SCHOOL OF TECHNOLOGY

GRADUATE STUDENT HANDBOOK

MS Industrial Management

MS Technology

Graduate Certificate Programs

PhD Technology Management

COLLEGE OF HEALTH SCIENCE AND TECHNOLOGY

Warrensburg, Missouri

Fall 2019

UNIVERSITY OF CENTRAL MISSOURI

LEARNING TO A GREATER DEGREE

Table of Contents

Disclaimer:
The materials included in this document are published as supplemental to the University of Central Missouri Graduate School Catalog. All information must comply with adopted policy and procedures set forth in the current edition of the Graduate Catalog.

Welcome

Dear prospective students:

Thank you for your interest in our graduate programs at University of Central Missouri (UCM). The goal is to provide students with professional and technical knowledge and skills necessary for successful career in management, technology, and applied engineering. With campus support services, highly effective and friendly faculty, we offer opportunities for students to build their own careers by learning, creating scholarly work and networking with industrial professionals. Our campus provides state of the art technology and knowledge management practices in teaching and course delivery with affordable costs.

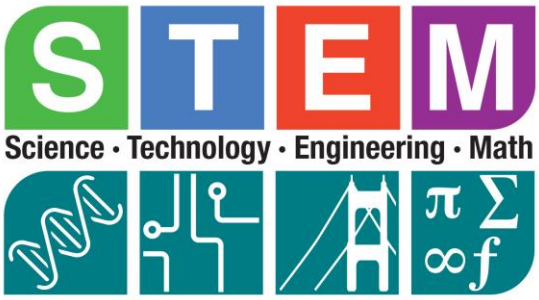
The M.S. in Industrial Management (MSIM) and M.S. in Technology (MST) programs currently have 85 majors and graduated average 25 per year. Majority of domestic students working full-time can complete the online degree program in 2.5-3 years (1 or 2 classes per semester). The international full-time students taking classes on campus can finish a degree within 4 semesters. According to the follow-up survey of our graduates, 70% of graduates rated 'excellent' to their overall educational experience at UCM, 85% showed high and very high satisfaction on quality of teaching and faculty on mentoring and advising. The range of annual salary was between US$55,000 – 110,000.

In addition, the MSIM and MST graduate degrees are under the Science, Technology, Engineering and Mathematics (STEM) programs and they have been accredited from the Association of Technology, Management, and Applied Engineering since 2008. The ASQ-UCM Student Chapter was named the Outstanding Student Branch for the 3rd consecutive year in 2018 by American Society for Quality Region 13. Once again, we appreciate your interest and we trust you will be pleased with the graduate education and time spent at University of Central Missouri.

Sincerely,

Dr. Suhansa Rodchua

Suhansa Rodchua, PhD.
Professor-School of Technology
Graduate Program Coordinator
PMP, CMQ/OE, CTM Certified



School of Technology - Mission

The School of Technology at the University of Central Missouri provides broad multi-disciplinary career preparation opportunities with programs at the pre-professional, bachelor's, master's, and doctoral levels. Our programs have been structured with industry input to meet the ever growing technical and management demands of global enterprise. The Mission of the School of Technology is to prepare students as management oriented technical-professionals, and entrepreneurs, for positions in business, industry, and government. The School of Technology was established, in part, to support University of Central Missouri's Statewide Mission in Professional Applied Sciences and Technology.

Our School of Technology offers two Master of Science degree programs in Industrial Management and Technology and two certification programs in Lean Six-Sigma and Network Security to satisfy the needs of industry, and to meet employers' demands. The School is also one of the five consortium members of the Doctoral Degree in Technology Management at Indiana State University.

Accreditation

University of Central Missouri (UCM) is a state leader in program-specific accreditations through national associations, and we are fully accredited by the Higher Learning Commission (HLC). HLC accredits degree-granting post-secondary education institutions in the North Central region.

HIGHER LEARNING COMMISSION

Program Accreditation

In 2008, the Industrial Management and the Technology Programs were the first two master's degrees to be fully accredited by the Association of Technology, Management, and Applied Engineering (ATMAE), formerly the National Association of Industrial Technology.

ACCREDITED BY ATMAE
The Association of Technology, Management, and Applied Engineering

Program Structure

Our programs are developed based on the collaborative efforts of our Industrial Advisory Boards and faculty. This combination of experience and expertise allows us to offer one of the finest master's Degree programs available to aspiring professional. The university outcomes, program outcomes, and curriculum competencies serve as the foundation for the departmental coursework. The University Outcomes are:

- *Communication* - The ability to prepare and deliver, effectively, written, oral, and graphic modes of communication, including listening.
- *Critical Thinking* - The ability to assimilate the many modes of thought and synthesize into a strategic order of systems
- *Interacting* - The ability to respond to conditions involving individuals or groups and exhibit professional qualities of leadership while performing diverse goal-related relationships.
- *Valuing* - The ability to protect and develop ideas, thoughts and things considered worth continuing for societal and global support while applying the professional code of ethics.

(Learning: Demonstrate skill in personally continuing the learning process, continue to exhibit the self-assessment necessary to merit technical growth.

Curriculum Matrix/Competencies:

Experienced managers develop our programs based on the competencies identified by the Academic Advisory Board to provide students with meaningful information used in today's industries.

		Program Courses																			
Benchmark Areas and Competencies		IndM 5015	IndM 5020	IndM 5110	IndM 5120	IndM 5130	IndM 5140	IndM 5150	IndM 5160	IndM 5180	IndM 5210	IndM 5212	IndM 5222	IndM 5230	IndM 5232	IndM 5240	IndM 5260	IndM 6580	EngT 5580	SOT 5010	SOT 5290
Management Skills	Industry: Structures and Strategies					x		x	x		x	x									
	Leadership			x		x		x	x		x			x				x	x		
	Managing a Team	x	x			x		x	x		x			x				x	x		
	Organizational Management		x			x		x	x		x	x						x			
	Managing Internationally		x	x					x		x										
	Total Quality Management			x		x			x		x	x	x		x			x	x		
	Knowledge Management		x	x	x	x			x		x	x					x				
Project Management	Production and Operations				x	x	x	x			x	x				x	x		x		
	Supervising People			x		x		x	x		x										
	Team Building		x			x		x	x		x			x				x			
	Creativity and Problem Solving		x	x	x	x		x	x	x	x	x	x	x	x	x		x			
	Transportations/Logistics		x				x	x			x	x				x					
Human Resources	Labor Relations	x		x					x												
	Ethical Issues	x		x					x		x										
	Legal Issues and contractal	x	x					x								x				x	
	Sexual Harassment	x		x					x		x										
	Diversity and Workplace issues			x					x		x										
	Motivation		x						x		x										
	Careers Path Development								x		x			x							
Communications	Group Dynamics		x			x		x	x		x			x		x		x			
	Presentations		x			x	x	x	x		x	x		x	x	x		x			x
	Creativity & Innovation			x	x	x			x		x			x				x			x
	Information Systems			x	x			x			x	x					x		x		
	Entrepreneurship			x							x										
Industrial Economy	Facility Management			x	x		x	x				x				x					
	Environmental & Waste Management				x		x	x				x				x					
	Energy and Power Management						x	x				x				x					
	Risk analysis and investment							x								x					
	ISO 9000 & QS 9000 Audits			x				x				x	x				x		x		
Technical	Industrial Automation				x		x				x	x				x					
	Drafting, CAD/CAM				x		x	x				x					x				
	Measurement & Statistics				x			x				x		x		x	x		x	x	x
	Quality Control & Process Control			x	x	x	x	x		x	x	x	x		x			x	x		
	Design Failures and Prototyping	x					x												x		
	Lean Six Sigma methodology			x		x							x		x			x	x		
	Total Preventive Maintenance				x	x						x	x		x			x	x		
Res	Experimental Design				x			x		x										x	x
	Statistics for Research and SPSS									x										x	x
	Research Method & Development				x			x						x						x	x
Technology	Basic Microsoft Office	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Impact of Technology and Assessment			x					x		x						x				
	Web and Electroic Database			x										x			x	x		x	x

Revised: 10/16/2018

M.S. Industrial Management (Online-option)

The Master of Science in Industrial Management degree program is designed *for students who desire work in management or supervisory positions in industry.* Participants in the Master of Science degree program develop skills useful to business and industry. The program provides a balanced curriculum focusing on the human element of the workplace as well as a variety of industrial systems. Specific skills will be developed in the field of leadership, problem solving, and decision-making. The entire curriculum is delivered via the Internet to meet the demand for those students who work full-time or live at a distance. The program offers courses on the main campus. See "Introduction to Online Course" on page 8 and computer requirement on page 40.

To be accepted into this program, a student shall have a minimum Grade Point Average (GPA) of 2.60 in the undergraduate major. A student not meeting this requirement may petition the department for admittance on a conditional basis. GRE or GMAT scores are not required. Once again, courses in this program are also offered via the Internet. Courses are scheduled with the capability of completing the degree program in two calendar years, including one summer session. MSIM website is located at www.ucmo.edu/msim.

Strengths of this program are the flexibility built into the cognate coursework and culminating experience. The program allows several curricular paths leading to graduation and facilitates articulation to a Doctorate degree in Technology Management. In a recent international survey of Industrial Management graduates, the range of salary US$55,000 – $110,000 per year. Some occupational titles include Vice President of Operations, Production Manager, Shift Supervisor, Safety Manager, Quality Systems Manager, Quality Auditor, IT administrator, College Professor, and Plant Manager.

Our goals are:

1. To provide students with professional and technical knowledge and skills necessary for entering and continuing in Industrial Management careers.
2. To continue an effort to improve the quality of management science and related activities.
3. To improve public awareness of the career "Industrial Organization Manager - 189.117-022", as defined by the Dictionary of Occupational Titles.
4. To enhance faculty professional and technical development in the field of industrial management.
5. To encourage faculty research and creative endeavors, grant writing and consulting for the management sciences.

Occupational Titles:

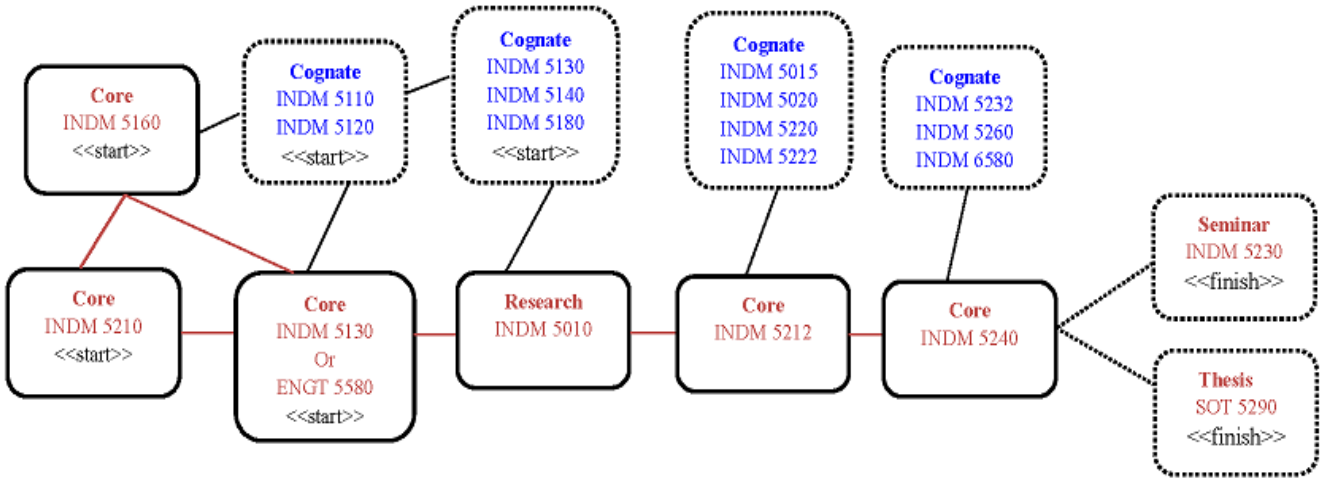
MANAGER, INDUSTRIAL ORGANIZATION - 189.117-022, alternate titles: general manager, industrial organization; manager, general; plant superintendent, industrial organization.

Directs and coordinates activities of industrial organization to obtain optimum efficiency and economy of operations and maximize profits: Plans and develops organization policies and goals, and implements goals through subordinate administrative personnel. Coordinates activities of divisions or departments, such as operating, manufacturing, engineering, planning, sales, maintenance, or research and development, to effect operational efficiency and economy. Directs and coordinates promotion of products manufactured or services performed to develop new markets, increase share of market, and obtain competitive position in industry.

