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté, sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue.</p>

Artificial Intelligence (AI) policy	<p>You may use generative artificial intelligence tools (e.g., ChatGPT, Gemini, Claude, etc.) for learning and practicing the concepts in this course, but these tools may NOT be used for completing term papers or any other type of assignment in this course.</p> <p>The use of generative artificial intelligence tools or apps for assignments in this course, including tools like ChatGPT, Gemini, Claude, Microsoft Copilot and other AI writing or coding assistants, is prohibited.</p> <p>The knowing use of generative artificial intelligence tools, including ChatGPT, Gemini, Claude, Microsoft Copilot and other AI writing and coding assistants, for the completion of, or to support the completion of, an examination, term test, assignment, or any other form of academic assessment, may be considered an academic offense in this course.</p> <p>Representing as one's own an idea, or expression of an idea, that was AI-generated is considered an academic offense in this course.</p> <p>Students may not copy or paraphrase from any generative artificial intelligence applications, including ChatGPT, Gemini, Claude, Microsoft Copilot and other AI writing and coding assistants, for the purpose of completing assignments in this course.</p> <p>The use of generative artificial intelligence tools and apps is strictly prohibited in all course assignments unless explicitly stated otherwise by the instructor in this course. This includes ChatGPT, Gemini, Claude, Microsoft Copilot and other AI writing and coding assistants. Use of generative AI in this course may be considered use of an unauthorized aid, which is a form of cheating.</p> <p>This course policy is designed to promote your learning and intellectual development and to help you reach the course learning outcomes</p>
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