Economics 871 – Second Semester 2020

MASTER'S MICROECONOMICS

Course Description:

The course provides a more advanced supplement to the honours course in microeconomic analysis, and explores topics that will help students understand the modern microeconomic literature and perform microeconomic analysis in either a professional or academic environment. Topics covered include general equilibrium theory (exchange economies, welfare theorems, contingent plans), game theory (extensive form games, games of incomplete information, behavioural game theory); behavioural economics (non-expected utility theory, choice under uncertainty), contract theory (adverse selection, moral hazard), auction theory.

Course Design:

The main focus is theoretical model building and analysis, with some reference to and exploration of related empirical issues.

The lectures make liberal and frequent use of the standard tools of mathematical optimization which were covered in the mathematics course. Some attention will be given to many of the mathematical features, but elements like basic calculus results will be taken as known and mastered by the student.

Students are expected to engage in critical and logical thinking, and to work towards developing concise and rigorous reasoning and writing skills. The course places great emphasis on active and extensive practice in problem solving as well as in-class participation during discussions. All of these elements will be assessed.

Course Objectives:

The broad objectives of the course are:

- To demonstrate how formal approaches can be used to formulate and solve microeconomic problems analytically.
- To explain the intuition behind some of the more well-known theorems in modern microeconomics.
- To build experience in tracing the consequences of specific assumptions often made in modelling decision processes, and consequently the reasons, costs and benefits of certain types of these assumptions.
- To provide students with a foundation to apply game-theoretic analysis, both formally and intuitively, to strategic situations.
- To demonstrate the importance of competitive and cooperative factors in a variety of decision problems.
- To help students recognize and assess archetypal strategic situations in complicated decision making settings.
- To facilitate critical engagement with the material in order to achieve synthesis across the various topics, and develop skills to apply to understanding most fields in economics.
- To indicate directions in which different parts of microeconomics have been taken and what is done at the cutting edge of research.

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Lectures: Wednesday 14:00 – 16:00 in the Schumann Annex 1027.
Lecture notes will be provided on the department's website (ekon.sun.ac.za) at the discretion of the lecturer. In some cases mathematical derivations will be done (exclusively) in class, by hand.

Attendance is thus required for completeness, as well as assessment (see Evaluation below). Formal notification of absence must therefore be made in advance, or within 72 hours ex post in the case of emergencies.

Tutorials: Weekly tutorials will take place every Friday, 14:00 - 16:00, in the Schumann Annex 1027. The purpose of these tutorials will be to review material covered in class, provide guided practice in solving problems and to discuss the answers to problem sets. Some of these tutorials may need to be used to replace lectures lost due to holidays or unforeseen circumstances.

Prescribed Textbook:

Jehle, G.A. and Reny, P.J. (2011) *Advanced Microeconomic Theory*, 3rd Edition, Financial Times|Prentice Hall, Harlow, England.
(*referred to as JR below*)

Recommended Textbooks:

Varian, H.R. (1992). *Microeconomic Analysis*, 3rd Edition. Norton, New York.

Mas-Colell, A., Whinston, M.D. and Green, J.R. (1995). *Microeconomic Theory*. Oxford University Press, New York.

Gibbons, R. (1992). *A Primer in Game Theory*. Prentice Hall, Harlow, England.

Research Papers:

Several papers will be used as additional content resources and as examples of current theoretical and empirical work. All assigned readings are examinable, both by in class questions (see evaluation) and in exams.

Evaluation:

Students' performance on the course will be assessed with the following weighted components:

- Mid-Semester Test: 30%
- Final Exam: 30%
- Essay 30%
- Problem Sets: 10%

The mid-semester test will be written on **23 September 2020**, and will cover part I of the course.

Essay:

Students have to submit an essay on one of the topics listed below. The essay should be written in groups of three (or two, if specifically requested). All groups are required to submit a proposal, which must contain the names of the group members, the essay topic and a brief outline of each team members' responsibility, to rulof@sun.ac.za by **4 September 2020**. The essay has a 2000 words limit which you will be penalised for exceeding. (Please indicate the number of words at the end of the essay.) References must be complete. The internet should be treated as any other source with full acknowledgement. The plagiarism declaration (available on the course website) has to be signed and attached to the front of your essay. In addition to a hard copy **every essay has to be submitted electronically on *turnitin.com*** on the same day as submission. No essay will be graded without an electronic submission. The final essay must be submitted at 12:00 on **16 October 2020**. Hand the essays in at Ms. Smit's office in 506A.

