

# 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 2015**

## Welcome

### To our prospective students:

I take this opportunity to welcome you to our Graduate programs. We appreciate your interest in the School of Technology and we hope your learning experience will be a great one. Our experienced faculty and staff will lend their expertise in support of your professional development. Our institution has a great reputation of teaching based upon current information available in each field of study to meet industry demands. Once again, we appreciate your participation interest and we trust you will be pleased with your graduate education.

Sincerely,

*Doug Koch*

Dr. Doug Koch  
Chair-School of Technology



### Dear prospective students:

Thank you for your interest in our graduate programs. As the Graduate Coordinator for the School of Technology, each student will work with an advisor to develop a program of study. This is your long range plan of coursework to complete the degree Master of Science. These programs are specifically designed to prepare students for careers in technology and management. The curriculum includes much of the content found in a standard MBA program with an added emphasis on manufacturing, construction, and the service industries. Our goal is to provide students with professional and technical knowledge and skills necessary for a successful career in management, technology and applied engineering. I look forward to working with each of you in the future.

Sincerely,

*Ronald Woolsey*

Dr. Ronald Woolsey  
Graduate Coordinator - School of Technology



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**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.

## 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.

## Program Accreditation

Central Missouri is a state leader in program-specific accreditations through national associations, and we are fully accredited by the North Central Association of Colleges and Schools.

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.



## 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.

Benchmark Areas and Competencies		Program Courses																				
		IndM 4010	IndM 4210	IndM 4220	IndM 4230	IndM 4240	IndM 4250	IndM 4260	IndM 4280	IndM 5015	IndM 5020	IndM 5212	IndM 5222	IndM 5232	IndM 5230	IndM 5240	IndM 5260	IndM 6580	SOT 5010	SOT 5290	EngT 4580	
Management Skills	Industry: Structures and Strategies		X					X				X										
	Leadership		X		X		X	X					X		X			X				
	Managing a Team		X		X		X	X		X					X			X				
	Manager Etiquette							X														
	History of Industry	X	X	X		X				X												
	Total Quality Management				X							X	X	X				X				X
	Lean Systems and Tools				X							X	X	X				X				X
	Organizational Management		X				X	X										X				
Knowledge Management	X	X		X		X				X												
Project Mgt	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				
	Transportations					X				X	X				X							
Human Resources	Labor Relations	X					X	X		X												
	Ethical Issues						X	X		X												
	Legal Issues	X								X	X					X			X			
	Sexual Harassment	X						X		X												
	Motivation							X		X												
	Diversity/Careers	X						X														
	Contemporary issues in workplace	X	X					X														
Communication	Group Dynamics						X	X							X							
	Presentations					X	X	X			X				X						X	
	Creativity & Innovation			X			X								X						X	
	Information Systems	X	X	X			X				X					X					X	
	Entrepreneurship	X	X					X														
Industrial Economy	Managing Internationally		X							X	X											
	Facility Management			X		X					X					X						
	Environmental & Waste Mgt	X		X		X	X									X						
	Energy and Sustainability	X				X	X				X					X						
	Risk and Sensitivity Analysis															X						
	ROR/ROI and investment															X						
	ISO 9000 & Baldrige award				X							X	X	X			X				X	
Technical	Mechanical Systems			X		X										X						
	Drafting, CAD/CAM	X		X		X	X				X						X					
	Structural Elements			X		X																
	Measurement & Statistics			X							X				X	X	X		X	X	X	
	Quality & Process Control	X		X		X					X				X						X	
	Design Failures			X		X			X	X												X
	Industrial Automation					X					X											
Research	Experimental Design			X				X			X			X					X	X		
	Research Method & Development			X				X			X			X					X	X		
	Statistics for scientific research							X												X		
Technology	Impact of Technology	X				X					X								X			
	Digital Communication	X									X							X	X			
	Technology Assessment	X					X											X				
	Emerging Technology/Innovation	X									X											

Revised: 09/20/2013

## 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 7 and computer requirement on page 42.

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

<http://www.ucmo.edu/sotgrad/programs/im.cfm>

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 average age was 40 with a mean salary of \$65,000 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.

