

PH.D. IN MANUFACTURING AND TECHNOLOGY MANAGEMENT

The purpose of the Ph.D. program is to train scholars to meet traditional standards of excellence in, and contribute to, the manufacturing and technology management field through research, teaching and publication in academic and professional journals. Within this broad field, students can specialize in either (i) operations and supply chain management or (ii) information systems. The program is designed for individuals who seek to contribute to the advancement and dissemination of knowledge in manufacturing and technology management through an integrative approach with sound foundations in business, technology, and research methodology. Graduates are expected to pursue careers in academia, consulting, research or manufacturing organizations.

The basic philosophy underlying the doctoral program is that researchers in manufacturing and technology management require a careful and creative mix of functional management specialties, economics, technology, supply chain management, manufacturing, commercialization, and information technologies. Regardless of track, students must become experts in applying analytical tools such as statistics, optimization and research methodology. Therefore, the program is designed to provide students with abilities and skills to integrate and synthesize these diverse yet important related areas.

Doctor of Philosophy in Manufacturing and Technology Management (Ph.D.)

Students in all graduate degree programs at the University of Toledo must complete all requirements for their program of study with at least a 3.0 (4.0 scale) cumulative GPA at the graduate level. All courses that count towards a graduate degree must be passed with a grade of C or better. There are no grade re-calculations at the graduate level; as such, repeated courses will have both grades included in the cumulative GPA calculation.

The program requires at least 60 hours of study beyond an MBA or relevant MS degree. Full-time students with an M.B.A. or a relevant M.S. degree should be able to complete the course work in two years before entering the dissertation stage. For a full-time student with only a bachelor's degree, the course requirements before entering the dissertation stage can be completed in three years. During the first year, the students without prior appropriate undergraduate or graduate work in business or engineering will acquire the foundation knowledge in business, engineering and manufacturing technology. Course waivers are possible at the foundation stage by passing competency examinations in appropriate areas. This is a STEM program.

Applicants with a master's degree in a technical field or business are preferred. Applicants with a bachelor's degree in a technical field or business may also be considered. Letters of reference from college faculty or employers acquainted with the student's character and ability, and official transcripts of all prior college work must be supplied. Applicants are expected to demonstrate preparation for, and a high promise of, success in the doctoral program.

The following will be considered in evaluating an application to the Ph.D. program on an individual basis:

- The student's undergraduate and graduate record with general academic performance, as well as the trend and comparison of grades over a period of time;
- The student's verbal, quantitative and total scores on the GMAT (in certain cases, depending on the academic background of the student, GRE scores may be substituted for GMAT scores);
- Evidence of the ability to do research (publications, presentations, etc.);
- Statement of purpose explaining why the student wants to pursue a Ph.D. in manufacturing and technology management;
- Three letters of reference;
- Appropriate experience;
- And, in the case of students whose native language is not English, a score of 80 or above on the TOEFL IBT, PTE equal to 58 or above, Duolingo equal to 105 or above, or a 6.5 or above on the International English Language Testing System (IELTS) is mandatory.

It is to be stressed that, although GMAT and GPA are important, they alone will not be the basis of admissions decisions. While students may come from many academic disciplines, those students with bachelor's degrees in fields other than business may require more than 79 semester hours in order to satisfy prerequisite (19 credit hours) and business program course (60 credit hours) requirements. A student may need additional calculus, statistics, and economic prerequisite requirements depending on the students previous academic discipline. **Students admitted to the Ph.D. program will not receive graduate credit for any undergraduate courses they take.**

A student should take the Ph.D. comprehensive examination as soon as the student and the student's advisor believes the student has mastered all the required subject areas and completed all course work. The format and other details of the examination are given in the handbook for Ph.D. students and are available on-line. Following successful completion of the comprehensive examination, the student is admitted to candidacy for the Ph.D. and undertakes dissertation research. The student is responsible for initiating the application to candidacy on a form available from the College of Graduate Studies.

When a student enters the program, the Ph.D. program director will help the student in preparing a plan of study. The Ph.D. program director will serve as the faculty advisor at the time of admission into the program. Each student will get a dissertation advisor after passing the comprehensive exam who will assist the student in choosing a dissertation topic, forming a dissertation committee and in other matters concerning the program. More information is available here (<http://www.utoledo.edu/business/PHD/>).

Prerequisites

- One year of calculus
- Statistics that include regression and analysis of variance
- One academic term of computer systems with applications
- Micro- and Macro-economics
- Some knowledge of computer programming for IS-track candidates

Prerequisites should be completed before starting the Ph.D. program.

Business Foundation Courses

(19 hours)

Code	Title	Hours
ACCT 5000	Financial And Managerial Accounting	3
ECON 5810	Econometrics Models And Methods I	4
BUAD 6400	Results-Based Management	3
BUAD 6800	Information Technology And E-Business	3
MKTG 5410	Marketing Systems	3
OSCM 5520	Analysis of Manufacturing and Service Systems	3
Total Hours		19

Ph.D. Program Curriculum

Code	Title	Hours
Quantitative and Research Methods		
MFGM 8630	Management Science	
MFGM 8860	Advanced Statistics	
MFGM 8880	Research Methods-Theory Bldg	
MFGM 8870	Seminar in Statistics/ Research Method	
<i>Plus two from the following:</i>		
RESM 6150/8150	Structural Equation Modeling	
MFGM 8640	Advanced Management Science	
MFGM 8650	Stochastic Modeling	
MFGM 8660	Qualitative Research Methodology	
MFGM 8670	Special Topics in Research Methods	
Major Field: Integrative Seminars		
MFGM 8480	Management of Technology	
MFGM 8980	Special Topics Seminar	
INFS 8990	Integrative Seminar in IT	
The students can choose one of the two tracks: 1) Operations and Supply Chain Management, or 2) Informatin Systems. These are graduate level courses and seminars.		
Operations and Supply Chain Management Track		
MFGM 8490	Supply Chain and E-Business Issues in Manufacturing	
MFGM 8890	Advanced Manufacturing Systems	
OSCM 6680/8690	Quality Management and Six Sigma	
OSCM 6690	Supply Chain Resources Management	
Information Systems Track		
INFS 6560	Business Systems Analysis and Design	
INFS 6150/8150	Business Intelligence Management	
INFS 6710/8710	Management of Information Systems Security	
INFS 8760	IS Research Seminar I	
INFS 8770	IS Research Seminar II	

Dissertation

MFGM 8960 Dissertation

¹ The minor will be a supporting field of three courses at the master's (M.B.A.) level, and a related advanced seminar with the objective of integrating the Manufacturing and Technology Management major field with developments in the minor field of interest.

Dissertation Research

The dissertation must be based on work initiated and undertaken specifically for that purpose. It must reflect a high level of scholarship, must constitute a substantial piece of work, and must indicate and document its claim to be a significant contribution to knowledge in its subject area.

Details regarding the dissertation research, starting with the dissertation proposal and ending with the final defense, are available in the handbook for Ph.D. students, which is available on the Ph.D. website. <http://www.utoledo.edu/business/PHD/index.html> (<http://www.utoledo.edu/business/PHD/>).

- PLO 1: Demonstrate the ability to do quality research\\n
- PLO 2: Demonstrate the ability to teach\\n
- PLO 3: Provide service to the institution and professional community