COURSE SPECIFICATION DOCUMENT

NOTE: ANY CHANGES TO A CSD MUST GO THROUGH ALL OF THE RELEVANT APPROVAL PROCESSES, INCLUDING LTPC.

Academic School/Department:	Business and Economics
Programme:	Combined Studies
FHEQ **Level:**	4
Course Title:	Game Theory
Course Code:	MTH 4130
Course Leader:	David M Munyinyi

Student Engagement Hours:	**120**
Lectures:	30
Projects / Tutorials:	15
Independent / Guided Learning:	75

Semester:	Fall/Spring

Credits Points:	12 UK CATS Credits
	3 US Credits
	6 ECTS Credits

Course Description:

This Course provides an introduction to game theory. The course will specifically aim to study the core principles of game theory from a theoretical and practical perspective making use of game algebra. Areas to be studied will include the notion of game strategies, classification of games, game trees, the Nash equilibrium, and zero - sum games, mixed strategy games, the prisoner's dilemma and repeated games, collective action games, evolutionary games in the context of hawk-dove games. Applications to specific strategic situation such as in bargaining, bidding and market competition will be explored.

Prerequisites: MTH3000 or MTH3110

Aims and Objectives:

This Course aims to provide students with an understanding of a number of concepts and applications of game theory.

Programme Outcomes:

Combined Studies: Ai, Aii, Bii, Ci, Cii, Ciii, Di

A detailed list of the programme outcomes are found in the Programme Specification.
This is located at the Departmental/Schools page of the portal.

Learning Outcomes:

- Have a broad understanding of the main ingredients of what constitutes game theory and differentiate different types of games that are appropriate for different situations.
- Demonstrate evidence of some ability in analyzing games and coming up with best best-response analysis criteria to maximize outcomes in a variety of strategies.
- Have a broad understanding of the principles and applications of the Nash equilibrium and zero-sum games, prisoner's dilemma, repeated games, two-person games and hawk-dove games.

Indicative Content:

- Game theory and strategic games.
- The Nash equilibrium and its application.
- Prisoner's dilemma and repeated games.
- Collective action games.
- The Hawk-Dove game
- Cooperative games
- Practical applications of game theory in bargaining, auction, bidding strategy and negotiations.

Assessment:

This course conforms to the Richmond University Special Programme Assessment Norms for Mathematics approved by Academic Council on 28 June 2012.

Teaching Methodology:

The Course will consist of interactive learning sessions of material presented using PowerPoint slides, small group discussions, and individual projects.

Bibliography:

IndicativeText(s):
Fiona Carmichael, "*A Guide to Game Theory*", Financial Times Prentice Hall, 2005

Journals
International Journal of Game Theory

Journal of Game Theory

Web Sites
Game Theory Society
http://www.gametheorysociety.org/journals/IJGT.html

Please Note: The core and the reference texts will be reviewed at the time of designing the semester syllabus

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Change Log for this CSD:

Major or Minor Change?	Nature of Change	Date Approved & Approval Body (School or LTPC)	Change Actioned by Academic Registry