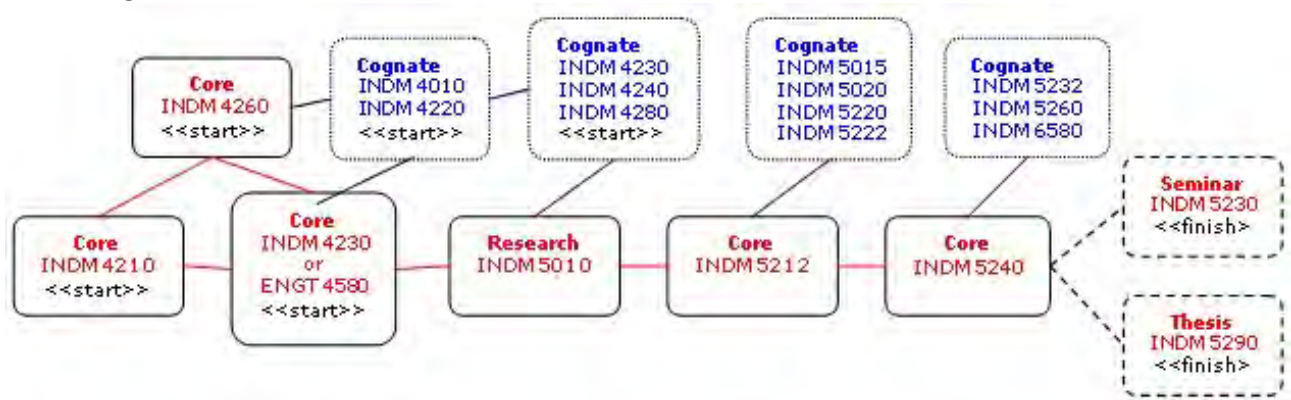
Analyzes division or department budget requests to identify areas in which reductions can be made, and allocates operating budget. Confers with administrative personnel, and reviews activity, operating, and sales reports to determine changes in programs or operations required. Directs preparation of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



### ***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.

### Technology Skills

Outcome #8 – Understand, communicate, and assess technology.

- The student will understand the impacts and be able to assess technology
- 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 – Industrial Management

### Required Courses (21-24):

IndM 4210	Industrial Management	3
IndM 4260	Organizational Dynamics	3
SOT 5010	Applied Research for Technology	3
IndM 5212	Production & Operations Management	3
IndM 5240	Engineering Economy	3
IndM 4230	Lean & Quality Management	3

### Choose

IndM 5230.....3

Seminar in Industrial Management

*Required to choose 4 from below*

SOT 5290.....6

Thesis (*Two Semesters & Statistics*)

*Required to choose 3 from below*

OR

### Cognate courses (9-12):

IndM 4010	Current Issues in Industry	3
IndM 4220	Human Factors Engineering	3
IndM 4230	Lean and Quality Management	3
IndM 4240	Facilities Engineering	3
IndM 4250	Project Management	3
IndM 4280	Industrial Statistics	3
IndM 5015	Legal Aspects of Industry	3
IndM 5020	International Technology Management	3
IndM 5220	Applied Operation Research	3
IndM 5222	Principles and Practices of Lean Systems	3
IndM 5232	Seminar in Lean Six Sigma Implementation	3
IndM 5260	System Analysis & MIS	3
IndM 6580	Advanced Strategic Quality and Standard	3

**Minimum Program 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 34.

## **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. IndM4210/01, 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: [instructor@ucmo.edu](mailto:instructor@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. Instructions for logging on are included in this package. Log on to the course as soon as you receive this letter. 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 and 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 Director of the Office of Accessibility Services, Barbara Mayfield, M.S., J.D., at [Mayfield@ucmo.edu](mailto:Mayfield@ucmo.edu) or 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.

