The University Of Toledo

Graduate Program Requirement Revision

* denotes required fields

Contact Person*: Yue Zhang Phone: 530-2380 (xxx - xxxx) Email: yue.zhang@utoledo.edu

College*: College Business and Innovation

Dept/Academic Unit*: Info Operations and Tech Management

Program Name*: PhD in Manuf and Tech Mgmt

Present

Minimum number of credit hours for completion(if changed):

List all courses which comprise the certificate or degree and identify term offered (summer/fall/spring):

Identify delivery method (Online/in class/off campus):

File Type	View File
PresentCourseList	View

Proposed

Minimum number of credit hours for completion(if changed):

List all courses which comprise the certificate or degree and identify term offered (summer/fall/spring):

Identify delivery method (Online/in class/off campus):

File Type	View File
ProposedCourseList	View

Proposed effective term*: 201740 (e.g. 201140 for 2011 Fall)

Please refer to http://www.utoledo.edu/catalog/ for university catalog.

Comments/Notes:

Please refer to the attached current PhD Curriculum and proposed PhD Curriculum. Please see the explanation of the changes on Pages 3-4 in the file, "PhD Curriculum Revision_2017.docx".

Rationale:

In this proposal, we are strengthening the Information Systems (IS) and Operations and Supply Chain Management (OSCM) tracks in the PhD Program for Manufacturing and Technology Management. These two areas now constitute tracks in the program rather than minors, as they were previously defined in the April, 2016 revision of the program. We have also significantly increased the emphasis on the core research methods area by introducing new courses and seminars, some of which will be taught by faculty from outside the College of Business and Innovation (COBI). The IS track has been considerably strengthened by the addition of two doctoral seminars. Our goal with this revision is to significantly raise the quality of our program so that we can successfully place our graduates in either OSCM or IS departments at reputable institutions.

Program 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	2017/04/12
Graduate Council:	Constance Schall, GC mtg 5/2/17	Date	2017/05/03
Dean of Graduate Studies:	Amanda C. Bryant-Friedrich	Date	2017/05/04
Office of the Provost :	marcia king-blandford	Date	2017/05/10

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Administrative Use Only

Effective Date:	2016/08/22 (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 Program Code:	

Banner Term Code:

Ph.D. in Manufacturing and Technology Management Program

Plan of Study			
Course Number	**Course Description**	**Credit Hrs**	**Status**
PREREQUISITES			
	1 Year of Calculus		
	Statistics that includes regression and analysis of variance		
	1 academic term of computer systems with application		
	Micro- and macro-economics		
BUSINESS FOUNDATIONS - 15 hours			
ACCT 5000	Financial and Managerial Accounting	3 hours	
BUAD 6800	Information Technology and E-Business	3 hours	
BUAD 6400	Results-Based Management	3 hours	
MKTG 5410	Marketing Systems	3 hours	
OPMT 5520	Analysis of Manufacturing and Service Systems	3 hours	
Quantitative and Research Methods - 12 hours			
MFGM 8630	Management Science	3 hours	
MFGM 8860	Advanced Statistics	3 hours	
MFGM 8880	Research Methods and Theory Building	3 hours	
MFGM 8870	Seminar in Statistics/Research Methods	3 hours	
MAJOR Field - 19 hours			
MFGM 8480	Management of Technology	3 hours	
MFGM 8510	Supply Chain and Technology Management Analytics	3 hours	
MFGM 8890	Advanced Manufacturing Systems	3 hours	
MFGM 8490	Supply Chain and E-Business Issues in Manufacturing	3 hours	
MFGM 8980	Special Topics Seminar	3 hours	
MFGM 8810	Seminar/Colloquia	4 hours	
MFGM 8960	Dissertation	17 hours	
MINOR Field		12 hours	
The students can choose one of the fields *Operations Management* or *Information Systems* for a minor field. The minor will be a supporting field of 3 courses at the master's (MBA) specialization, and a related advanced seminar with the objective of integrating the Manufacturing and Technology Management major field with developments in the fields *Operations Management* or *Information Systems.*			
Total hours for the Ph.D. program		**60 hours (Post Master's)**	

Note: Business Foundations courses are satisfied by prior course work. These are not included in the 60-post master's hours above.

MINOR FIELD

The students can choose **one** of the fields *Operations Management* or *Information Systems* for a minor field. The minor will be a supporting field of 3 courses at the master's (MBA) specialization, and a related advanced seminar.

Operations Management-Minor (12 hours)

The minor field consists of the following courses:

OPMT 6270/8270	SIMULATION
OPMT 6680/8680	TOTAL QUALITY MANAGEMENT AND SPC
OPMT 6690/8690	MANUFACTURING RESOURCES MANAGEMENT
INFS 8990	INTEGRATIVE SEMINAR

Information Systems-Minor (12 hours)

The minor field consists of the following courses:

INFS 6560/8560	SYSTEMS ANALYSIS AND DESIGN
INFS 6150/8150	BUSINESS INTELLIGENCE MANAGEMENT
INFS 6710/8710	MANAGEMENT OF INFORMATION SYSTEMS SECURITY
INFS 8990	INTEGRATIVE SEMINAR

Ph.D. Program in Manufacturing and Technology Management
(Proposed in February 2017)

