

## Further Topics in Statistics and Probabilities

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### Group du Collège d'Économie:

Monday, 16h–17h30, Centre Assas, room 403, and  
Thursday, 18h–19h30, Centre Assas, room 314.

### Group du CMI EFiQuaS:

Monday, 18h–19h30, Centre Assas, room 505, and  
Thursday, 16h–17h30, Centre Assas, room 314.

Classes start Monday, September 25 and run for 10 weeks through Thursday, November 30.

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In this class, we are going to review the fundamental concepts of probability theory and apply them to problems in mathematical economics. We are going to discuss in particular models of interactive knowledge and belief revision as they have been introduced by Robert Aumann's 1976 article "Agreeing to disagree."

For our meetings please bring:

- Your notes from your statistics classes (second semester of last year and your current cours magistral) as well as any other books or lectures notes. You are allowed and encouraged to use this material for group works in class.

Evaluation for this class (2 ECTS) is based on:

- your participation during the sessions, including group works, presentations, and solutions of written assignments (16/20 points), and
- your term paper (4/20 points).

## Program

### Week of Monday September 25

Modeling information and beliefs about events (Aumann's 1976 model) as a door into the fundamental concepts of probability theory (probability spaces,  $\sigma$ -algebras, random variables)

### Week of Monday October 2

Bayes' Law

### Week of Monday October 9

Aumann's (1976) result on common knowledge and agreement

### Week of Monday October 16

Interpreting the "Aumann conditions"

### Week of Monday October 23

*Bayesian Dialogues*

### Week of Monday October 30

Summary and conclusions

### Week of Monday November 6

[Students' presentations](#)

### Week of Monday November 13

[Students' presentations](#)

### Week of Monday November 20

[Students' presentations](#)

### Week of Monday November 27

Feedback

## References

- [1] Aumann, Robert J. 1976. "Agreeing to Disagree." *The Annals of Statistics* 4, 1236–1239.
- [2] Geanakoplos, John and Herakles Polemarchakis. 1982. "We Can't Disagree Forever." *Journal of Economic Theory* 28, 192–200.
- [3] Sebenius, James K. and John Geanakoplos. 1983. "Don't Bet On It: Contingent Agreements with Asymmetric Information." *Journal of the American Statistical Association* 78 (382), 424–426.
- [4] Savage, L. 1954. *The Foundations of Statistics*. New York: Wiley.

[5] Pawlowitsch, C. 2020. *Dialogues Aumanniens*. Working Paper.

[6] Williams, David. 1991. *Probability with Martingales*. Cambridge, UK: Cambridge University Press.