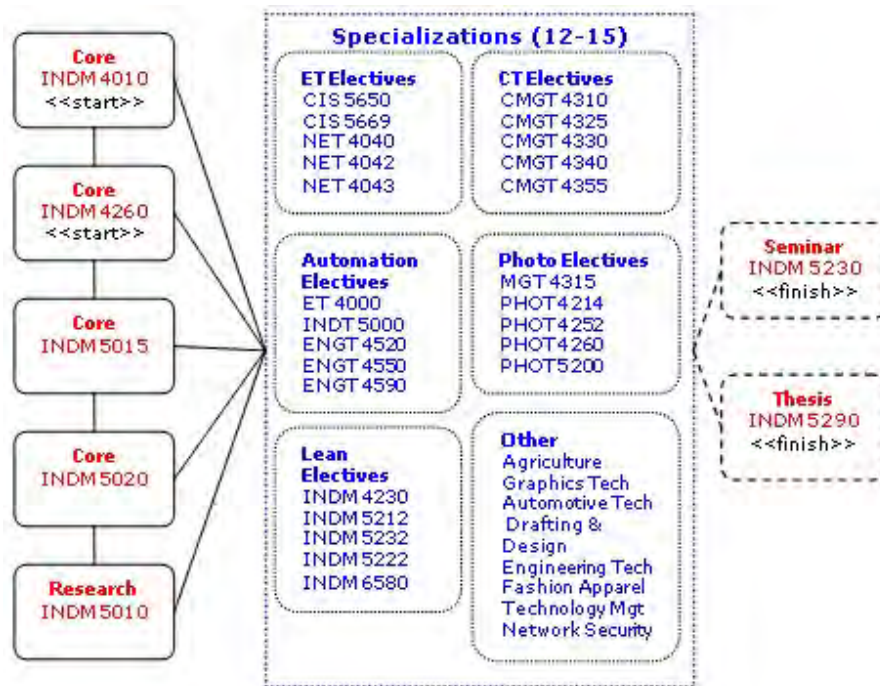
Applicants must have an appropriate distribution of undergraduate course work including a minimum of 18 semester hours of relevant technology, discipline specific related courses and/or work experience. Students are able to select coursework to meet their individual career goals. The program of study 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. The Photography specialization also requires submission of a "Photographic Portfolio", see page 14. More information is available on the program website at <http://www.ucmo.edu/sotgrad/programs/tech.cfm> 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,
  - Graphic Arts Technology Management,
  - Industrial Technology,
  - Manufacturing Management,
  - Computer Integrated Manufacturing,
  - Robotics and Automation,
  - Photography
- 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 Courses:**

IndM 4010	Current Issues in Industry	3
IndM 4260	Organizational Dynamics	3
SOT 5010	Applied Research for Technology.	3
IndM 5015	Legal Aspects of Industry	3
IndM 5020	International Technology Management	3

**Research**

IndM 5230	Seminar in Industrial Management	3
<b>OR</b>		
SOT 5290	Thesis	6

**Departmentally Approved Graduate Electives**

12-15  
 Automotive Technology Management, Computer-Aided Drafting & Design Technology, Construction Management, Electronics Technology, Engineering Technology, Fashion: Textile and Clothing in Business, Graphic Arts Technology Management, Industrial Technology, Manufacturing Management, Computer Integrated Manufacturing, Robotics and Automation, Photography, and Safety Sciences.

**Minimum Program 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 34-42.

**Elective Emphasis** (NOTE: all courses must be taken for graduate credit)  
**(12 semester hours with thesis, 15 semester hours with non-thesis Seminar)**

**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.*

- ET 4000 Special Projects in Electronics Technology (ET) (3)
- SOT 5000 Special Problems in Technology (CNC) (3)
- ENGT 4520 Robotics and Automation (3)
- ENGT 4590 Computer Integrated Manufacturing (3)
- ENGT 4221 Manufacturing Problem Solving (3)