Analyzes division or department budget requests to identify areas in which reductions can be made, and allocates operating budget. Confers with administrative personnel, and reviews activity, operating, and sales reports to determine changes in programs or operations required. Directs preparation of directives to division or department administrator outlining policy, program, or operations changes to be implemented.

Promotes organization in industry, manufacturing or trade associations. Workers are usually identified according to industry in which employed, such as petroleum production or refining, iron and steel, electrical equipment; type of organization, such as air, rail, motor or water transportation; or type of product, such as paper, chemical, or plastics products.
GOE: 11.05.01 STRENGTH: L GED: R5 M4 L5 SVP: 8 DLU: 86

Program Outcomes:
The Master of Science in Industrial Management program is designed to prepare professional managers who possess skills and knowledge acquired through education and on-site experience necessary to manage manufacturing processes including bid preparation, project acquisition, project management, quality, safety, and supervision of the industrial enterprise. The diagram below illustrates the suggested articulation for this degree.



Management Skills
Outcome #1 - Apply management skills and concepts to specific situations.

- The student will apply the principles and philosophy of management systems, cost accounting, and economics to industry, including the interpretation of contracts, and the value of team building.
- The student will execute industrial safety standards including the ability to interpret the OSHA industry standards, establish safety and health procedures on the project site, and perform hazardous material and process analysis.

Project Management
Outcome #2 - Plan and implement a project.

- The student will identify the appropriate management principles necessary to complete a business plan, evaluation supply chains, and produce project plans.
- The student will create change orders, organize contract agreements, interpret engineering drawings, operations schedules, and develop a return on investment analysis.
- The student will prepare a complete project schedule, develop a procurement timetable, and establish a control manual.
- The student will develop a plan showing the logical sequence of activities and time duration in order to monitor progress and update schedules.

Human Resources
Outcome #3 - Analyze and develop a human relations strategy.

- The student will identify the management code of ethics for organizations and management individuals.

- Students will investigate union operations and labor relations within the industrial enterprise.

Communications Skills

Outcome #4 - Demonstrate the ability to communicate effectively.

- The student will apply oral, written, graphic and listening skills as each enhances the behavioral principles or attitude and effective communications.
- The student graduating from the program will be a manufacturing service provider and marketer of management skills and knowledge.
- Students will demonstrate the skills necessary to incorporate the technological tools used in industry to effectively communicate and collaborate with other professionals at a distance.

MSIM and Related Competencies

Industrial Economy

Outcome #5 - Explain and apply the basic concepts of an Industrial Economy.

- The student will complete the estimating, cost accounting, and bidding sequence necessary for project job acquisition and completion.
- The student will prepare a complete cost control analysis including the ability to establish an enterprise budget, prepare cost reports, and forecast expenditures.

Technical Skills

Outcome #6 - Introduce and adapted technical expertise to a given process or product.

- The student will implement the various forms of technology necessary to complete the task of process management, utilizing the computer and electronic data processing.
- The student will create complete word-processing, database, spreadsheet, and presentation applications for delivery on the information highway.
- The student will understand the science of materials and methods of manufacturing.

Research Skills

Outcome #7 - Perform, interpret, and explain research.

- The student will apply scientific knowledge of the mathematical, physical, and management sciences to the economic utilization of materials and forces of nature affecting operations of the industrial enterprise.
- The student will effectively communicate in this digital and information technology era
- Students will practice techniques for developing innovative concepts and adding value to product/process

Curriculum (Minimum of 33 credit hours)

Required Core Graduate Courses	**18**
IndM 5210 Industrial Management	3
IndM 5160 Organizational Dynamics	3
IndM 5212 Production & Operations Management	3
IndM 5240 Engineering Economy	3
Engt 5580 Quality Systems Engineering (or) IndM 5130 Lean and Quality Management	3
SOT 5010 Applied Research for Technology	3
Culminating Experience **(taken the last semester(s) of student's program)**	**3-6**
IndM 5230 Seminar in Industrial Management (or)	3
SOT 5290 Thesis	3-6
Cognate Requirements **(Choose any 3 courses with Thesis or 4 courses with Seminar)**	**9-12**
IndM 5110 Current Issues in Industry	3
IndM 5210 Human Factors Engineering	3
IndM 5140 Facilities Engineering	3
IndM 5150 Project Management	3
IndM 5180 Industrial Statistics	3
IndM 5015 Legal Aspects of Industry	3
IndM 5020 International Technology Management	3
IndM 5222 Principles and Practices of Lean Systems	3
IndM 5232 Seminar in Lean Six Sigma Implementation	3
IndM 5260 System Analysis & Management Information Systems	3
IndM 6580 Advanced Strategic Quality and Standard	3
Departmentally approved graduate electives	3
Minimum Total	**33**

NOTE: Thesis (SOT 5290) should be enrolled in two consecutive semesters for three semester hours each to total six credit hours. To read descriptions of INDM courses, go to page 37.

Introduction to Online Course

(Sample Instructor Welcome Letter)

Greetings from University of Central Missouri! Our records indicate you are enrolled in online course.

Make sure you know which section you enrolled in!

First: Please email your instructor immediately with:

- Email address you plan to use for the course.
- Telephone number where you can be reached both day and night.

Please include Course#/Section#, your name, and title of an email within the subject line.
Eg. IndM5210, your name, contact information (please follow this format every time you send an email to your instructor)

Send the above information to the instructors email address: instructorname@ucmo.edu. Example: rodchua@ucmo.edu

Second: This class will be conducted completely online, requiring the Internet access and an email account. Blackboard is the course management software Central uses to deliver online courses. Student should be able to access to the course on the first day of school. Please familiarize yourself with the format of the course AND follow an instruction indicated in "Announcement" section within the course site. Different instructors require different participation level, assignment dates, weekly quizzes, etc.

Third: As part of your course activities, you must attend virtual chat on assigned dates.
Your instructor will notify you regarding the chat dates and times. (If you have conflict with any particular night of the week, please notify your instructor via email as soon as possible). To participate in the Virtual Class Meeting, logon to the course and follow the instructions under announcements. Please refer to "Course Schedule" folder within the course for your exact Virtual Chat Dates. If your instructor has set Virtual Class Office hours, please follow the above steps. For your Virtual Office hours please check the "Announcement" section in the course.

Fourth: Textbook - See the course syllabus. You can purchase textbooks online or call the University Bookstore at 1-800-330-7698 to order your textbook and arrange delivery to your home.

Fifth: A student with disabilities who may need accommodation is responsible for making contact with the Office of Accessibility Services, at access@ucmo.edu or call 660-543-4421.

Sixth: Please read the enclosures, especially "Computer Requirements" and "Online Tips for Success."

We at the University of Central Missouri look forward to assisting you in the pursuit of your education goals. Please call our office, 660-543-4439 or toll free at 877-729-8266 so that we may assist you. Have a great semester!

Sincerely,

School of Technology
University of Central Missouri

M.S. Technology

The Master of Science degree in Technology is focused on preparing students for professional positions in technology related organizations, enterprises, and activities. Graduates are prepared in a range of rapidly evolving technological disciplines, as entrepreneurs and members of an organizational enterprise.

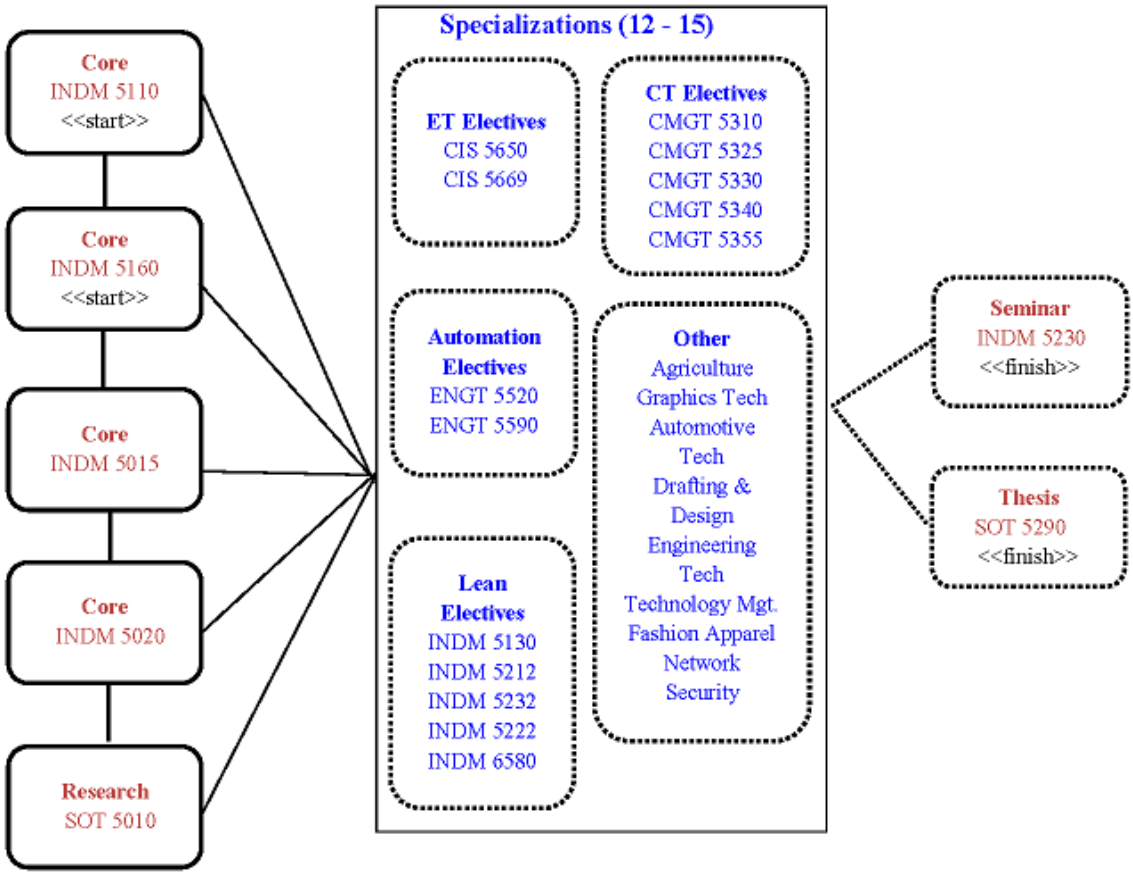
Applicants must have an appropriate distribution of undergraduate course work including a minimum of 18 semester hours of relevant technology, discipline specific related courses and/or work experience. Students are able to select coursework to meet their individual career goals. The program of study will include a blend of advanced technologies, management, communication, safety, research, quality assurance and relevant computer applications depending on a specific discipline.

Prior to admission to this program, a student must submit to the Graduate Studies Office all official transcripts indicating a minimum grade-point average of 2.50 in the undergraduate major, a "Career Goals Statement of Purpose", a Resume` including three contact references, and an application form. More information is available on the program website at www.ucmo.edu/mst

Students selecting the thesis option must enroll in 3 hours for two consecutive semesters to total a minimum of 6 semester hours. A student must also pass a comprehensive examination before completion of the program. The objectives of the masters of science in Technology are to:

- Provide a sound academic background in various technical areas of;
    - Agriculture,
    - Automotive Technology Management,
    - Computer-Aided Drafting & Design Technology,
    - Construction Management,
    - Electronics Technology,
    - Engineering Technology,
    - Fashion: Textile and Clothing in Business,
    - Industrial Technology,
    - Lean and Six Sigma (100% online option),
    - Manufacturing Management,
    - Computer Integrated Manufacturing,
    - Robotics and Automation,
    - Networking Security, Computer Sciences, Information Technology,…
- Provide an atmosphere conducive to creative intellectual specialties.
- Provide courses that will enhance an individual's quality of life through increased knowledge and skills needed for the technical age.
- Provide the opportunity to apply the scientific method of research to technical problems.

The program of study is designed to be completed in two calendar years. The diagram below illustrates the suggested articulation for this degree.