The proposed essay topics are:

1) A key concern for Randomised Control Trials (RCTs) is 'external validity'. Discuss how this relates to general equilibrium and whether RCTs can be used to empirically examine general equilibrium outcomes.
2) Prices are the key mechanism through which a Walrasian Equilibrium Allocation is obtained in general equilibrium models. Discuss the empirical evidence on pricing behaviour and how this links with general equilibrium models.
3) Discuss how the Second Welfare Theorem can be used to inform the debate about redistribution in South Africa.
4) Model an everyday situation using games of incomplete information or evolutionary game theory in order to demonstrate how strategic thinking can help us better understand individual behaviour.
5) "Attempts to develop a satisfactory economic model of individual decision-making in situations of risk require more insights from psychologists regarding the cognitive process that leads to a choice." Write an essay arguing either in favour or against this view.
6) What have the fields of experimental and behavioural economics contributed to our understanding of game theory?
7) In 2010 the UK coalition government set up the Behavioural Insights Team (also known as the Nudge Unit) to apply insights from behavioural economics to UK policy. Apply the concept of libertarian paternalism to come up with three policy recommendations for the South African government.

8) Subjective Expected Utility representations tend to be violated by individual choice under uncertainty (c.f. the Ellsburg Paradox). The two main axioms that have been weakened to deal with this is the Independence axiom or the Completeness axiom. Discuss the relative merits of each in applications.
9) Use contract theory to propose a mechanism to improve the outcomes for players engaged in an everyday game.
10) Use the results/methods of contract theory to consider some of the implications of one of the following:

    - Nationalisation of private companies (mines, most probably)
    - The National Health Insurance scheme being developed by government
    - The interaction between the Financial and Public Finance sectors light of the financial crisis of 2007/8/9 and the ongoing public debt crisis in Europe and the USA

Problem Sets: Problem sets will be assigned every week and are due at the following tutorial session.

Brief Lecture Outline

Part I: Advanced topics in game theory & behavioural economics – 6 Lectures – Rulof Burger

- Static Games of Incomplete Information (1 lecture)

  Readings:

  Jehle, G.A. and Reny, P.J. (2011) *Advanced Microeconomic Theory*, *Chapter 7.2.3,* 3rd Edition, Financial Times|Prentice Hall, Harlow, England.

  Gibbons, R. (1992). *A Primer in Game Theory. Chapter 3*. Prentice Hall, Harlow, England.

  Harsanyi, J.C. (1967). "Games with Incomplete Information Played by "Bayesian" Players, I-III: Part I. The Basic Model", *Management Science* 14(3): 159-182.

  Harsanyi, J.C. (1995). "Games of Incomplete Information", *American Economic Review* 85 (3): 291-303.

- Dynamic Games of Imperfect Information (1 lecture)

  Readings:

  Jehle, G.A. and Reny, P.J. (2011) *Advanced Microeconomic Theory*, *Chapter 7.3.6-7.3.7,* 3rd Edition, Financial Times|Prentice Hall, Harlow, England.

  Gibbons, R. (1992). *A Primer in Game Theory. Chapter 4*. Prentice Hall, Harlow, England.

  Reny, P.J. (1992) "Rationality in Extensive-Form Games", *Journal of Economic Perspectives* 6(4): 103-118.

  Goeree, J.K. and Holt, C.A. (2001) "Ten Little Treasures of Game Theory and Ten Intuitive Contradictions", *American Economic Review* 91(5): 1402-1422.

- Dynamic Games of Incomplete Information (1 lecture)

  Readings:

  Jehle, G.A. and Reny, P.J. (2011) *Advanced Microeconomic Theory*, *Chapter 7.3.6-7.3.7,* 3rd Edition, Financial Times|Prentice Hall, Harlow, England.

  Gibbons, R. (1992). *A Primer in Game Theory. Chapter 4*. Prentice Hall, Harlow, England.