**Automotive emphasis minimum of 12 - 16 semester hours**

- ATM 4032 Hydraulics & Pneumatics (3)
- ATM 4038 Advanced Hydraulics (3)
- ATM 4410 Intermodal Surface Transportation (3)
- SOT 4000 Spec Proj in Technology; take Auto Dealership Mgt. or Parts Dist. & Marketing (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 4310 Construction Safety (3)
- CMGT 4325 Advanced Estimating & Cost Analysis (3)
- CMGT4355 Computer-Based Project Control (3)
- Choose any two from the list below: 6-9 semester hours*
- CMGT 4330 Mechanical Systems for Buildings (3)
- CMGT 4340 Solar Energy for Building Construction
- CMGT 4380 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 4170\*\* Computer-Aided Drafting & Design for Engineering Technology (3)
- CADD 4180\*\* Industrial Design (3)
- SOT 4570 Computer Graphics (3)

*Elective: Choose 3 to 6 semester hours*

- CADD 4114 Advanced Technical Problems in Drafting (1-3)
- CADD 4124 Geometric Dimensioning & Tolerancing (3)
- CADD 4175 Advanced 3D Analysis and Rapid Prototyping (3)
- GRAP 4500 Special Projects in Graphics (1-3)
- GRAP 5500 Special Problems in Graphics (3)

\*\* These courses are required in the BS in Computer-Aided Drafting & Design Technology Program

**Electronics Technology emphasis minimum of 12 - 15 semester hours**

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

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

*Choose one option below: 9 Semester hours*

**Network Operating Systems**

NET4040 Fund of Network Operating Systems (3)

NET4042 Network Servers and Services (3)

NET4043 Network Services and Infrastructure (3)

OR

**Network Security**

NET4500 Managerial Design for Secure Networks (3)

NET4501 Network Security Management I (3)

NET4502 Network Security Management II (3)

**Approved Substitutions:**

CIS 5660 Legal Environment of Information Systems may substitute for IndM 5015

Safe 4940 Introductory Quantitative Methods may substitute for IndM 4280

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 for the courses below.*

IndM 5240 Engineering Economy (3)

IndM 5260 Systems Analysis and Management Information Systems (3)

ENGT 4520 Robotics and Automation (3)

ENGT 4221 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 4490 Internship (3)

*Elective: Choose 6 to 9 semester hours*

Select any three from the following courses:

FAME 4410 Architectural Interiors (3)

FAME 4414 Advanced Technical Problems (3)

FAME 4424 Pattern Design (3)

FAME 4430 Merchandising Applications (3)

FAME 4433 International Apparel Technology (3)

FAME 4434 Fashion History (3)

FAME 4442 Advanced Textiles (3)

FAME 4444 Fashion Merchandising (3)

FAME 4445 Senior Seminar in Fashion (3)

FAME 4450 Special Problems in Textiles and Clothing (3)

**Graphic Arts Technology Management emphasis 12 - 15 semester hours**

GRAP 4038 Principles of Color Reproduction (3)

GRAP 4051 Print Production (3)

GRAP 4053 Graphic Arts Production Analysis (3)

GRAP 4500 Special Projects in Graphics (3-6)

**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 4220 Human Factors Engineering (3)  
IndM 4240 Facilities Engineering (3)  
IndM 4280 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 4240 Facilities Engineering (3)  
IndM 5212 Production & Operations Management (3)  
IndM 5240 Engineering Economy (3)  
SOT 4000 Special Proj. in Technology; take ENGT 3510 Engineering Planning & Control (3)  
SOT 5000 Special Prob. in Technology; take ENGT 3530 Inspection & Quality Control (3)

**Photography emphasis minimum of 12 - 15 semester hours**

*Required Specialization courses: 6 hours*

SOT 4000 Special Projects in Technology; take PHOT 3290 Architectural Photography (3)  
PHOT 5200 Special Problems in Photography (1-6) Prerequisites: PHOT 1210, PHOT 1211

*Elective: Choose 6 to 9 semester hours*

SOT 5000 Special Problems in Technology; Exhibition/Independent study in Photography (3)  
T&OE 5120 Preparation of Instructional Materials (3)  
CTE 4145 Curriculum Construction (3)  
SOT 5022 Internship