Program Outcomes:
The graduate with a Master of Science degree in Technology will use the knowledge and skills obtained in the program to develop:

An Organizational Style

- Acquire advanced skills for managing complex projects including planning and implementation
- Apply organizational skills and concepts to effectively manage available resources
- Be adaptable and focused on fostering continuous growth and development
- Analyze current global systems, national interactions, and local business industry workflow

A Global Orientation

- Demonstrate the ability to communicate effectively and interact in the global environment
- Analyze and develop processes and workflows
- Demonstrate multi-cultural awareness in a global and technological society
- Understand the importance of global functional integration
- Explain the importance of contemporary, global and societal issues as they relate to careers

Quality Systems Knowledge

- Recognize the characteristics that define quality relative to a specific discipline
- Identify, develop, and implement quality strategies
- Implement appropriate software applications for optimum quality and productivity

Technology Management Skills

- Understand scientific principles and technology relative to specialty area

- Select and implement discipline specific technology
- Develop, evaluate, and integrate technological systems to meet strategic goals
- Understand legal issues affecting the use and implementation of evolving technology
- Explain the significance of life-long learning for the purpose of enhancing discipline specific technical competencies

Technological Ethics and Professionalism

- Develop advanced professional and personal competencies in technology
- Practice within the specific profession to meet the highest social and ethical standards
- Explain and apply the basic concepts of a supply and demand economy in an information based society
- Demonstrate knowledge of professional integrity and ethical standards

Research skills for Innovation

- Apply advanced quantitative problem solving and decision making techniques
- Develop the ability to conduct applied experimental research
- Demonstrate integration techniques for new technologies related to a field of study
- Foster entrepreneurs through innovation, collaboration and managed technological change
- Research foundational and developing systems and make predictions concerning emerging technologies

Curriculum – Technology

Required Core Graduate Courses	**15**
IndM 5110 Current Issues in Industry	3
IndM 5160 Organizational Dynamics	3
IndM 5015 Legal Aspects of Industry	3
IndM 5020 International Technology Management	3
SOT 5010 Applied Research for Technology	3
Research	**3-6**
IndM 5230 Seminar in Industrial Management **OR**	4
SOT 5290 Thesis	6
***Approved Graduate Electives in Technology**	**12-15**

Agriculture, Graphic Technologies, Automation, Automotive Technology, Computer Sciences, Drafting and Design Technology, Construction Management, Engineering Technology, Fashion: Textile and Clothing in Business, General Technology, Lean Six-Sigma, Manufacturing Management, Network Security, or other approved departments. Graduate electives are to be taken at UCM and may include a concentration of study in Technology.

Minimum Total	**33**

NOTE: Thesis (SOT5290) should be enrolled in two consecutive semesters for three semester hours each to total six credit hours. To read descriptions of courses, go to pages 35-39.

Automation Technology emphasis 12-15 semester hours

Work with an automation faculty member to choose the sequence of courses and/or substitutions for the courses below.

SOT 5000 Special Problems in Technology (*CNC*) (3)
ENGT 5520 Robotics and Automation (3)
ENGT 5590 Computer Integrated Manufacturing (3)
ENGT 5221 Manufacturing Problem Solving (3)

Automotive emphasis minimum of 12 - 16 semester hours

ATM 5032 Hydraulics & Pneumatics (3)
ATM 5038 Advanced Hydraulics (3)
ATM 5410 Intermodal Surface Transportation (3)
SOT 5000 Special Prob. in Technology; take Advanced Power plant Pr&T 3134 (4)

Construction Management emphasis minimum of 12 - 15 semester hours

Choose any two from the list below: 6-9 semester hours

CMGT 5310 Construction Safety (3)
CMGT 5325 Advanced Estimating & Cost Analysis (3)
CMGT 5355 Computer-Based Project Control (3)

Choose any two from the list below: 6-9 semester hours

CMGT 5330 Mechanical Systems for Buildings (3)
CMGT 5340 Solar Energy for Building Construction
CMGT 5380 Heavy Construction: Methods and Materials
SOT 5022 Internship in Applied Sciences (3)

Drafting and Design Technology emphasis minimum of 12 - 15 sem. hrs.

Required Specialization Courses: 6 to 9 semester hours

CADD 5180** Industrial Design (3)
SOT 5570 Computer Graphics (3)

Electronics & Computer Technology emphasis minimum of 12 - 15 semester hours

Choose any two for the list below: 3-6 semester hours

IndM 5260 Syst Analysis & Mgnt Information Systems (3)
CIS 5650 Managing Corporate Information Systems (3)
CIS 5669 Communications Network Management (3)

Choose one option below: 9 Semester hours

Network Security

NET5500 Managerial Design for Secure Networks (3)
NET5501 Network Security Management I (3)
NET5502 Network Security Management II (3)

Approved Substitutions:

CIS 5660 Legal Environment of Information Systems may substitute for IndM 5015
Fin 5800 Managerial Finance may substitute for IndM 5020

Engineering Technology emphasis 12-15 semester hours

Work with an automation faculty member to choose the sequence of courses and/or substitutions from the courses below.

IndM 5240 Engineering Economy (3)
IndM 5260 Systems Analysis and Management Information Systems (3)

ENGT 5520 Robotics and Automation (3)
ENGT 5221 Manufacturing Problem Solving (3)
SOT 5000 Special Problems in Technology (3)

Fashion and Apparel Merchandising emphasis minimum of 12-15 s. h.

Required Specialization Courses: 6 Semester Hours

FAME 5460 Seminar in Textiles and Clothing (3)
FAME 5490 Internship (3)
Elective: Choose 6 to 9 semester hours
Select any three from the following courses:
FAME 5410 Architectural Interiors (3)
FAME 5414 Advanced Technical Problems (3)
FAME 5424 Pattern Design (3)
FAME 5433 International Apparel Technology (3)
FAME 5442 Advanced Textiles (3)
FAME 5445 Senior Seminar in Fashion (3)
FAME 5450 Special Problems in Textiles and Clothing (3)

Lean Six Sigma Graduate Certificate (15 semester hours), 100% online

IndM 5130 Lean & Quality Management (3) OR Engt 5580 Quality System Engineering (3)
IndM 5212 Production & Operations Management (3)
IndM 5222 Principles and Practices of Lean Systems (3)
IndM 5232 Seminar in Lean Six Sigma Implementation (3)
IndM 6580 Advanced Strategic Quality and Standard (3)

Industrial Management emphasis 12-15 semester hours

Required Specialization Courses: 6 Semester Hours

IndM 5212 Production & Operations Management (3)
IndM 5240 Engineering Economy (3)
Elective: Choose 6 to 9 semester hours
IndM 5120 Human Factors Engineering (3)
IndM 5140 Facilities Engineering (3)
IndM 5180 Industrial Statistics (3)
IndM 5260 Systems Analysis and MIS (3)

Manufacturing Management emphasis 12-15 semester hours

Work with an automation faculty member to choose the sequence of courses and/or substitutions for the courses below.

IndM 5140 Facilities Engineering (3)
IndM 5212 Production & Operations Management (3)
IndM 5240 Engineering Economy (3)
SOT 5000 Special Proj. in Technology

Other areas of specialization:

Agricultural, Computer Sciences, Safety Sciences, Industrial Technology, and others

Graduate Certificate Programs

The School of Technology offers two graduate certificate programs. To be admitted applicants must have completed a baccalaureate degree from an accredited college or university with a GPA of 2.5 overall. Contact your advisor and Instructor for consent to enroll in this sequence of courses. Applicants must also demonstrate proficiency in English communication and an ability to work in a technology management-driven environment. Students must maintain a grade point average of 3.0. The certificate can be completed in one calendar year. Additionally, candidates seeking the Network Security area must have an Electronics Technology degree with an emphasis in Networking OR satisfy one of the following two choices:

1. Bachelor's degree in a *related field* **AND** NET 5100 - Network Device Configuration **OR** Instructor's consent based on experience and skills testing.
2. Bachelor's degree in a *non-related field* **AND** NET 5100 - Network Device Configuration **AND** Instructor's consent based on experience and skills testing.

This program is a non-degree graduate program. However, courses completed as part of the certificate curriculum can be included in a program of study leading to a Master of Science degree. The School of Technology graduate coordinator and advisor will advise students and confirm completion of certificate requirements.

Lean Six-Sigma Graduate Certificate

Lean 6σ
UCM Master Certified ©

The Lean Six-Sigma program consists of **fifteen semester hours** intended for industrial and service managers, supervisors and others who desire to bridge their companies' productivity to "Lean-Six Sigma" methods.

Program Description

This online certificate program is designed for industrial professionals seeking insight to techniques of Lean Six Sigma systems while preparing for the Lean Certification by the Society of Manufacturing Engineers (SME), Six Sigma Green Belt Certification and/or the Manager of Quality/Organizational Excellence Certification from the American Society for Quality (ASQ). The five required courses will integrate with the Industrial Management and Technology Master's Degree programs as an area of specialization. The program will be delivered via the Internet using web-based tools for effective learning.
In order to be awarded the certificate, student will complete all five required courses with a "B" or better. These courses must be completed within six calendar years, beginning with the date the student first registers as a graduate level certificate student.

Program Objectives

Students will gain the most recent skills and knowledge in Lean systems, Six Sigma, quality tools, and quality management principles while preparing for certification examinations. Specific Objectives:

- Apply lean concepts in various industrial situations to eliminate waste and maximize quality.
- Use seven statistical tools and quality techniques to problem solve a given industrial scenario.
- Develop a continuous improvement plan using quality standards criteria established by the International Standards Organization series and Malcolm Baldridge Awards program.

- Prepare for Lean certification by the Society of Manufacturing Engineers (SME) and/or the Manager of Quality/Organizational Excellence Certification from the American Society for Quality (ASQ).

This online graduate certificate program utilizes the same format to present all five courses included in the program of study. Course deliverables and materials will have a complete set of course components, including learning outcomes, instructional modules, handouts, assignments, and assessment. Interactive discussions with peers and course facilitators in a virtual class meeting, video conference, discussion board, and telephone conferences are encouraged.

Students will take five, three-semester hour courses:

Fall Semester

- **IndM 5212 Production and Operation Management**. Production/operations concepts with emphasis upon systems, systems design and analysis, strategies, productivity, planning, forecasting, deterministic and stochastic inventory control, MRP scheduling, and project planning.
- **IndM 5222 Principles and Practices of Lean Systems**. A survey of theory, goals, and applications of Lean principles and strategies in industrial organizations. Applying Lean and Six Sigma (DMAIC) concepts to business strategy, product design, tools for finding and eliminating waste and for continuous improvement. Mapping the value stream, error proofing, failure analysis, and the lean metrics are covered.

Spring Semester (Enroll in INDM 5130 or ENGT 5580)

- **IndM 5130 Lean and Quality Management.** Relationship between quality and competitiveness, design strategy for performance excellence, and discussion of cases in Lean systems and Six Sigma.
- **EngT 5580 Quality Systems**. The principles and practices of Total Quality and Six Sigma, and the decision making tools and techniques utilized by professional in today's successful industries. Emphasis on Statistical Process Control (SPC) to reduce variation.
- **IndM 5232 Seminar in Lean Implementation**. Individual research directly related to Lean implementation applied to business and service processes. Alignment and systematic business and service process design focusing on implement and validate solutions and control plan. Measuring business results with business profit and customer satisfaction.

Summer Session

- **IndM 6580 Advanced Strategic Quality and Standards**. An investigation of advanced quality techniques for production/quality managers, global standards criteria (ISO series and Malcolm Baldridge Award), leadership, empowerment and human development, and standard certification training for quality managers and professionals.

Program Costs

The estimated cost is $350 per credit hour (online course) plus the cost of textbooks and software.
(Note: tuition and other costs are subject to change.)

Network Security Graduate Certificate

The Network Security program includes **fifteen semester hours** designed for networking professionals seeking to enhance their skill set in designing and implementing Cisco Systems hardware-based network security measures. Students will gain the most recent skills and knowledge in securing corporate network infrastructure.

Students will take five, three-semester hour courses:

- **NET 5500 Managerial Design for Secure Networks.** Utilizing Cisco Systems Architecture for Voice, Video and Integrated Data networks to apply modular design practices to ensure the enterprise solution is highly available and optimized for the business and technical needs.
- **NET 5501 Network Security Management I.** Utilizing Cisco Systems routers for network and overall security processes focusing on designing and implementing solutions that will reduce the risk of revenue loss and vulnerability.
- **NET 5502 Network Security Management II.** An emphasis on security policy design and management, security technologies, firewall and secure router design, installation, configuration and maintenance, AAA and VPN implementation using Cisco Systems routers and firewalls. (Substitute NET5000/NET4062)
- **INDM 5160 Organizational Dynamics.** Various types and styles of supervisory leadership in the industrial setting. Emphasis is placed on human relations aspects of leadership in the line and staff organizational structure.
- **INDM 5260 Systems Analysis and Management Information Systems.** Development of material requirements planning within the context of management information systems.

