

Professor Anton Korinek
UVA Economics and Darden, GovAI, and Brookings

Personal note: I am offering this course because I believe that artificial intelligence will transform our world more profoundly than we can imagine in the coming years. This course invites you to join me on a journey from our evolutionary origins to present technological disruptions and their effects on the economy towards the future of life in our universe.

Course webpage: <https://canvas.its.virginia.edu/courses/101888/>

Lecture: Tue and Thu 12:30 – 1:45pm in Monroe Hall 134

Office hours: Tue 2pm in Monroe 246 and by appointment

Teaching Assistant: Max Schnidman

Course email: econofai@virginia.edu (for both professor and TA)

Discussion sessions: Friday 11:00am – 11:50am / 12pm – 12:50pm in New Cabell Hall 309

TA office hours: Friday 2pm-4pm in Monroe Basement

Course description:

Advances in artificial intelligence have proceeded rapidly in recent years and have reached an inflection point that will have profound implications for the future of humanity.

How is rapid progress in artificial intelligence affecting our economy and society? This course analyzes the short- and medium-run implications for employment, economic growth, and inequality. It also studies the long-run implications of artificial intelligence rivaling human intelligence.

Learning goals: At the conclusion of this course, you will be able to:

- assess the implications of the rise of AI for our society and for humanity
- evaluate how our economy will be affected by the ongoing AI revolution
- demonstrate your understanding in an in-depth course paper on a specific topic in the field
- devise a plan for how to effectively manage your career and life in the Age of AI

Grade composition:

30 % Class preparation and participation (each quiz will count 4% towards this)

20 % Problem sets

20 % Mid-term exams

15 % Course presentations

15 % Course paper

No final exam

No opportunities for extra credit.

If you cannot deliver an assignment on time, please get in touch with the TA as soon as possible to discuss how to manage the situation. Little can be done after an unsatisfactory grade has been assigned.

Policy on Use of Electronics:

The use of laptops and other electronics in the classroom is forbidden because research shows that they interfere with effective learning (see e.g. <https://nyti.ms/2hVMrVo>).

If you need to use your phone, please step outside the classroom – you are welcome to do so for urgent matters and do not need to excuse yourself.

Class Preparation, Attendance and Participation:

Class attendance and participation are an essential part of your learning experience. I will assign preparatory readings each week that we will discuss in class the following week. Preparing these materials will help you to actively and effectively participate in classroom discussions, including in your response to cold calls. This will count for a significant part of your grade.

Make sure to reserve about 2 to 4 hours each week to prepare your readings. I recommend that you go through the readings carefully and summarize the main points for yourself. Make sure you understand the big picture – you do not need to memorize the details.

Regardless of your comfort level with the materials, there are many effective ways to participate in the classroom, including asking good questions or articulating ideas and insights that help others understand better. Here are some suggestions for effective classroom participation:

- The best contributions are well-formulated analyses or questions that relate directly to the preparatory readings. Look for ways to discuss the questions at hand that help others understand the material and the fundamental concepts behind it.
- If your own understanding of the concepts is a bit murky, you can still participate by presenting some of the key facts in the preparatory readings.
- If engaging in discussion is natural for you, think about ways to make your comments precise, on topic, and helpful for fellow students.
- If you are normally reluctant to engage in classroom discussion, try to push yourself a bit, or discuss with me how to best include you.

Unannounced Tuesday Quizzes:

We will have several unannounced mini quizzes throughout the semester that ask you about the preparatory readings for the week. These quizzes will only take place on Tuesdays and will ask questions that you will be able to answer if you have gone through the preparatory readings conscientiously.

Excused Absences:

You will be allowed to excuse yourself for up to two class sessions without providing a reason. In order to be excused, you need to either email us before class or sign your name on the “Excused” sheet that our teaching assistant will have ready before class starts. If you excuse yourself, you are not expected to participate in the classroom discussion or in a potential quiz that day.

Medical Absences and Religious Holidays:

If you will have to miss a class for an excused reason as per university policy (religious holiday or illness), please email us as soon as you find out about the circumstance that will prevent you from attending in order to make sure that you do not lose participation points.

Problem Sets:

There will be seven problem sets, which will be due *at the beginning of class* by the indicated due dates, i.e., 1/30, 2/13, 2/27, 3/19, 4/2, 4/16 and 4/30. You can either upload them on Canvas or submit a paper copy. The problem sets will help you to digest the materials covered in class and will be useful in preparing for the mid-term exams.

You are allowed to collaborate in teams (of up to 4 students). If you do so, then please list your team members at the top of the problem set. Nonetheless, everyone is responsible for handing in their own assignment and will be graded solely on what they hand in. Late submissions will not be accepted.

Mid-term Exams:

There will be two mid-term exams on 2/29 and 4/4. You will be responsible for all the materials covered in class, including the preparatory readings. The exams will be cumulative.

Course Presentations and Papers:

In our class meetings on 4/16, 4/18, 4/23, and 4/25, we will have student team presentations. Please form teams of 4 to 7 students with classmates who have similar interests. The broad theme is how advances in AI will transform our economy and society. To pick a topic, choose one specific area that you find particularly interesting to focus on, for example, a sector of the economy, a category of jobs, or an area of our lives, and analyze how it will be affected by AI. Start by analyzing how the AI systems we currently have will likely affect your area of interest, and then speculate how it may be transformed by further improvements in AI, including human-level AI systems and beyond. Moreover, include your suggestions on how our society can best prepare for the transformations you envision.

Max and I will be available to advise you on topics, to discuss your choices with you and recommend sources and research approaches, and to offer you feedback as you develop your topic.

The following deadlines will guide you along the process of preparing your presentation and paper:

Due date selection of team members and topic	Wed Feb 7
Due date for draft list of source materials	Wed Feb 14
Due date for draft slides	Wed Apr 1
Extra Office hours to discuss slides	Apr 8 – 12
Due date for course paper	Apr 15
Date of presentations (5 min per speaker)	Apr 16 – 25

NOTE: The due *time* for all assignments in the table above is 5pm!

Components of presentation grade:

8 pt: Depth of preparation (explanation of mechanisms, multitude of sources)

3 pt: Quality of slides and preparedness

2 pt: Coordination among team members

2 pt: Professionalism and Timeliness of Materials and Presentation (stay within time limit)

We will typically assign the same grade to all members of a given team.

Course Paper:

Each team is expected to submit a paper on the topic presented. The paper should have a 1-page executive summary (of about 500 words) and a body that is approximately 1000 words per team (corresponding to about 2 pages per team member using standard formatting).

Late submission will lose 25% of the points if submitted within the first 24 hours after the deadline, 50% if submitted within 48 hours, 75% if submitted within 72 hours, and will receive a zero grade if submitted later than that.

Generative AI Policy:

I encourage you to use generative AI to the extent useful for all class assignments that you work on outside of the classroom, i.e., except quizzes, mid-term exams, and course participation. A website that I found particularly useful because it aggregates a wide range of generative AI models is poe.com. You may also find helpful resources at GenAIforEcon.org.

Main Course Themes:

- 1) Introduction & scenario planning
- 2) Taking stock: AI, deep learning, generative AI
- 3) Predicting the future of AI
- 4) What is intelligence?
- 5) Evolution of intelligence
- 6) Agency and AI control
- 7) The economic problem
- 8) Economics in a solved world
- 9) Inequality
- 10) Meaning in a solved world
- 11) Public policy in a solved world
- 12) Beyond human biology
- 13) Preparing for the Age of AI