**Approved Substitutions:**

MGT 3310 Principles of Management (3) may substitute for IndM 4210 (3)  
COMM 4250 Mass Communication Law (3) may substitute for IndM 5015 (3)  
Safe 4940 Introductory Quantitative Methods (3) may substitute for IndM 4280 (3)  
SOT 5000 Special Problems in Technology-Exhibition (3) may substitute for INDM 5230 (3)

**Electives available to Non-UCM Photography Graduates:**

\*PHOT 4200 Color Imaging (3) Prerequisite: PHOTO 2210, 2200, 3230 (Not in Graduate Catalog)  
\*PHOT 4252 Portfolio Photography (3) Prerequisite: Senior standing or consent of chairperson/instructor.  
\*\*PHOT 4210 Wedding and Location Photography (3) Prerequisite: PHOT 3250.  
\*\*PHOT 4214 Advanced Technical Problems in Photography (1-3) Prerequisites: minimum 2.5 GPA, written contract/proposal with objectives and written department consent  
\*\*PHOT 4220 Advanced Digital Imaging (3) Prerequisite: PHOTO 3230.  
\*\*PHOT 4230 Business Management for Photographers (3)  
\*\*PHOT 4250 Advanced Color Portraiture (3) Prerequisites: PHOT 1210 and PHOT 3250.  
\*\*PHOT 4260 Advertising Photography (3) Prerequisite: PHOT 3280.

\***Note:** Courses required in UCM undergraduate Photography major

\*\***Note:** Courses required in UCM undergraduate Photography elective areas

**Other areas of specialization:**

Agricultural, General Graphics, and Industrial Technology

# M.S. in Technology with an Emphasis in Photography

## Portfolio Review Form

Applicant's Name: \_\_\_\_\_

### Requirements for photography candidate portfolio submission

The portfolio provides a visual statement of the applicant's maturity in terms of technical skills and aesthetic development. Applicants will send twenty to thirty high resolution digital images (tif or psd file format) on a CD or DVD representing a cohesive body of recent work appropriate to the career goals statement of purpose. Also, each candidate must provide a link to their required on-line visual web presence (image gallery, image blog, etc.).

### Portfolio submission process and checklist to be used by the photo faculty on the portfolio

The candidate's portfolio and admissions packet will be forwarded from the graduate coordinator to the photography program coordinator for action. All full-time faculty photography members will be notified via e-mail of the availability of a candidate's portfolio for review. For approval, two faculty members must sign-off on the review form, indicating approval of the work for acceptance in the MS program. The work will be evaluated (normally within one month) relative to its technical and artist merit, based on the following guidelines:

#### 1. Originality/Creativity

1.1. Development of ideas and curiosity; personal expression.

#### 2. Content

2.1. Strength of concept; synthesis and compatibility of design.

2.2. Does the applicant articulate their ideas and visual elements?

2.2.1. The work must communicate through the use of photography as a visual language.

#### 3. Craftsmanship

3.1. Does the applicant understand the materials and techniques used? Is the work well presented?

3.1.1. Technical quality and control of the process, camera craft, processing craft and final presentation

#### 4. Design

4.1. Does the applicant understand the application of art principles and elements? The use of light and shadow, foreground and background?

4.1.1. Composition, use of color, clarity of vision

#### 5. Effort

5.1. Is the applicant engaged in the photographic discipline?

5.1.1. Does the work demonstrate a commitment, individual growth potential, risk taking, courage, and visual confidence?

The portfolio has been reviewed and accepted by the below signed full-time photography faculty at the University of Central Missouri.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Action	
Approve	Deny

## 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 4100 - Network Device Configuration **OR** Instructor's consent based on experience and skills testing.
2. Bachelor's degree in a *non-related field* **AND** NET 4100 - 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

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.

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 4230 or ENGT 4580)

- **IndM 4230 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 4580 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



Baldrige Award), leadership, empowerment and human development, and standard certification training for quality managers and professionals.

