Syllabus: First-Year M. Phil. Microeconomics: Game Theory and Industrial Organization
Vincent P. Crawford, University of Oxford Michaelmas Term 2012

There will be nine or if needed ten lectures, in the Lecture Theatre from 9:30-11:00 on Monday and *Thursday* of week 5; Monday, Tuesday, and Thursday of weeks 6 and 7; and Monday and Tuesday of week 8.

Course materials, including lecture slides and practice problems, are available on my course page at http://weber.ucsd.edu/~vcrawfor/FirstYearGameTheory.html, which is linked from the Department's First-year MPhil Microeconomics website at http://www.economics.ox.ac.uk/index.php/graduate/details/mphil_microeconomics/.

Old exam papers (for the First Year M.Phil. Microeconomics course) can be found at http://www.oxam.ox.ac.uk/pls/oxam/keyword?tx=HECN+5372&fd=3&yr=- (i.e. search in their rather rigid system for 'HECN 5372' as Exam paper code, for all years. Older exam papers are at http://www.economics.ox.ac.uk/index.php/graduate/intranet/mphil_past_exam_papers/.

My office hours are (preferably) by email appointment: vincent.crawford@economics.ox.ac.uk. Depending on requested timing, I may ask you to meet me either in my study at All Souls (go to the Porters' Lodge) or my Department office 2109. If you prefer to see me in my Department office, I am more likely to be there near class times.

The main text is:
Chapters 7-9 and 12 of Andreu Mas-Colell, Michael Whinston, and Jerry Green, *Microeconomic Theory*, Oxford University Press, 1995 ("MWG")

Useful supplementary texts include:
Kreps, *A Course in Microeconomic Theory*, Princeton 1990 ("Kreps")
Martin Osborne and Ariel Rubinstein, *A Course in Game Theory*
Jean Tirole, *The Theory of Industrial Organization*

The lectures will cover the topics of MWG's section headings, with some additional material. My recommendations for further practice problems from MWG are listed below.

Chapter 7. Basic Elements of Non-Cooperative Games
A. Introduction
B. What is a Game?
C. The Extensive Form Representation of a Game
D. Strategies and the Normal Form Representation of a Game
E. Randomized Choices

Problems 7.C.1, 7.D.1-2, and 7.E.1 at MWG 233-234; problems 3-4 at Kreps 385-386.

Chapter 8. Simultaneous-Move Games
A. Introduction
B. Dominant and Dominated Strategies
C. Rationalizable Strategies
D. Nash Equilibrium
E. Games of Incomplete Information: Bayesian Nash Equilibrium
F. The Possibility of Mistakes: Trembling-Hand Perfection
Appendix: Existence of Nash Equilibrium

Problems 8.B.1-7, 8.C.1-4, 8.D.1-9, and 8.E.1-3 at MWG 262-266; problems 2-3 at Kreps 451-452.

Chapter 9. Dynamic Games
A. Introduction
B. Sequential Rationality, Backward Induction, and Subgame Perfection
C. Sequential Rationality and Out-of-Equilibrium Beliefs
D. Reasonable Beliefs, Forward Induction, and Normal Form Refinements Appendix
Appendix B: Extensive Form Trembling-Hand Perfection

Problems 9.C.1, 3-4, and 7 at MWG 304-305; problems 17-18 at Kreps 457.

Chapter 12. Market Power
A. Introduction
B. Monopoly Pricing
C. Static Models of Oligopoly: Bertrand, Cournot, product differentiation
D. Repeated Interaction: Complete-information repeated games
E. Entry
F. The Competitive Limit
G. Strategic Precommitments to Affect Future Competition
Appendix A: Infinitely Repeated Games and the Folk Theorem
Appendix B: Strategic Entry Deterrence and Accommodation

Problems 12.C.1-17 at MWG 430; problems 14-15 and 21 at Kreps 454-462 and problems 2-4 at Kreps 498-501.

(Time permitting) Cooperative Game Theory