Program Description

This certificate program is designed for networking professionals seeking enhance their skill set in designing and implementing Cisco Systems hardware-based network security measures. The five courses are currently integrated with the Industrial Technology Master's Degree program as an area of specialization. The courses would also serve as electives for other CAST graduate programs.

Program Objectives

Students will gain the most recent skills and knowledge in securing the corporate network infrastructure. Specific objectives include:

- Security policy design and management.
- Security technologies, products, and solutions.
- Firewall and secure router design, installation, configuration, and maintenance.
- Intrusion Prevention (IPS) implementation using routers and firewalls.
- Virtual Private Network (VPN) implementation using routers and firewalls.
- Preparation for Cisco Firewall Specialist certification.

Program Costs

The estimated cost is $350 per credit hour (online course) plus the cost of textbooks and software.
(Note: tuition and other costs are subject to change.)

Roadmap to Graduation

The materials contained in this section were compiled from the UCM Graduate Catalog. Student Accepted into the School of Technology Master's program is assigned a graduate advisor. Each graduate student in the School of Technology is responsible to contact the program advisor, engage in intellectual study at a high level and comply with all policies and procedures from the School. A roadmap to graduation includes the following steps:

1. To begin your study, we suggest that you set up a study plan using these major documents:
    - Articulate Diagram (page 5 for MSIM program OR page 10 for MST program)
    - Course Schedule 2019-2025 (page 43)
    - Graduate Handbook and read the "Graduation Requirement". This information is also available at https://www.ucmo.edu/graduate/current/require.cfm

2. Take courses following your study plan, minimum 33 credits hours to graduation. The M.S. in Technology will be required a minimum of 15 hrs of elective (specialization) courses. You may contact the Graduate School at 660-543-4621 for assistance with enrollment or use your student Portal to enroll the classes by yourself, 'add/drop' courses.

3. Create an Application for Approval of Program of Study form within a month of completion of 12 hours of graduate study, see Appendix, page 44 for example. Then submit the completed form to the advisor via email. To fill out online, email your advisor for the form. If you want to review your Program of Study on Degree works, the forms and examples are available at https://sites.google.com/a/ucmo.edu/sotgrad-forms/

4. While taking courses, make sure you keep and organize all electronic files of all your course materials (e.g. course syllabus, research papers, assignments, lecture notes, handouts, and other supplements). The electronic portfolio is required for submission in IndM 5230 Seminar in Industrial Management.

5. In your final semester, first week, you will complete the graduation application, go to your Student Portal, then select "Apply for Graduation" Please note that if you also complete the LSS or NS Graduate Certificate, you will require to fill out the graduation application for the certificate as well.

The M.S. in Technology requires students to pass the comprehensive exam prior to the graduation. Students need to contact the program advisor to take an exam in the final semester.

- IndM 5230 should be enrolled in the final semester with course instructor' permission.
- If students select to work on SOT 5290 Thesis, 6 credit-hrs with two semesters (instead of IndM 5230). Students will consult with the committee chair to recruit another 2 committee members. The final draft of your thesis must be signed off by all committee members and submit to the Graduate Office 3 weeks prior the graduation. The UCM thesis manual is available online at https://www.ucmo.edu/offices/graduate-education-and-research/thesis-and-writing-resources/index.php

6. The program advisor will check your program information and sign the paper. The UCM commencement ceremony is held every Spring (in May) and Fall (in December) semester.

Graduation Fee: The Revenue Office will bill you for graduation fees. Final clearance for graduation begins after semester grades are posted for the semester. Diplomas are mailed in about 4-6 weeks after final clearance.

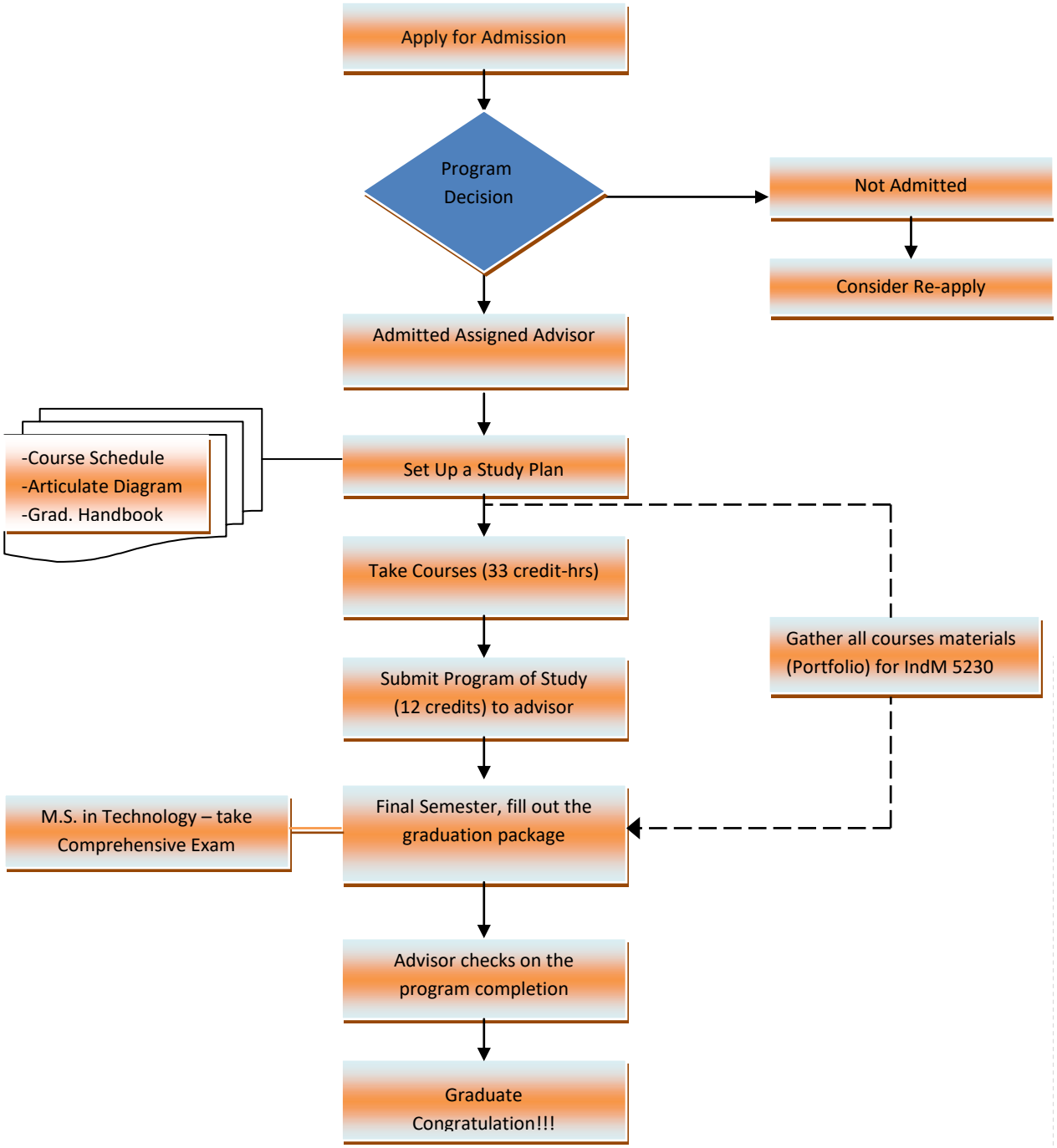
Commencement: If you intend to participate in the Commencement ceremony you must pick up your commencement packet from the Graduate School, Ward Edward 1800, or commencement packets can be mail upon request (660)-543-4621. Check with The Graduate School for the date commencement packet will be available.

Cap & Gown, Graduation Announcement:
University Bookstore
Union 128
(660)-543-4370

Official Transcripts:
Office of the Registrar
Ward Edwards 1000
(660)-543-4900

Successful work and career are waiting for you.

M.S. Program - Flow Process



M. S. Student Progress Checklist

Graduate Student Orientation

- ✓ All new graduate students should complete the online orientation at https://www.ucmo.edu/graduate/future/orientation/
- ✓ International graduate students must attend the International Graduate Student Orientation.

Set-up a Study Plan and Enroll in classes

- ✓ Use the Course Schedule 2019-2025 on page 43 to plan for your study, contact your graduate advisor for questions/suggestions.
- ✓ Enroll in classes each semester. Enroll on the web https://mycentral.ucmo.edu/cp/home/displaylogin
- ✓ or by calling The Graduate School 660-543-4621.
- ✓ IndM 5230 Seminar in Industrial Management should be enrolled in your final semester, seek approval from course instructor to enroll in this course.

Program of Study

- ✓ Students must fill out the Program of Study (POS) prior to completing 12 hours of graduate coursework, then forward it to your advisor for approval. The form in Excel format is available via email. Make sure you email your advisor for a form and work with him/her to complete it. See sample of POS on page 44.

Thesis

- ✓ Students deciding to complete a thesis will enroll SOT 5290 Thesis for six credit hours and it is suggested to enroll in three credit hours for two consecutive semesters. Students should obtain a Thesis Manual from the Graduate School to preparing a thesis or visit a link at https://www.ucmo.edu/offices/graduate-education-and-research/thesis-and-writing-resources/index.php

Comprehensive Exam

- ✓ Students majoring in Technology must pass the comprehensive examination prior to the graduation; contact the advisor at the beginning of your final semester to plan for the exam.

Graduation

- ✓ The commencement ceremony is held in spring and fall semester, fill out the graduation application on My Central, "Apply for Graduation". make sure you complete all the program requirements:
  - Earn a minimum of 33 semester hours of graduate credits applicable on an approved program, a minimum of 3.0GPA. Students can not have more than 2 Cs.
  - All U grades (incomplete grades) must be removed prior to graduation.
  - Complete the application for graduate degree in a commencement packet and pay the graduation fee

Note: If students also completed the graduate certificate (LSS or NS) together with the MS degree, students are required to fill out the graduation applications for both MS and graduate certificate.

Graduation Education Appeals

Certain graduate policies may be appealed within the guidelines specified per the Graduate Catalog, for example enrollment overload, extension of eight – year rule, graduate academic eligibility reinstatement, course repeat (grade replacement), academic renewal. More details and appeal form are located at https://www.ucmo.edu/offices/graduate-education-and-research/graduate-education-appeals/index.php

Graduate Program Admission

Admission Process: For U.S. Citizens, Legal Alien, Permanent Residence, students from U.S. territories and internationals. (For specifics on International Applications, see next section "International")

An applicant for admission to a master's degree program must have a bachelor's degree. Prerequisite degrees must be from institutions accredited by agencies recognized by University of Central Missouri.

Admission to The Graduate School, which permits enrollment in classes, is not equivalent to admission for a particular program or degree. Degree seeking students meeting the requirements for admission to graduate study will be forwarded to the department, as designated by the student, for consideration and recommendation. Department admission requirements, including standardized tests, for specific graduate programs, are listed in the Graduate Catalog, available online at https://www.ucmo.edu/current-students/office-of-the-registrar-and-student-records/catalogs/index.php

To Apply go to: https://giss.admissions.ucmo.edu/apply/
Your online application will be held until the fee and your official transcript(s) are received. All required documents (Career goal statement, resume,…) must be in-place prior to the review process.

Returning Central Graduate Students
If you are returning to The Graduate School at Central after an absence of a year or more, please call 660-543-4621 and request re-admission.

Graduate School Application Deadlines:
All application materials should be received by the Office of Graduate Studies at least three weeks prior to the beginning of the semester in which the student wishes to register.

Note: Before applying, we strongly suggested you visit the website https://www.ucmo.edu/future-students/admissions/graduate-admissions/index.php to read the Missouri Law (HB1549) requirement on the acceptable documentation.

Semester Deadline:	Fall – July 1st
For Domestic student	Spring – November 15th
	Summer – April 1st

Admission Process: For International

To apply to the Graduate School at the University of Central Missouri:
Application available via online at: https://giss.admissions.ucmo.edu/apply/

- Complete the International Student Application
- Pay the non-refundable $75 application fee*
- Prove English proficiency
- Provide financial support letter
- Provide a bank statement with adequate funds
- Official Transcripts
- Photocopy of passport
- Career goal statement and a resume

*may not apply to all student types

Online Application

This fee is $75.00 USD and non-refundable.