### **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 Masters 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 Baldrige 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.

## **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:

- **NET4500 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. (Substitute NET4000/NET3068)
- **NET4501 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. (Substitute NET5000/NET4060)

- **NET4502 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)
- **INDM5015 Legal Aspects of Industry.** 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.
- **INDM5260 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 Masters 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**

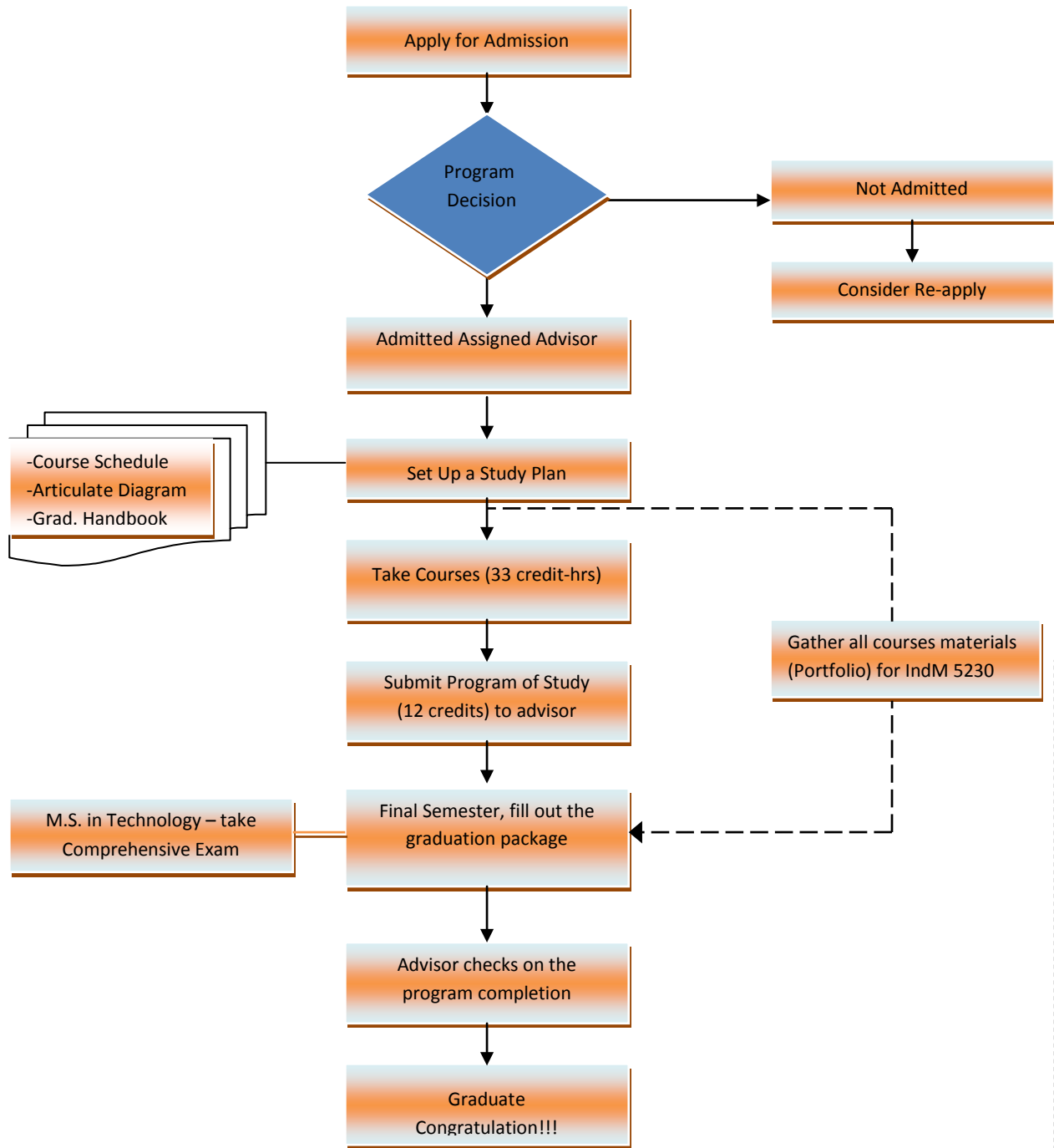
The estimated cost is \$328 per credit hour plus the cost of textbooks, software, and CD's. (Note: tuition and other costs are subject to change.)

