

Til: Programrådet
Fra: Programleder og programrådsleder
Sak: Sak 07/2020
Sak: ECON4830 – Economics Dynamics and Uncertainty
Dato: 2. april 2020

SAK 07/2020 –ECON4830 – ECONOMICS DYNAMICS AND UNCERTAINTY

Programrådet vedtok i sitt møte 25. februar å opprette et nytt valgfritt masteremne ECON4830 fra og med høsten 2020. Den endelige tittelen og forkunnskapskrav, obligatorisk aktivitet og vurderingsform var ikke klart. Når foreligger det et forslag fra emneansvarlig Christian Traeger (vedlagt).

Kurset får tittelen “Economics dynamics and Uncertainty”. Det vil tilbys første gang høsten 2020, og deretter enten årlig eller annethvert år. **Formelle forkunnskapskrav** vil være Bachelor i samfunnsøkonomi – eller tilsvarende, og ECON3120/4120 – Mathematics 2 eller tilsvarende. **Anbefalt forkunnskapskrav** vil være ECON3220/4220 – Microeconomics 3. Det vil ikke være obligatorisk aktivitet. **Vurderingsform** blir 3-timers skoleeksamen i Inspera. Hjelpemidler blir (godkjent) kalkulator. Eksamensoppgaven gis på engelsk, og besvarelsen må leveres på engelsk.

Forslag til vedtak:

Programrådet går inn for at det vedtatte emnet ECON4830 får tittelen «*Economics Dynamics and Uncertainty*». Det vil tilbys første gang høsten 2020, i tråd med Traegers notat. Formelle og anbefalte forkunnskaper vil være hhv. Bachelor i samfunnsøkonomi eller tilsvarende, ECON3120/4120 eller tilsvarende og ECON3220/4220 eller tilsvarende. Emnet har ikke obligatorisk aktivitet, det arrangeres med en 3-timers skoleeksamen i Inspera og med godkjent kalkulator som eneste hjelpemiddel. Eksamen må besvares på engelsk.



Economics Dynamics & Uncertainty

The class on *Economic Dynamics and Uncertainty* trains the student in dynamic economic thinking, intertemporal trade-offs, optimal and behavioral aspects of choice, and responses to uncertainty and learning. It draws from a variety of economic fields such as macroeconomics, asset pricing, behavioral economics, climate change economics, decision theory, and more. The overarching theme is the exploration, interpretation, and understanding of dynamic trade-offs in economic reasoning. Methodologically, the class starts with basic reasoning in two period models and moves on to dynamic programming in discrete and continuous time. The class applies similar methods and trade-offs to different economic settings in order to train the student in the application of concepts and methods outside of a narrow field or topical focus. The class pays particular attention to the fact that the future is uncertain. It explores implications of risk aversion, prudence, and Bayesian learning for decision making and economic dynamics. The seminars will make occasional use of Matlab. Students can use alternative programming language like Python or Julia if they do not require support.

Learning Outcomes

- **Knowledge**

You should understand

- intertemporal trade-offs
- the interactive dynamics of marginal valuation and good provision
- how uncertainty affects dynamics and optimal decisions
- Dynamic implications of learning and behavioral responses
- Dynamic implications of policies & implications of dynamics for policy

- **Skills & Competence**

You should obtain experience in

- thinking dynamically
- setting up dynamic economic models
- using dynamic programming to evaluate intertemporal trade-offs
- interpret intertemporal optimality conditions
- be able to read and understand reports and journal articles that make use of the concepts and methods introduced in this course

Tentative Lecture Outline

1. Overview & Introduction
2. 2-Period Reasoning & Discount Factor
3. Risk Premia, Prudence
4. Dynamic Programming in Discrete Time
5. Dynamic Programming in Continuous Time
6. Intertemporal Trade-Offs & Euler Equations
7. Integrated Assessment of Climate Change
8. Habit Formation and/or Self-Control

9. Learning
10. Stochastic Discount Factor & Asset Pricing I
11. Risk Aversion versus Intertemporal Substitution
12. Continuous Time Stochastics
13. Asset pricing II

Lecture Material

The main lecture material will be lecture notes provided on Canvas, blackboard notes, and some slides. Some lecture notes will be based on the following book draft available online: Karp, L. and C. Traeger (2013), *Dynamic Methods in Environmental and Resource Economics*. In addition, a limited number of paper readings will be assigned for selected classes.