Demonstration of English Proficiency

Proficiency may be demonstrated by one of the following:

A TOEFL exam score of 79 IBT or 550 PBT
b. IELTS exam score of 6.0
c. PTE exam score of 53

If you do not meet this requirement, you may participate in our Intensive English Program to Master's track.

Transcripts

All graduate students are required to upload unofficial transcripts to their student portal (created upon application submission) and submit official transcripts to the admission office. These transcripts will be used for advisement purposes.

Please reference International Admissions Process for more information on submitting transcripts.

Declaration of Financial Support

This document is required to demonstrate sufficient financial support while attending UCM**.**

Official Bank Statement/Certification

This document is required as verification that adequate funds are currently and subsequently available to you in support of your tuition and living expenses while at UCM. The cost per academic year of attending the University of Central Missouri as an on campus graduate student is approximately (in US Dollars):

Please refer to the website https://www.ucmo.edu/future-students/admissions/international-admissions/international-admissions-requirements/index.php , for detailed information on international student's application instructions.

International Application Deadlines

Students are encouraged to complete and forward their applications to University of Central Missouri as early as possible. This allows for sufficient time to obtain visas and arrange for transportation. The priority deadlines for receipt of all admission materials are listed below. Applications received after these deadlines will automatically be processed for the following semester.

Semester Deadline: **Fall**
For international (July 1) for new international student;
(July 15) for transfer students (Already in the U.S)

Spring
(October 15) for new international student
(December 1) for transfer students (Already in the U.S)

Summer
No admission for international student

Students staying in their home country
(6 weeks prior to the start of the semester)

The admissions team for international students is eager to help answer your questions. Please feel free to contact them at the email addresses below:

Contact
Graduate & International Student Services
University of Central Missouri
Ward Edwards 1800
Tel: 660-543-4092
giss@ucmo.edu

Career Goal Statement (Guideline)
University of Central Missouri
School of Technology

Career Goal Statement of Purpose

Each student wishing to pursue a graduate degree program in the School of Technology will prepare a written career goal statement of purpose containing the following components;

Name _____

Address _____

Telephone/Fax _____ E-Mail _____

Program Requested:
M.S. In Industrial Management _____
M.S. In Technology _____ Emphasis Area _____
PhD in Technology Management _____ Emphasis Area _____

Semester you wish to start: _____ Part-time or Full-time: _____

On Campus: _____ Off Campus: _____

Please read the program outcomes and course descriptions included in the graduate catalog before writing your career goal statement and/or answering these questions.

1. Why do you want to pursue a graduate degree with an industrial technology/industrial management specialization?

2. What career objectives do you hope to achieve upon completion of this program? For example, what job title or job description are you seeking upon graduation?

3. What are the primary skills/competencies you plan to develop in your graduate program?

4. Please supply three references with contact information and any other general comments you may have concerning the graduate degree.

Note:
This statement may be submitted as a separate document and must thoughtfully address all questions above. It must be at least one page in length, single spaced, and word processed (no handwritten forms will be accepted). This statement may not exceed two pages in length.

** The form is also available online at https://www.ucmo.edu/academics/programs/masters-degrees/technology-ms-53-589/career-goal-statement.pdf, link “Career Goal Statement”.

Frequently Asked Questions (FAQ)

Q: What is the nature of the M.S. Industrial Management online program?

The program provides a balanced curriculum focusing on the human element of the workplace as well as a variety of industrial systems. Specific skills will be developed in the field of leadership, problem solving, and decision-making. The program is delivered online via Internet. Students must be highly self-motivated and goal-oriented with excellent study skills and time management. Instructors will hold virtual class meetings in the evening (5pm, 6pm, and 7pm central time) to discuss the course materials.

Q: What type of background should I have?

The successful applicant should have at least 2 years of work experience in the related fields of industry/business/education/government and also have an appropriate background Bachelor's degree. Those without this background education or work experience may be required to take some prerequisite courses.

Q: What are the website addresses to learn more about the programs and financial aid?

School of Technology**:** www.ucmo.edu/technology
SOT Graduate program: www.ucmo.edu/sotgrad
M.S. Industrial Management**:** www.ucmo.edu/msim
M.S. Technology**:** www.ucmo.edu/mst
Student Financial Services**:** www.ucmo.edu/sfs/
UCM Online**:** http://www.ucmo.edu/ucmonline/

Q: How do I apply?

You can apply online at https://www.ucmo.edu/academics/graduate-studies/
For international students, please visit the International Center at http://www.ucmo.edu/international.

Q: When can I enroll?

You are eligible to enroll as soon as you received a letter saying you are admitted to the program. Contact your program advisor prior to the enrollment. Go to MyCentral, log-in with your username and password, then select 'Add/Drop'.

Q: How long will it take to complete the M.S. program?

The M.S. in Industrial Management and M.S. in Technology are 33 credit hours. If enrolled as a full-time student, 9 credit hours for each spring and fall; and 3-6 credit hours in summer, it can take one and half years to complete (or 4 semesters). It is normal for the students in the program working full-time to enroll in only 3-6 credits hours per semester; they may take 2.5-3 years for completion. The program also provides some summer session courses (only online delivery).

Q: How much is tuition?

For the latest information on tuition and fees, visit http://www.ucmo.edu/costs/.
For 2018/2019, the cost of tuition for an on-campus graduate student is $298.50 per credit hour

for Missouri residents and $597.00 per credit hour for non-residents (international student). 2018/19 graduate online and hybrid courses (extended campus) are $348.50 per credit hour.

Q: Is financial aid available?
Yes, there are several types of financial aid at UCM. The Student Financial Services website is located at http://www.ucmo.edu/sfs . To apply for a Graduate Assistantship, you can read details and download the application form at http://www.ucmo.edu/graduate/support/assist/.

Q: How does an online program work?
The Office of Extended Studies provides detailed information on distance learning. View the FAQ's about taking an online class at https://www.ucmo.edu/academics/ucm-online/
In each class, the MSIM and MST programs request students to attend the virtual chat meeting 2-4 hours a month to discuss course contents and exchange knowledge with course instructors and classmates.

Q: When should I file the Program of Study?
You should create a Program of Study form with your advisor within a month of completion of 12 credit hours of graduate study. The forms and examples are located on page 44.

Q: What are some job titles for MS in Industrial Management?
The job titles from our graduates include Project Manager, Engineering Manager, College Professor, Corporate Maintenance and Reliability Manager, Production Manager, Research Assistant, Plant Manager, Business Intelligence, Quality System Engineer, Corporate Plant Systems and Controls Manager, Sr. Process Improvement Analyst, Manufacturing Engineer,…

Q: What are some job titles for MS in Technology?
The job titles from our graduates include Project Manager, Engineering Manager, College Professor, Production Manager, Manufacturing Engineer, Network Administrator, Lean and Cost control manager, sr. project engineer, systems analyst, and business/owners.

Q: What are the salary range for the graduates?

According to the follow-up survey for MSIM and MST graduates, the annual salary is range between $55,000 – 110,000.

Q: Who should I contact if I have questions on course enrollment or general questions about the programs?
You can contact your advisor or the program coordinator, Dr. Sue Rodchua, rodchua@ucmo.edu

Q: How to connect with the SOT Graduate Programs?
The main office is located at Technology Gaines Building, 3rd floor, TRG 318, School of Technology, University of Central Missouri, Warrensburg, MO64093.
To connect with us via social media:
UCM SOT Graduate Programs Facebook /UCMSOTGRAD
UCM ASQ Student Branch Facebook /ASQUCM
UCM SOT Graduate Programs LinkedIn /company/ucm-sotgrad

Ph.D. in Technology Management

The Doctor of Philosophy in Technology Management is designed to prepare students for positions of leadership in the public and private sectors of society. At the conclusion of the program, graduates will have developed skills in research procedures, will have acquired expertise in instructional processes, and will be able to provide service to the industrial and educational community. The program maintains most of the traditional requirements characteristic of advanced graduate study, but it is unique in using the resources of a consortium of five universities linked together by alternative communication systems. These member universities have programs staffed by faculty having expertise in many areas of technology. Coursework for this program is delivered online. For more information visit
https://www.ucmo.edu/academics/programs/cooperative-doctoral-degree/technology-management-phd/

The program offers five specializations:

- **Construction Management -** Coursework within the construction management specialization is directed toward applied research, the advancement of the construction organization, and professional management leading to the effective and efficient control of the construction process.
- **Digital Communications -** The need for faster and more efficient transmission, reception, storage, and retrieval of information in our high-change society has caused digital communications to be one of the fastest growing fields in technology. The purpose of advanced studies in this area is to increase the knowledge about the design and implementation of systems to communicate in a cost-effective manner.
- **Human Resource Development and Training-** Human Resource Development & Industrial Training (HRD&IT) means the integrated use of training and development, organizational development, and career development to improve individuals, group, and organizational effectiveness. HRD&IT relies on more than one subject discipline and draws on theories and insights from education, management, industrial and individual psychology, communication, counseling, economics, sociology, and related areas of research.
- **Manufacturing Systems -** A Manufacturing System can be defined as the means to operate and control processes that add value to a product. Another key characteristic of a manufacturing system is its ability to replicate the product profitably. While traditional manufacturing programs have focused on manufacturing technologies, manufacturing systems concentrates on the all activities and practices used to integrate an enterprise's production.
- **Quality Systems -** The QSS program is dedicated to providing people with corporate leadership abilities and faculty for the profession. Graduates shall have a global vision encompassing quality systems. The primary QSS focus is to provide people with the ability to manage complex organizations to meet the requirements of customer satisfaction in public and private sectors.

Program Curriculum

Major Area of Specialization (18 credits): Specialization in a technical concentration and is achieved by completing six PhD level courses. Examples of program specializations have been identified for manufacturing, construction, digital communications, and others. It is anticipated that additional specializations will be developed with the changing nature of technology studies. These specializations shall be reviewed and recommended for adoption, modification, or deletion by the Graduate Consortium Coordinating Council to the Ph.D. Graduate Program Coordinator. The approved recommendation shall be sent to the Dean of the School of Graduate Studies at Indiana State University.

Research Core (27 credits): The research component of the program is composed of course work in research design, research methodology, and statistical analysis. A dissertation of eighteen credits shall be completed after advancing to candidacy for the degree.

Technology Core (12 credits): The general technology core of studies is designed to provide a conceptual framework for studies in technology. This core emphasizes the relationship of technology to the societal context from which it operates. The core will be taught using internet technologies, or other approaches capitalizing on the unique expertise of professors at consortium member institutions. These courses will be required of all students

Professional Studies (9 credits): The area of study may be inclusive of previous graduate work Internship and Field Research Study and is designed to provide concentrated study in technology. Recommendations for approval shall be made by the student's program committee.

Application Procedure
Admission and application information can be obtained from the School of Graduate Studies, Indiana State University. The application form is the School of Graduate Studies - Application for Admission at Indiana State University. Application materials must include:

- Indiana State University School of Graduate Studies Application form
- Pay application fee.
- Graduate Record Examination Scores sent directly to Indiana State University, School of Graduate Studies (GRE scores must be current - taken in the past 5 years.).
- Original transcripts sent directly to the Indiana State University, School of Graduate Studies.
- Three years of work experience verified by employer letter.
- Completion of Career Goal Statement. Download form (Word document, requires Microsoft Office Software or the free viewer)
- Five letters of recommendation from persons who are familiar with your ability to do advanced graduate work.
- A current Vita.

Indiana State University's Ph.D. in Technology Management Program admits a limited number of students several times during a calendar year. A candidate's application materials are not evaluated until all required application materials are completely submitted to the School of Graduate Studies at Indiana State University. Once complete, those materials are evaluated for admission at the next available admission date. For more details, visit the website at http://technology.indstate.edu/consortphd/

University of Central Missouri – Fast Facts

(https://www.ucmo.edu/about/fast-facts/)

University Profile

The University of Central Missouri is an innovative school that offers a high-quality education while remaining one of the most affordable universities in the country. The institution is a state-assisted, four-year comprehensive university governed by a state-appointed Board of Governors. In 1996, University of Central Missouri was designated Missouri's lead institution for professional technology, an area long recognized as one of the university's greatest strengths. UCM has the highest graduation rate among our competitors, and the only public school in Missouri that pays you to graduate in four years with the Learning to a Greater Degree 15-to-Finish scholarship.