## 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 include the following steps:

1. To begin your study, we suggest that you set up a study plan using these major documents:
  - o Articulate Diagram (page 4 for IM program OR page 9 for Technology program)
  - o Course Schedule 2010-2014 (page 45)
  - o Graduate Handbook and read the "Graduation Requirement". This information is also available at <http://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 required a minimum of 12 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.
3. Create an Application for Approval of Program of Study form within a month of completion of 12 hours of graduate study, see appendix B for example. Then submit the completed form to the advisor by fax or email. To fill out online, email your advisor for the form. If you want to review your Program of Study on Degree works, instructions are available at <http://www.ucmo.edu/graduate/current/programs.cfm>
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, you will complete the graduation package, see page 24, request your package by calling the Graduate Office at 660-543-4621.
  - 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. See Example of writing a brief proposal of creative project/thesis on pages 43-44. The UCM thesis manual is available online at <http://www.ucmo.edu/graduate/current/manual.cfm>
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.

# 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 should also attend the International Graduate Student Orientation.

### ***Set-up a Study Plan and Enroll in classes***

- ✓ Use the Course Schedule 2010-2014 on page 45 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 to complete it. See sample of POS in Appendix B.

### ***Thesis***

- ✓ Students deciding to complete a thesis will enroll IndM 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 <http://www.ucmo.edu/graduate/current/manual.cfm>.

### ***Comprehensive Exam***

- ✓ Students majoring in Technology must pass the comprehensive examination; 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, call the Graduate School to obtain a commencement packet. Make sure you complete all of the program requirements:
  - Earn a minimum of 33 semester hours of graduate credits applicable on an approved program, at least 18 semester hours must have been in 5000/6000 level.
  - 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

## Graduate Program Admission

**Admission Process: For U.S. Citizens, Legal Alien, Permanent Residence, students from U.S. territories. (For other, 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

<http://www.ucmo.edu/academics/catalogs/>

**To Apply go to:** <http://www.ucmo.edu/graduate/future/>

Your online application will be held until the fee and your official transcript(s) are received. Please request your transcripts be sent.

### **E-mail**

1. A brief statement describing educational objectives and career goals.
2. A current Resume
3. Email both documents to [chorta@ucmo.edu](mailto:chorta@ucmo.edu) or [Woolsey@ucmo.edu](mailto:Woolsey@ucmo.edu)

### **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 that you visit the website

<http://www.ucmo.edu/graduate.cfm>

To read the Missouri Law (HB1549) requirement on the acceptable documentation.

## **Admission Process: For International**

To apply to the Graduate School at the University of Central Missouri:  
Application available via online at: <http://www.ucmo.edu/graduate/int/>

1. Complete the online form.
2. Pay the application fee.
3. Official academic records from each post-secondary institution attended.
4. Proof of English Proficiency: TOEFL
5. A brief statement describing educational objectives and career goals.
6. A current Resume
7. Three letters of recommendations
8. An official statement of financial support and current bank statement in U.S. dollars.

Please refer to the website <http://www.ucmo.edu/graduate/int/> , 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 (August) May 1; Spring (January) October 1.

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

**Rachel Mitchell** - International Admissions at the Graduate Office, email: [ramitchell@ucmo.edu](mailto:ramitchell@ucmo.edu)

**Trisha Boyd** - International Admissions at the International Office, email: [tboyd@ucmo.edu](mailto:tboyd@ucmo.edu)

Or Email the general admissions address: [intladmit@ucmo.edu](mailto:intladmit@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 \_\_\_\_\_ Student # \_\_\_\_\_

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 <http://www.ucmo.edu/technology/masters/im.cfm>, link "Career Goal Statement".

