

The University Of Toledo

New Graduate Course Proposal

* denotes required fields

1. College*:

Department*:

2. Contact Person*: Phone: (xxx - xxxx) Email:

3. Alpha/Numeric Code (Subject area - number)*: -

4. Proposed title*:

Proposed effective term*: (e.g. 201140 for 2011 Fall)

5. Is the course cross-listed with another academic unit? Yes No

Approval of other academic unit (signature and title)

Is the course offered at more than one level? Yes No

If yes, an undergraduate course proposal form must also be submitted. If the undergraduate course is new, complete the [New Undergraduate Course Proposal](#); if the undergraduate course is existing, submit an [Undergraduate Course Modification Proposal](#).

6. Credit hours*: Fixed: or Variable: to

7. Delivery Mode: Primary* Secondary Tertiary

a. Activity Type *

b. Minimum Credit Hours *

Maximum Credit Hours *

c. Weekly Contact Hours *

8. Terms offered: Fall Spring Summer

Years offered: Every Alternate

Year **Years**

9. Are students permitted to register for more than one section during a term? No Yes

May the courses be repeated for credit?

No Yes

Maximum Hours

10. Grading System*:
- Normal Grading (A-F, S/U, WP/WF, PR, I)
 - Satisfactory/Unsatisfactory (A-C, less than C)
 - Grade Only (A-F, WP/WF, PR, I)
 - Audit Only
 - No Grade

11. Prerequisites (must be taken **before**): i.e. C or higher in (BIOE 4500 or BIOE 5500) and C or higher in MATH 4200

PIN (Permission From Instructor)

PDP (Permission From Department)

Co-requisites (must be taken **together**):

12. Catalog Description* (**75 words Maximum**)

The course introduces students to advanced theory, algorithms, and applications of management science techniques, including dynamic programming, nonlinear programming, game theory, etc. The methods have applications to supply chain management, manufacturing, transportation, marketing, and economics.

13. Attach a syllabus - a syllabus template is available from the University Teaching Center. Click [here](#) for the Center's template.

File Type	View File
Syllabus	View

14. Comments/Notes:

This course would be particularly valuable to candidates in the OSCM track as this course would cover techniques such as dynamic programming, non-linear programming, and game theory. Many of these techniques have applications in supply chain management and manufacturing. Dynamic programming, in particular, is also applied in IS research as it is seen as an alternative to the real options approach.

15. Rationale:

We have simultaneously submitted a proposal to revise the PhD program in Manufacturing and Technology Management. In this proposal, we attempt to strengthen the Information Systems (IS) and Operations and Supply Chain Management (OSCM) tracks in this PhD Program. We have significantly increased the emphasis on the core research methods by introducing new courses and seminars.

Course Approval:

Department Curriculum Authority:	Bassam Hasan	Date	2017/04/03
Department Chairperson:	P. S. Sundararaghavan	Date	2017/04/03
College Curriculum Authority or Chair:	Michael Mallin	Date	2017/04/03
College Dean:	Anand S. Kunnathur	Date	2017/04/03
Graduate Council:	Constance Schall, GC mtg 4/18/17	Date	2017/04/19
Dean of Graduate Studies:	Amanda C. Bryant-Friedrich	Date	2017/05/01
Office of the Provost :		Date	

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Administrative Use Only

Effective Date:

  (YYYY/MM/DD)

CIP Code:


Subsidy Taxonomy:

Program Code:

Instructional Level:

Registrar's Office Use Only

Processed in Banner on:

Processed in Banner by:

Banner Subject Code:

Banner Course Number:

Banner Term Code:

Banner Course Title:



MFGM 8640: Advanced Management Science

The University of Toledo
College of Business and Innovation

Instructor:	Office Hours:
Term:	Office Location:
Credit Hours:	Office Phone:
Class Location:	Email:
Class Day/Time:	

COURSE DESCRIPTION

The course introduces students to advanced theory, algorithms, and applications of management science techniques, including dynamic programming, nonlinear programming, game theory, etc. The methods have applications to supply chain management, manufacturing, transportation, marketing, and economics.

STUDENT LEARNING OUTCOMES

1. Learn advanced theory, modeling, and algorithms in management science;
2. Apply the methods in supply chain management, manufacturing, transportation, marketing, and economics.

REQUIRED TEXTS AND ANCILLARY MATERIALS

Dynamic Programming and Optimal Control, by Dimitri P. Bertsekas, 4th Edition.

Nonlinear Programming, by Dimitri P. Bertsekas, 3rd Edition.

Game Theory, by Drew Fudenberg and Jean Tirole, 11th Printing Edition.

Selected academic journal articles.

UNIVERSITY POLICIES

Policy Statement on Non-Discrimination on the basis of Disability (ADA). The University is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance](#).

ACADEMIC ACCOMMODATIONS

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the [Student Disability Services Office](#).

GRADING

Class presentation and discussion:	40%
Final exam:	30%
Project/Presentation/Paper:	30%

Grading Scale: You may earn grades based on the following scale:

A	≥ 93	B -	83 - 80	D +	69 - 67
A -	92 - 90	C +	79 - 77	D	66 - 63



B +	89 - 87	C	76 - 73	D -	62 – 60
B	86 - 84	C -	72 - 70	F	< 60

Class Presentation and Discussion

There will be a reading list available to you, which lists three to five academic journal articles for each topic listed below. Prior to the class each week, you are expected to read all of them and choose one to make a presentation to the class. You are also expected to give comments/questions to other presentations and discuss potential research ideas.

Final Exam

A final exam is required, which will be covering all the topics. The final exam will be scheduled in the final exam week. The specific time and location will be determined and announced. The final exam will be **open book/notes**.

Project/Presentation/Paper

For the final project, you are expected to conduct a project individually, applying some analytical methods and techniques studied in the course to a relatively real problem. You are expected to meet the instructor to discuss the project scope before and during the process. You will give a presentation and submit a project paper.

COURSE OUTLINE

Week	Topic
1	Introduction to Operations Research/Management Science
2	Theory and Modeling in Dynamic Programming
3	Solution Methods for Dynamic Programming
4	Applications of Dynamic Programming
5	Theory in Nonlinear Programming
6	Advanced Theory in Nonlinear Programming
7	Solution Methods for Unconstrained Nonlinear Programming
8	Solution Methods for Constrained Nonlinear Programming
9	Applications of Nonlinear Programming
10	Theory in Game Theory
11	Advanced Theory in Game Theory
12	Solution Methods for Game Theory
13	Applications of Game Theory in Supply Chain Management
14	Applications of Game Theory in Supply Chain Management
15	Final project presentations
16	Final exam