Central offers Engaged learning, future-focused academics, culture of service and worldly perspective. Our university believes in enriching each student's perspective through a cumulative academic experience that integrates applied learning and servant-leadership opportunities.

Total Enrollment

Nearly 11,500 students attend Central, with 55 percent of them female, 45 percent male, 9 percent ethnic minority and 4 percent international. Nearly 80 percent of the undergraduate campus population is made up of full-time students. The student-to-faculty ratio is 18 to one, and the average size of undergraduate classes is 25 students. Students come from 44 states and 62 foreign countries.

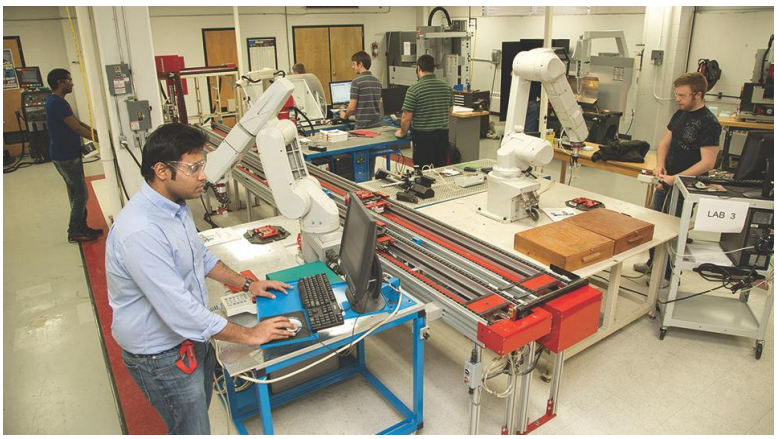
Teaching Staff

Total Faculty- 428 (77% of whom hold a PhD & other terminal degree)

Academic Areas

Students choose from more than 150 areas of study in an atmosphere of personalized attention and individualized instruction. Seventy-three percent of our faculty members hold earned doctorates, and full professors teach many beginning classes in addition to advanced courses and seminars. This means Central students learn from top-ranking academicians beginning with their first day of classes. In addition, Central features 10 pre-professional programs, 27 areas of teacher certification and 50 graduate programs.

Accreditations (within College of Science and Technology)
Association of Technology, Management, and Applied Engineering (ATMAE)
American Council for Construction Education
American Design Drafting Association
Council for Technical Teacher Education
Council on Accreditation for Aviation
Engineering Technology Accreditation Commission (ABET)
International Association for Management Education
Missouri State Board of Nursing
National League for Nursing
North Central Association of Schools and Colleges



Affordability, Fees, and Scholarships

Affordability: You can afford to attend Central Missouri State. Hope Scholarships and an array of other state and federal programs are now available to help students and their families meet the cost of attending the university, which is already one of Missouri's best education values. These benefits are broadening access to Central and allowing more students to join the ranks of well-paid professionals, whose skills are valued by top employers.

Costs & Fees: Central has one of the most affordable tuition rates in the state. There are institutional and general Fees for resident and non-resident graduate student. For latest information on tuition fees, visit https://www.ucmo.edu/offices/student-financial-services/

Graduate student - the cost of tuition per credit hour (2019):

Missouri Resident: $313.50
Non-resident/International: $627.00
Online delivery: $365.90

Federal Financial Aid: A student who has been fully admitted to a graduate degree program at Central is eligible to be considered for several types of Federal financial assistance. This aid is authorized and regulated by the United States government and is designed to help students pay the educational and living expenses associated with pursuing their programs. For further information, please contact the Office of Financial Aid Services 1100 Ward Edwards, Warrensburg, MO 64093, or by telephone: 600-543-8266, FAX: 660-543-8080, or you can find more info at https://www.ucmo.edu/future-students/tuition-costs-and-financial-aid/financing-your-education/applying-for-financial-aid/

Scholarships and Award: At Central, we strive to make your educational and career goals a reality. Our fees are very competitive when compared to other public universities and thousands of dollars less than those charged by private institutions offering similar degrees.

- **Graduate Student Achievement Award:** The annual Graduate Student Achievement Award is applicable only to student fees. This award waives $500 of the recipient's fall and spring fees, and $300 of the recipient's summer fees. The award is based on high academic achievement and leadership qualities. Deadline: March 1. Students who receive a full-time Graduate Assistantship are NOT eligible for a Graduate Student Achievement Award.

- **Graduate Non-Resident Scholarship:** Covers the non-resident fees for graduate study at Central for all students enrolling no later than the fourth semester following graduation from an undergraduate program at Central; the student must have earned a minimum of 60 hours at Central with a 3.0 or higher UCM GPA; renewable for six semesters if student maintains a graduate GPA of 3.4 or higher. Deadline: Open. Application Form. Window of Opportunity for Alumni: Any past graduate who meets the eligibility criteria and enrolls by fall 2005 qualifies for the scholarship. Application form: https://www.ucmo.edu/future-students/tuition-costs-and-financial-aid/financing-your-education/scholarships/documents/grad-nonresident-schol-app.pdf

- **Warren C. Lovinger Graduate Student Scholarship:** This award has been given annually since 1980 in honor of Dr. Warren C. Lovinger, past president of Central. Applicants must have received an undergraduate degree from Central and have been admitted to a graduate program at Central. Students

must have at least 16 credit hours remaining on their graduate program to be eligible for this award. Deadline: March 1.

- **The Reid Hemphill Outstanding Graduate Student Award:** This cash award is given to the university's outstanding graduate student. The award was funded and established by Dr. Reid Hemphill, Central's first Graduate Dean. Nominations are made by faculty members to their deans. The deans of Central's four colleges then nominate one student from the college for the award. The recipient is selected by the Graduate Council. Deadline: March 1.

- **The Presidential Scholarship for First-Generation Graduate Students:** This is an award of $1,000 per academic year, a student may receive the award only once per academic year. To be eligible:

  - ✓ You must be the first generation in your family to attend graduate school (no parents or grandparents attended graduate school).
  - ✓ You must also have a minimum undergraduate GPA of 2.50
  - ✓ You must meet an income requirement to show financial need. Central's Office of Student Financial Assistance can determine if you meet the income requirement if you have filed your Free Application for Federal Student Aid (FAFSA).
  - ✓ Deadline: March 1 for scholarships awarded the following fall.

- **Kansas City International Facility Management Association Scholarship:** More information on the scholarship and application materials can be obtained on the chapter website: http://www.kcifma.com/ Click on Education Click on Scholarship Details. They are seeking students with an interest in, and the potential for success in the Facility Management field.

Application Forms: Most forms are available athttps://www.ucmo.edu/future-students/tuition-costs-and-financial-aid/financing-your-education/scholarships/index.php

You will need to have Adobe Acrobat Reader to retrieve these forms. Adobe Acrobat Reader is available for download free of charge from the http://www.adobe.com/

Graduate Assistantship: To apply for an assistantship, submit online application https://jobs.ucmo.edu/

Fulfills three important objectives at University of Central Missouri:

1) Students are provided with meaningful, professional experiences that will enhance educational and career goals,
2) Students provide a service to a department or unit within the University, and Students are provided with financial assistance.
3) Students are provided with financial assistance.

Policies for Graduate Assistantships: A student may be awarded an assistantship a maximum of four semesters, excluding summers. An Education Specialist student, who has had an assistantship while working on a Master's degree, may have two additional semesters, for a total of six semesters as a graduate assistant, excluding summer sessions.

Graduate Assistant and Doctoral Fellows Compensation: The compensation for a full-time Graduate Assistant is two 3-hour courses per semester or whose assignment involves twenty hours per week is $3,750 per semester or $7,500 for two semesters. The Doctoral Teaching Fellows facilitate two 3-hour

courses per semester and keep an active research agenda for the School of Technology Graduate Programs. The compensation for Graduate Assistants with a partial assignment is reduced proportionately. (This is subject to change.)

Instructional Fee Waiver: Your instructional fees are covered by a fee waiver in proportion to your GA appointment. Courses taken for undergraduate credit or audit will not be included in the instructional fee.

Departmental Scholarships: Some scholarships and awards are offered within departments. Students should contact their departments for additional information.

Robert E. Goetz Award
Available to graduate student from the College of Applied Sciences and Technology. Two reference letters are required to support the application. Application deadline March 15.

Wayne Kay Graduate Fellowship (Society of Manufacturing Engineers)
Supported by the Wayne Kay scholarship Fund and annually makes available ten $5,000graduate fellowships. Applicants must have proven scholastic ability, exemplary character and leadership capability and have demonstrated their potential for future leadership in the profession. Available online at www.sme.org

Dr. Clois E. Kicklighter Doctoral Student Scholarship Award Program
The ATMAE Foundation established the "Dr. Clois E. Kicklighter Doctoral Student Scholarship Award Program" in 2003. The program was endowed by a generous gift from Dr. Kicklighter and provides $2,500 scholarship awards for applicants planning for a career in Technology, Applied Technology, Engineering Technology, or a Technology Related Discipline and has been accepted in a doctoral level program designed to prepare for that career.

Research Funding: Willard North Research Awards for Graduate Students: This award is named in honor of Dr. “Will” North who devoted many years to fostering research activities at University of Central Missouri. The awards are supported by the Willard North Endowment Fund which is part of the University of Central Missouri Foundation. The purpose of these awards is to promote and encourage the highest levels of graduate research and scholarly investigation. Dr. North was a proponent of sound research design, appropriate statistical techniques, and proper interpretation of results. Willard North Research awards are for students of all disciplines. Because of Dr. North’s professional involvement in teaching psychology and counselor education, students in those academic disciplines are especially encouraged to apply. Proposed projects are usually considered as joint student/faculty research or student thesis development. Proposals may be submitted at any time. Questions or requests for forms should be directed to the Office of Sponsored Programs, (660) 543-4264, Ward Edwards 1800. Warrensburg, MO 64093

Graduate Student Research Awards: The purpose of the Graduate Student Research Award competition is to bring recognition and reward to the authors of exemplary research in Central’s graduate programs. Faculty members identify and submit outstanding student theses to the competition. Questions or requests for forms should be directed to the Office of Sponsored Programs, (660) 543-4264, Ward Edwards 1800. Warrensburg, MO 64093

Additional Research Funding: Federal and foundation directories that list additional funding sources for research and projects are housed in the Office of Sponsored Programs. Interested students may visit the Office of Sponsored Programs in Ward Edwards 1800. Warrensburg, MO 64093 or call them at (660) 543-4264 to utilize these resources or obtain further assistance.

Contact Information

For further information, please contact:

Graduate and International Student Services (GISS)
(Admission process, Letters of Acceptance and Proof of Enrollment, Graduation):
Website: http://www.ucmo.edu/graduate/about/contact.cfm
University of Central Missouri, Ward Edwards 1800, Warrensburg, MO 64093, U.S.A.
Phone: (660) 543-4621 (Monday ~ Friday 8:00am-5:00pm, Central Time)
Email: giss@ucmo.edu
Enrollment in Courses: (660) 543-4621 or http://www.ucmo.edu/registrar/enrollment/

Graduate Education and Research (GER)
(Graduate student support and resources, thesis manual, research funding, appeals)
Phone: (660) 543-4729, email: ger@ucmo.edu

Office of Registrar
(Request official transcript, Central Degree Audit)
Phone: (660) 543-4900 or http://www.ucmo.edu/registrar/

University Bookstore (https://www.ucmo.edu/offices/bookstore-university-store/)
(Textbooks, Cap & Gown, Graduation Announcement)
Phone: (660)-543-4370, email: ucmbookstore@ucmo.edu

Student Financial Services
Payment of Courses, Financial Services, Billing Questions
Phone: (660)-543-8266 or https://www.ucmo.edu/future-students/tuition-costs-and-financial-aid/financing-your-education/contact-student-financial-services/

Important webpage
School of Technology**:** www.ucmo.edu/technology
SOT Graduate program: www.ucmo.edu/sotgrad
M.S. Industrial Management**:** www.ucmo.edu/msim
M.S. Technology**:** www.ucmo.edu/mst
Student Financial Services**:** www.ucmo.edu/sfs/
UCM Online**:** http://www.ucmo.edu/ucmonline/

SOT Graduate Program Coordinator
Dr. Suhansa (Sue) Rodchua, phone: 660-543-4438, email: rodchua@ucmo.edu