Curriculum			
Course Number	**Course Description**	**Credit Hrs**	**Status**
PREREQUISITES			
	1 Year of Calculus		
	Statistics that includes regression and analysis of variance		
	1 academic term of computer systems with application		
	Micro- and macro-economics		
	For IS track candidates some knowledge of programming		
Business Foundations - 19 hours			
ACCT 5000	Financial and Managerial Accounting	3	
ECON 5810	Econometrics Models and Methods I (Offered by Economics Dept)	4	
BUAD 6800	Information Technology and E-Business	3	
BUAD 6400	Results-Based Management	3	
MKTG 5410	Marketing Systems	3	
OPMT 5520	Analysis of Manufacturing and Service Systems	3	
Quantitative and Research Methods - 18 hours			
MFGM 8630	Management Science	3	
MFGM 8860	Advanced Statistics	3	
MFGM 8880	Research Methods and Theory Building	3	
MFGM 8870	Seminar in Statistics/Research Methods	3	
TWO FROM THE FOLLOWING			
RESM 6150/8150	Structural Equation Modeling (Offered by Education Dept)	3	
MFGM 8640	Advanced Management Science	3	
MFGM 8650	Stochastic Modeling	3	
MFGM 8660	Qualitative Research Methodology	3	
MFGM 8670	Special Topics in Research Methods	3	
Major Field - 9 hours			
MFGM 8480	Management of Technology	3	
MFGM 8980	Special Topics Seminar	3	
INFS 8990	Integrative Seminar	3	
Track - 15 hours			
Dissertation - 18 hours			
The students can choose either *Operations and Supply Chain Management* or *Information Systems* as a track. The track will be a supporting field of 5 courses or seminars at the master's or doctoral level.			
Total hours for the Ph.D. program – 60 hours (post Master's)			

Note: Business Foundations courses are not included in the 60-post master's hours above. They can be satisfied by prior coursework.

TWO MAIN TRACKS

The students can choose **one** of the two tracks: 1) *Operations and Supply Chain Management,* or 2) *Information Systems*. These are graduate level courses and seminars.

Operations and Supply Chain Management Track (15 hours)

This track consists of the following courses:

MFGM 8890	Advanced Manufacturing Systems	3 hours
MFGM 8490	Supply Chain and E-Business Issues in Manufacturing	3 hours
MFGM 8510	Supply Chain and Technology Management Analytics	3 hours
OPMT 6680/8680	Quality Management and Six Sigma	3 hours
OPMT 6690/8690	Manufacturing and Service Resource Management	3 hours

Information Systems Track (15 hours)

This track consists of the following courses:

INFS 6560/8560	Systems Analysis and Design	3 hours
INFS 6150/8150	Business Intelligence Management	3 hours
INFS 6710/8710	Management of Information Systems Security	3 hours
INFS 8760	IS Research Seminar I	3 hours
INFS 8770	IS Research Seminar II	3 hours

Explanation of the Changes

In this proposal, we are strengthening the Information Systems (IS) and Operations and Supply Chain Management (OSCM) tracks in the PhD Program for Manufacturing and Technology Management. These two areas now constitute *tracks* in the program rather than *minors*, as they were previously defined in the April, 2016 revision of the program. We have also significantly increased the emphasis on the core research methods area by introducing new courses and seminars, some of which will be taught by faculty from outside the College of Business and Innovation (COBI). The IS track has been considerably strengthened by the addition of two doctoral seminars. Our goal with this revision is to significantly raise the quality of our program so that we can successfully place our graduates in either OSCM or IS departments at reputable institutions.

Specifically, the changes made are as follows:

1. In the area of prerequisites, we have included some knowledge of programming for those who express an interest in the IS track. Our IS PhD Program has a clear orientation towards the blend of the technology and the business. We believe that in order for the student to be able to do well in the courses and seminars in the program, a technical background is desirable. In particular, we would like to see some background in programming which attests to the technical orientation of the candidate.

2. In the business foundations area, we have introduced ECON 5810: Econometrics Models and Methods I, which is offered by the Economics Department. Since a significant portion of business research involves the analysis of secondary data, it is necessary for the PhD candidate to have some grounding in econometrics.

3. The core quantitative and research methods area has been considerably strengthened by the addition of several advanced courses in research methodology, some of which are offered by departments outside the COBI. The application of stringent and rigorous research methodologies enhances the quality of the dissertation and allows for its publication in top-tier journals. This would then enhance the candidate's prospects of placement in reputable institutions, which is a key objective of this revision.

   In particular, the changes made in this area are as follows:

   a. Structural equation modeling is a staple methodology in IS research. Hence, RESM 6150/8150: Structural Equation Modeling, which is offered by Education Department, has been added.

   b. MFGM 8640: Advanced Management Science 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 (RO) approach.

c. MFGM 8650: Stochastic Modeling will focus on advanced probability theory, stochastic processes, and Markov chains. This set of modeling techniques finds application in decision-making in diverse areas such as supply chain management, manufacturing, transportation, and finance.

d. Qualitative research methodology is being increasingly used to complement the traditional quantitative positivist research (QPR) paradigm that has been a staple of IS research. Hence, MFGM 8660: Qualitative Research Methodology has been added in the core research methods area.

e. MFGM 8670: Special Topics in Research Methods will focus on contemporary research topics that are garnering attention. This will allow us to quickly respond to new and emerging research techniques and methods.

4. INFS 8760: IS Research Seminar I and INFS 8770: IS Research Seminar II are two doctoral-level seminars that have been added to significantly bolster the quality of education delivered in the IS track. Our IS PhD candidate must acquire mastery of the key research papers in the IS field if they are to find placement in reputable institutions. This will be achieved through these two rigorous seminars.

    a. INFS 8760: IS Research Seminar I will focus on the wealth of research on the user acceptance of technology using theoretical models such as TAM and its various incarnations such as UTAUT and UTAUT 2. This research is largely characterized by the quantitative positivist research (QPR) methodology that has been used in examining user acceptance of technology.

    b. There is however a wealth of IS research that falls outside the TAM/QPR genre. There is research on technology strategy as well as on the financial and economic value of technology. There has also some been research done on technology acceptance using qualitative methodology. INFS 8770: IS Research Seminar II will cover the non-TAM/QPR research in IS.