  Cho, I.-K. and Kreps, D. M. (1987) "Signalling Games and Stable Equilibria", *Quarterly Journal of Economics* 102: 179-221.

  "Economics evolves: A long way from dismal." *The Economist,* 10 January 2015.

  "Buttonwood: More Kirk than Spock." *The Economist,* 9 May 2015.

- Evolutionary Game Theory (1 lecture)

  Readings:

  Bowles, S. (2004) "Spontaneous Order", Chapter in *Microeconomics: Behavior, Institutions, and Evolution. Princeton,* Princeton University Press.

  Samuelson, L. (2002) "Evolution and Game Theory", *Journal of Economic Perspectives* 16(2): 47-66.

  Mailath, G.J. (1998) "Do People Play Nash Equilibrium? Lessons from Evolutionary Game Theory", *Journal of Economic Literature* 36(3): 1347-1374.

  Sudgen, R. (1989) "Spontaneous Order", *Journal of Economic Perspectives* 3(4): 8-97.

- Behavioural economics: Choice under uncertainty (1 lecture)

  Readings:

  Starmer, C. (2000) "Developments in Non-Expected Utility Theory: The Hunt for a Descriptive Theory of Choice under Risk", *Journal of Economic Literature* 38(2): 332-382.

  Barberis, N. (2013) "Thirty Years of Prospect Theory in Economics: A Review and Assessment", *Journal of Economic Perspectives* 27(1): 173-196.

  Camerer, C.F. (2000) *"Prospect Theory in the Wild: Evidence from the Field,"* Chapter 16 in D. Kahneman and A. Tversky (eds.), *Choices, Values, and Frames*. Cambridge: Cambridge University Press.

  Machina, M.J. (1987) "Choice Under Uncertainty: Problems Solved and Unsolved", *Journal of Economic Perspectives* 1(1): 121-154.

  Rabin, M. & Thaler, R.H. (2001) "Anomalies: Risk aversion", *Journal of Economic Perspectives* 15(1): 219-232.

- Behavioural economics: Discounted utility (1 lecture)

  Readings:

  Frederick, S., Loewenstein, G. and O'Donoghue, T. (2002) "Time Discounting and Time Preference: A Critical Review", *Journal of Economic Literature* 40(2): 351-401.

  Angeletos, G., Laibson, D., Repetto, A., Tobacman, J. and Weinberg, S. (2001). "The Hyberbolic Consumption Model: Calibration, Simulation, and Empirical Evaluation", *Journal of Economic Perspectives*, 15(3): 47–68.

O'Donoghue, T. and Rabin, M. (1999) "Procrastination in Preparing for Retirement," Chapter 4 in H. Aaron (ed.) *Behavioral Dimensions of Retirement Economics*, Washington D.C.: Brookings Institution Press.
Della Vigna, S. & Malmendier, U. (2006) "Paying Not to Go to the Gym", *American Economic Review* 96(3): 694-719.
Bryan, G., Karlan, D.S. and Scott, N. (2010) "Commitment Devices", *Annual Review of Economics* 2(1): 671-698.
Thaler, R.H. and Sunstein, C.R. (2003) "Libertarian Paternalism", *American Economic Review* 93 (2): 175-179.

Part II – Contract & Auction theory – 4 Lectures – Gideon du Rand

- Moral Hazard and Adverse Selection (2 Lectures)
  Readings:
  JR Chapter 2 (Section 2.4) and Chapter 8
  Additional readings to be assigned

- Basic Auctions (2 Lectures)
  Readings:
  JR Chapter 9, Sections: 9.1, 9.2, (9.3)
  Additional readings to be assigned

Part III – General Equilibrium and Welfare – 2 Lectures – Gideon du Rand

- Equilibrium in Competitive Market Systems (1 lecture)
  Readings:
  JR Chapter 5, Sections 5.1, 5.2

- Equilibrium in Production (1 lecture)
  Readings:
  JR Chapter 5, Sections 5.3

- Prices and pricing (1 lecture)
  Readings to be assigned

- Social Choice and Welfare (1 lecture)
  Readings:
  JR Chapter 6

ADDITIONAL READINGS WILL BE ASSIGNED