SOT Chair
Dr. Ronnie Rollins, phone: 660-543-4439, email: rollins@ucmo.edu

SOT Office Professional
Ms. Susie Pine, phone: 660-543-4439, email: pine@ucmo.edu

School of Technology – Program Contacts
Website: http://www.ucmo.edu/technology

Faculty-Staff	Area	Office	Phone (660)	Email
Ronnie Rollins	SOT Chair	Grinstead 009	543-4439	rollins@ucmo.edu
Susie Pine	Office Professionals	Grinstead 009	543-4439	pine@ucmo.edu
Suhansa Rodchua	MS & PhD Program Coordinator	TRG 318D	543-4438	rodchua@ucmo.edu
William Ford	MST & MSIM	TRG 318	543-4940	wford@ucmo.edu
Joleen Byerline	MST & MSIM	TRG 318G	543-8954	byerline@ucmo.edu
Scott Wilson	Automotive Technology Mgt	TRG 318C	543-4065	swilson@ucmo.edu
Roya Azimzadeh	Computer-Aided Drafting & Design Technology	G 207E	543-4062	azimzadeh@ucmo.edu
Kyle Larson	Construction Mgt	COT 203C	543-4746	klarson@ucmo.edu
Ronnie Rollins	Electronics & Network Technology	TRG 304	543-4436	rollins@ucmo.edu
Melissa Abner	Fashion: Textiles and Clothing in Business	G 215	543-8724	mabner@ucmo.edu
Troy Ollison	Industrial & Engineering Technology	G 014B	543-8660	ollison@ucmo.edu
Thomas Mitchell	Photography	G 105E	543-8914	mitchell@ucmo.edu
Shawn Bentley	Networking Technology	TRG 302E	543-8734	bentley@ucmo.edu
Jeff Ulmer	Technology Management 2+2	G 014A	543-8337	julmer@ucmo.edu

Appendix

- Course Descriptions
- Computer Requirement
- Creative Project/Thesis Topic Approval
- Course Schedule 2019-2025
- Program of Study (POS)
  - MSIM
  - MSIM & LSS
  - MST
  - MST & LSS

Course Descriptions

INDM - Industrial Management

INDM 4015/5015 Legal Aspects of Industry (3) Identify, discuss, and research legal issues affecting industry as related to corporate planning, decision making, and management. The role of corporate and social responsibility will also be developed.

INDM 4010/5110 Current Issues in Industry (3) Identify, discuss, and research current issues, trends, and technological changes affecting industry as related to corporate planning, decision making, and managing for the future. Prerequisite: Junior or senior status for undergraduate credit.

INDM 4210/5210 Industrial Management (3) A survey of operations management in industry today. Industrial management principles and applications, management science, operations analysis and design, manufacturing processes, process life cycle, production inventory, and quality control are emphasized.

INDM 4220/5120 Human Factors Engineering (3) Integration of concepts involved in providing safe and comfortable work places (Ergonomics) with concepts directed toward increased productivity and profitability (Work Design).

INDM 4230/5130 Lean Quality Management (3) Relationship between quality and competitiveness, design strategy for performance excellence, and discussion of cases in lean systems and Six Sigma.

INDM 4240/5140 Facilities Engineering (3) Provides students and practitioners with the practical resources that describe the techniques and procedures for developing an efficient facility layout and an introduction to computer simulations.

INDM 4250/5150 Project Management (3) This course is designed to provide students with applied knowledge in project management organizational contexts, project selection, portfolio management, project leadership, scope management, team building, conflict management, risk management, scheduling, networking, resource management, project evaluation, project control, and project termination.

INDM 4260/5160 Organizational Dynamics (3) Various types and styles of supervisory leadership in the industrial setting. Emphasis is placed on human relations aspects of leadership in the line and staff organizational structure.

INDM 4280/5180 Industrial Statistics (3) Statistical methods designed for industrial and applied research. Some of the quantitative methods used for solving industrial problems, including measurement system analysis, statistical process control, probability distribution, testing hypotheses, multiple regression analysis, design of experiment, and nonparametric statistics commonly used in industry. Prerequisite: MATH 1111 or instructor consent.

INDM 5020 International Technology Management (3) Develop an understanding of international technology management for graduate students in the international environment.

INDM 5212 Production and Operations Management (3) Production/operations concepts with emphasis upon systems, systems design and analysis, strategies, productivity, planning, forecasting, deterministic and stochastic inventory control, MRP scheduling, and project planning.

INDM 5220 Applied Operations Research (3) Systems and modeling in industrial management situations. General models, and models such as linear programming, transportation assignment, dynamic programming, and queuing theory are discussed.

INDM 5222 Principles and Practices of Lean Systems (3) A survey of theory, goals, and applications of Lean principles and strategies in industrial organizations. Applying Lean concepts to business strategy, product design, tools for finding and eliminating wastes and for process continuous improvement. Prerequisite: Background in quality management or ENGT 4580 or instructor consent.

INDM 5230 Seminar in Industrial Management (1-3) To provide individual research and experimentation opportunities for industrial management majors. May be repeated for a maximum of 3 semester hours. Prerequisite: Ten semester hours of graduate study in industrial management.

INDM 5232 Seminar in Lean-Six Sigma Implementation (3) An investigation of problems and specific issues in Lean-Six Sigma implementation in the manufacturing and service environment is presented. The emphasis is on case study analysis and individual research projects on industrial core operations and support functions, with the business results of Lean and Six Sigma processes. Prerequisite: Background in quality management or ENGT 4580 or instructor consent.

INDM 5240 Engineering Economy (3) Principles and techniques needed for making decisions about the acquisition and retirement of capital goods by industry. Emphasis on techniques which produce long-run economy in industrial operations.

INDM 5260 Systems Analysis and Management Information Systems (3) Development of material requirements planning within the context of management information systems.

INDM 6580 Advanced Strategic Quality and Standards (3) A course of study in total quality techniques, quality standards and criteria, and quality certification training utilized by quality professionals in dynamic organizations. Prerequisite: ENGT 4580 or instructor consent.

Further courses, please check in the UCM Graduate Catalog.

SOT - School of Technology

SOT 5000 Special Problems in Technology (2-6) meets individual student needs for additional research and/or laboratory experiences in the development of technical knowledge and skills in the areas of manufacturing and construction. May be repeated for a maximum of 6 semester hours.

SOT 5010 Applied Research for Technology (3) Research investigation of a technical problem. The course will culminate in a research report. May be repeated to a maximum of 6 semester hours per degree program.

SOT 5022 Internship in Applied Sciences (1-6) Provides experience for students in cooperating industries. Students rotate assignment. Written reports are required. May be repeated for a maximum of 6 semester hours. Prerequisites: Graduate adviser consent and Technology Internship coordinator consent; graduate GPA 3.0 or above; minimum of one semester graduate work completed.

SOT 5290 Thesis (3-6) A special investigation of selected problems in Industrial Management which culminates in the completion of a thesis. Must be repeated for a total of 6 semester hours. Prerequisite: Graduate status.

TMD - Technology Management Doctoral

TMD 6015 Legal Aspects of Technology and Innovation (3) This course is a study of legal aspects of managing technology, innovation, and technological policy analysis for United States and international organizations. Prerequisites: Permission of the Program Coordinator.

TMD 6315 Advanced Legal Aspects of Construction (3) An advanced course in legal aspects of the construction process. Prerequisite: INDM 5015 or TMD 6015.

TMD 6525 Manufacturing Economy (3) Managerial related economic factors pertaining to a manufacturing enterprise and the influence of these factors on manufacturing in a global society. Prerequisites: ITEC 6050 and admission in the Ph.D. in Technology Management program.

TMD 7320 Ethics and Professional Issues of the Construction Process (3) Develops the ability to think critically and systematically about the issues of relevance to any practicing professional in construction. Prerequisite: INDM 5015 or TMD 6015.

TMD 7550 Current Issues in manufacturing (3) Issues and trends in manufacturing and their implications and impact on manufacturing in a global society. Prerequisites: ITEC 6050 and admission in the Ph.D. in Technology Management program.

TMD 8590 Internship (1-6) Practicum designed to provide direct, supervised experiences for doctoral students, usually in the areas of the technical specialization. The experiences are tailored to provide an opportunity to test and experiment with regard to industry, research organizations, government agencies, and other appropriate experiential ventures associated with technology utilization, transfer, and innovation. The area in which the internship is taken will be designated on the student's transcript, i.e., Internship: Quality Systems. No more than 6 hours may count toward meeting degree requirements. Prerequisite: Admission to candidacy in the Ph.D. in Technology Management program.

TMD 8920 Field Research Projects (1-3) Provides opportunity for doctoral students to test a theory or hypothesis in technology or management. Field research projects will be designed, conducted, and results evaluated. Prerequisite: Admission to candidacy in the Ph.D. in Technology Management program.

TMD 8990 Dissertation (18) A requirement for all doctoral students. Offered by arrangement with the chairperson of the student's dissertation committee. Credit registration must have 9 hours of the 18 hours from Indiana State University and 9 from Central Missouri State University. Prerequisite: Admission to candidacy in the PhD in Technology Management program.

Note: Additional graduate level courses are available in other program areas. Please check the Graduate Catalog for a complete listing. Doctorate degree courses will be taken from each of the five Consortium Universities: Bowling Green State University (BGSU), University of Central Missouri (UCM), East Carolina University (ECU), Indiana State University (ISU), North Carolina A&T (NCA&T).

Computer Requirement

The programs are extensively integrated with Internet access and digital media to enhance communications and promote efficient content delivery. The following is a list suggesting minimum computer hardware and software configuration.

As UCM students, you can download Office 365 for free with your UCM email address, for more information, go to https://www.ucmo.edu/offices/office-of-technology/internal-resources/shared/technology-support-center/

The following bulleted items are students **MINUMUM required hardware and software** items, other items are optional:

Suggested Hardware:

- P4-3.0 Ghz PC with SVGA/XGA video output, Soundboard and 4.0Gb of RAM, 840Gb hard drive, and Windows XP/Vista Operating System/Windows 7
- Keyboard (Standard 102 key), 16X CD-ROM, Speakers, Mouse and a 17 inch color monitor capable of 1024 by 768 (SVGA), resolution
- Broadband Ethernet, an Internet Service Provider, and an active E-mail account
- Webcam

Note: UCM e-mail accounts are provided but must be activated by the student through the UCM Help Desk.

Software/Format:

- Word Processor - MS Office Windows 7, Windows 8 and Windows 10
- Video/Audio (WMV/WMA)- Windows Media Player - Free Download
- Universal PDF - Adobe Reader - Free Download

Suggested software includes:
Presentations - MS PowerPoint 2016, 2017, 2018
Spreadsheet - MS Excel 2016, 2017, 2018
Database - MS Access 1997, 2003, 2007, 2010 for XP, Vista, Windows 7
Statistics - SPSS, MiniTab
Graphics Editor (GIF/JPG) - Paint Shop Pro
MS Office, MS Project

Statistical Package for Social Sciences (SPSS) is required for SOT 5010 Applied Research for Technology and/or Thesis, Special Project. Computer Lab at the library provide a full version of SPSS for free. Online students can install the 15-days demo version for free from www.spss.com. The instruction for downloading SPSS step-by-step is located in the course SOT 5010.

Minitab is also used in IndM 6580 Advanced Strategic Quality and Standard and it may be used in some other classes in Lean Six Sigma Graduate Certificate. Online students can install the 30-days demo version for free from www.minitab.com. The instruction for downloading Minitab step-by-step is located in the course IndM 6580.

***Note**: Some legacy software versions may be partially compatible. For the best working environment a Windows 7 operating system running on an X86 platform will encounter fewer cross-platform errors. Certain MAC platforms are also supported by the University Help Desk.*

Form - Creative Project/Thesis Topic Approval

University of Central Missouri
School of Technology

TOPIC APPROVAL SHEET FOR CREATIVE PROJECT OR THESIS

This form is to be accompanied by a one page tentative description of the proposed creative project or thesis including the problem and the research method (Sample Attached).

This form is to be completed before the student begins the creative project or thesis. In the case of a group project each member will complete a separate form. Once the student has received approval from the program coordinator, the form will be forwarded to the department chairman to be signed and placed in the student's permanent file.

[ ] CREATIVE PROJECT [ ] THESIS (Check one)

Title:_____

_____

_____

Student Name: _____ E-mail Address: _____

Username: _____ Student Number: _____

Current Address: _____

_____

_____

_____ _____
(Student's Signature) (mm/dd/yyyy)

PROGRAM APPROVAL

_____ _____
(Signature, Program Coordinator) (mm/dd/yyyy)

_____ _____
(Signature, Department Chairperson) (mm/dd/yyyy)

Creative Project/Thesis
(Example - a brief proposal)

Category: Technical Management
Title: Curriculum Currency for an Industrial Management Master's Degree
Name: John Smith, M.S. in Industrial Management
Address: TRG 318D, School of Technology
University of Central Missouri
Warrensburg, MO 64093
Phone: (660) 543-4438, Email address: jsmith@ucmo.edu

Need for Project:

The purpose of this study is to identify knowledge, skills, and managerial competencies that are perceived to be necessary and useful for the Industrial Management Master's Degree students at UCM. This study will also be used as a tool to guide revisions to the Industrial Management (IM) curriculum. It gathered results from four sources:

1. A research survey of UCM Industrial Management graduates from 1980 through 1998
2. A review of similar graduate programs in the United States.
3. Then a brainstorming session with industrial experts will be facilitated to determine necessary skills and knowledge areas.
4. Finally, benchmarking will be used to refine and validate the competencies identified.

Overview Statement:

As a result of the rapidly changing environment in industry and technology during the last decade of this century, business and industry leaders have indicated a definite shift from factual or theoretical knowledge needed in traditional industries to more group dynamics, communication skills and the use of information technology in the workplace. A review of University of Central Missouri (UCM) graduate catalogs from 1980 through 1998 revealed that the IM curriculum had not changed significantly in the eighteen-year period. To meet the current needs of today's business and industry manager, it was necessary to conduct a complete review of all course curriculum and materials in an effort to update the knowledge and skills to be more relevant to current managerial careers.

Major Points:

1. The knowledge areas of the IM program as perceived by graduates to be most useful were Industrial Supervision, Production and Operations, and Quality Control.
2. The most important perceived skills were interpersonal relations and communication, while technical skills received the lowest needed rating.
3. Professionals in the field identified thirty-eight needed skills while grouping them into eight benchmark curricular areas. The areas were Management Skills, Project Management, Human Resources, Communications, Industrial Economy, and Technical.
4. IM curriculum revisions will also be reported from 1980-2001(22 years) at UCM.

Conclusions:

The curriculum review includes a survey of past program graduates, a summary of similar curricular programs in the U.S., an advisory board brainstorming session with follow-up competency validation and finally a topic benchmarking activity with professional managers. These competencies will be arranged in a table of existing course titles. This table will then be presented as the guide for creating a list of individual course expectations and anticipated outcomes.

School of Technology - Graduate Programs (Course Schedule 2019-2025) Master Plan (Revised 08/2018)

includes course roll-out for Lean Six Sigma Graduate Certificate; O: Online, F: Face-to-Face

Course No.	Course Title	Fa 18	Sp 19	Su 19	Fa 19	Sp 20	Su 20	Fa 20	Sp 21	Su 21	Fa 21	Sp 22	Su 22	Fa 22	Sp 23	Su 23	Fa 23	Sp 24	Su 24	Fa 24	Sp 25	Su 25	Fa 25
Required Courses (18 credits IM) (15 credits T)																							
IndM 4010/ 5110	Current Issues in Industry (3) T	O		O	O		O	O		O	O		O	O		O	O		O	O		O	O
IndM 4210/ 5210	Industrial Management (3) IM	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F
IndM 4230/ 5130	Lean and Quality Management (3) IM	O	O-F		O	F		O	F		O	F		O	F		O	F		O	F		O
IndM 4260/ 5160	Organizational Dynamics (3) IM & T	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F
EngT 4580/ 5580	Quality Systems Engineering (3) or IM	O	F	O	O	F	O	O	F	O	O	F	O	O	F	O	O	F	O	O	F	O	O
IndM 5015	Legal Aspects of Industry (3) T		O			O	O		O			O	O		O			O	O		O		
IndM 5020	International Technology Management (3) T	O		O	F			O		O	F			O		O	F			O		O	F
IndM 5212	Production & Operations Management (3) IM	O	O		O-F			O-F			O-F			O-F			O-F			O-F			O-F
IndM 5240	Engineering Economy (3) IM		O-F			O-F			O-F			O-F			O-F			O-F			O-F		
SOT 5010	Applied Research for Technology (3) IM & T	F	O		F	O		F	O		F	O		F	O		F	O		F	O		F
Culminating Experience / Research (3-9 credits, take the last semester of student's program)																							
IndM 5230	Seminar in IM (3 credits) IM & T	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F		O-F	O-F		O-F	O-F		O-F	O-F		O-F
SOT 5290	Thesis (3-6 credits) IM & T	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
TMD 8990	Dissertation (1-9 credits) TMD	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Cognate, Electives & Specialization (9-12 credits IM) (12-15 credits T)																							
IndM 4015/ 5015	Legal Aspects of Industry (only undergrad) (3)		O			O	O		O			O	O		O			O	O		O		
IndM 4220/ 5120	Human Factors Engineering (3)							O						O						O			
IndM 4240/ 5140	Facilities Engineering (3)				O						O						O						O
IndM 4250/ 5150	Project Management (3)	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F	O-F	O	O-F
IndM 4280/ 5180	Industrial Statistics (3)			O						O						O						O	
IndM 5222	Principles and Practices of Lean Systems (3)	O			O			O			O			O			O			O			O
IndM 5232	Seminar in Lean-Six Sigma Implementation (3)		O			O			O			O			O			O			O		
IndM 5260	System Analysis & Mgt information Systems (3)		O					O				O					O				O		
IndM 6580	Advanced Strategic Quality and Standard (3)			O			O			O			O			O			O			O	
SOT 5022*	Internship in Technology (1-3)	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
TMD 6015	Legal Aspects of Technology and Innovation (3)		O			O			O			O			O			O			O		
TMD 6315	Advanced Legal Aspects of Construction (3)								O						O						O		
TMD 6525	Manufacturing Economy (3)				O						O						O						O
TMD 7320	Ethics and Prof Issues of the Const Process (3)	O						O						O						O			
TMD 7550	Current Issues in Manufacturing (3)					O						O						O					
TMD 8590	Internship (3)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
TMD 8920	Field Research Project (3)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
TMD 8990	Dissertation (1-6)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Notes:

1) This schedule is subject to change depending on student enrollments and faculty workload.

2) SOT 5022* Internship is offered as a live class on campus, but students will be at the work site.

3) Lean Six Sigma Grad Certificate (15 credits-hrs) includes IndM 4230 (or Engt 4580), IndM 5212, IndM 5222, IndM 5232, and IndM 6580

Required courses for MSIM: IndM 4210, 4230 (or Engt 4580), 4260, 5212, 5230, 5240, and SOT 5010. Required courses for MST: IndM 4010, 4260, 5015, 5020, 5230, and SOT 5010

Program of Study - Master of Science Degree (MS)

Example MSIM

Name:	James E. Smith	Date:	20-Jan-20		
Email address:	jes00005@ucmo.edu, james@gmail.com				
Phone number:	(660) 543-4444				
Major/Concentration:	M.S. in Industrial Management (MSIM)				
Graduate Certificate	Yes/No, if Yes……				
Program advisor:					

Proposed graduate course requirements:

	Prefix	Course #	Course Title	Credit-hr	Grade	Sem/Year
Req	INDM	5210	Industrial Management	3	A	Fall19
Req	INDM	5130	Lean & Quality Management (Sub. For Engt 4580)	3	A	Fall19
Req	SOT	5010	Applied Research for Technology	3		Spring20
Cognate	INDM	5015	Legal Aspects in Industry	3		Spring20
Cognate	INDM	5150	Project Management	3		Sum20
Req	INDM	5212	Production and Operation Management	3		Fall20
Cognate	INDM	5020	International Tech Management	3		Fall20
Req	INDM	5240	Engineering Economy	3		Spring21
Req	INDM	5160	Organizational Dynamics	3		Spring21
Cognate	INDM	5110	Current Issues in Industry	3		Fall21
Req	INDM	5230	Seminar in Industrial Management	3		Fall21
			Graduate Program Semester Hour Total	**33**		

Note: ……

……

Program of Study - Master of Science Degree (MS)

Example MSIM-LSS

Name:	James E. Smith	Date:	20-Jan-20		
Email address:	jes00005@ucmo.edu, james@gmail.com				
Phone number:	(660) 543-4444				
Major/Concentration:	M.S. in Industrial Management				
Graduate Certificate	Yes/No, if Yes, Lean Six Sigma				
Program advisor:					

Proposed graduate course requirements:

	Prefix	Course #	Course Title	Credit-hr	Grade	Sem/Year
Req	INDM	5210	Industrial Management	3	A	Fall19
Req/LSS	INDM	5130	Lean & Quality Management (Sub. For Engt 4580)	3	A	Fall19
Req	SOT	5010	Applied Research for Technology	3		Spring20
LSS	INDM	5232	Seminar in Lean Six Sigma	3		Spring20
LSS	INDM	6580	Advance Strategic Quality and Standards	3		Sum20
Req/LSS	INDM	5212	Production and Operation Management	3		Fall20
LSS	INDM	5222	Principles and Practices of Lean Systems	3		Fall20
Req	INDM	5240	Engineering Economy	3		Spring21
Req	INDM	5160	Organizational Dynamics	3		Spring21
Cognate	INDM	5150	Project Management	3		Fall21
Req	INDM	5230	Seminar in Industrial Management	3		Fall21
			Graduate Program Semester Hour Total	**33**		

Note: .....

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Program of Study - Master of Science Degree (MS)

Example MST

Name:	James E. Smith	Date:	20-Jan-20		
Email address:	jes00005@ucmo.edu, james@gmail.com				
Phone number:	(660) 543-4444				
Major/Concentration:	M.S. in Technology (MST)				
Graduate Certificate	Yes/No, if Yes,				
Program advisor:					

Proposed graduate course requirements:

	Prefix	Course #	Course Title	Credit-hr	Grade	Sem/Year
Req	INDM	5020	International Technology Mgt	3	A	Fall19
			Elective	3	A	Fall19
Req	SOT	5010	Applied Research for Technology	3		Spring20
Req	INDM	5015	Legal Aspects of Industry	3		Spring20
			Elective	3		Sum20
Req	INDM	5110	Current Issues in Industry	3		Fall20
			Elective	3		Fall20
Elective	INDM	5150	Project Management	3		Spring21
Req	INDM	5160	Organizational Dynamics	3		Spring21
			Elective	3		Fall21
Req	INDM	5230	Seminar in Industrial Management	3		Fall21
			Graduate Program Semester Hour Total	**33**		

Note: .....

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Program of Study - Master of Science Degree (MS)

Example MST-LSS

Name:	James E. Smith	Date:	20-Jan-20		
Email address:	jes00005@ucmo.edu, james@gmail.com				
Phone number:	(660) 543-4444				
Major/Concentration:	M.S. in Technology (MST)				
Graduate Certificate	Yes/No, if Yes, Lean Six Sigma				
Program advisor:					

Proposed graduate course requirements:

	Prefix	Course #	Course Title	Credit-hr	Grade	Sem/Year
Req	INDM	5020	International Technology Mgt	3	A	Fall19
LSS	INDM	5130	Lean & Quality Management	3	A	Fall19
Req	SOT	5010	Applied Research for Technology	3		Spring20
Req	INDM	5015	Legal Aspects of Industry	3		Spring20
LSS	INDM	6580	Advance Strategic Quality and Standards	3		Sum20
LSS	INDM	5212	Production and Operation Management	3		Fall20
LSS	INDM	5222	Principles and Practices of Lean Systems	3		Fall20
LSS	INDM	5232	Seminar in Lean Six Sigma	3		Spring21
Req	INDM	5160	Organizational Dynamics	3		Spring21
Req	INDM	5110	Current Issues in Industry	3		Fall21
Req	INDM	5230	Seminar in Industrial Management	3		Fall21
			Graduate Program Semester Hour Total	**33**		

Note: .....

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Program of Study - Master of Science Degree (MS)

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Name: ..... Date: .....

Email address: .....

Phone number: .....

Major/Concentration: .....

Graduate Certificate Yes/No, if Yes, ...

Program advisor: .....

Proposed graduate course requirements:

	Prefix	Course #	Course Title	Credit-hr	Grade	Sem/Year
			Graduate Program Semester Hour Total			

Note: .....

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Commencement Ceremony at UCM

UNIVERSITY OF
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