## Graduation Application Process

The **following forms need to be submitted before graduate** to initiate the clearing process for receipt of your degree.

<b>FORM</b>	<b>SUBMIT TO</b>
<input type="checkbox"/> Creative Project/Thesis Topic Approval <i>(See Appendix VII)</i>	Graduate Coordinator (SOT) - Dr. Ron Woolsey
<input type="checkbox"/> Request for Transcript <i>(See Appendix VIII)</i>	Registrar's Office (Send to program advisor, mark "Send Now" in the form)
<input type="checkbox"/> Application for Degree Card <i>(See Appendix IX)</i>	Graduate Coordinator (SOT) - Dr. Ron Woolsey (Please read below)
<input type="checkbox"/> Certificate of Eligibility <i>(See Appendix X)</i>	Graduate Coordinator (SOT) - Dr. Ron Woolsey (Advisor signs, then forward to The Graduate School)
<input type="checkbox"/> Permanent University Record <i>(See Appendix XI)</i>	Alumni Relations

**Application for Degree Card:** How your name appears on the diploma depends on how the Application for Degree Card is filled out. Make certain that the name on this card appears as how you want it on your diploma. The address on the card is the address where the diploma will be mailed. The diploma will take up to 6 weeks after graduation to arrive. Make certain that you are able to receive your diploma from the address stated on the Application for Degree Card. This card must be signed by your advisor, who will then forward the card to The Graduate School.

**Thesis:** All theses (if applicable) are due in the Graduate School **3 weeks prior** to commencement. Please follow the routing process outlined in the Policies and Procedures section of *the Central Thesis Manual*. After completing the routing process, a binary number will be issued by the Graduate School and must be reported to your advisor. Bound copies are to be ordered for you advisor and the JCK Library.

**U Grades:** All U grades (incomplete) must be removed prior to graduation.

**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

## Frequently Asked Questions

### Frequently Asked Questions

**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](http://www.ucmo.edu/technology)

M.S. Industrial Management: <http://www.ucmo.edu/sotgrad/programs/im.cfm>

M.S. Technology: <http://www.ucmo.edu/sotgrad/programs/tech.cfm>

Student Financial Services: <http://www.ucmo.edu/sfs/>

UCM Online: <http://www.ucmo.edu/ucmonline/>

**Q: How do I apply?**

You can apply online at <http://www.ucmo.edu/graduate/future/>

For international students, please visit <http://www.ucmo.edu/graduate/int/>

**Q: When can I enroll?**

You are eligible to enroll as soon as you received a letter saying you are admitted to the program.

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

The M.S. programs in Industrial Management and 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. 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 2-3 years for completion. The program also provides some summer session courses.

**Q: How much is tuition?**

For the latest information on tuition and fees, visit <http://www.ucmo.edu/graduate/future/gradcost.cfm>

**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 on

<https://www.ucmo.edu/graduate/support/assist/>

**Q: How does an online program work?**

The Office of Extended Studies provides detailed information on distance learning, visit the website

<http://www.ucmo.edu/es/>

**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.

**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.

## 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 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 <http://technology.indstate.edu/consortphd/>

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

**University Profile:** University of Central Missouri 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. Our new mission has expanded this commitment, and means that Central will continue to integrate the latest technologies into every level of our comprehensive liberal arts curriculum, whether you major in computer information systems, biology or music.

Central offers many programs you won't find at other colleges and universities. Our university is a leader in discipline-specific accreditations within Missouri higher education and several Central programs are nationally or internationally known. Central gives you many opportunities to broaden your horizons intellectually, culturally and socially.

**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):**

American Council for Construction Education

American Design Drafting Association

Council for Technical Teacher Education

Council on Accreditation for Aviation

International Association for Management Education

Missouri State Board of Nursing

Association of Technology, Management, and Applied Engineering (ATMAE)

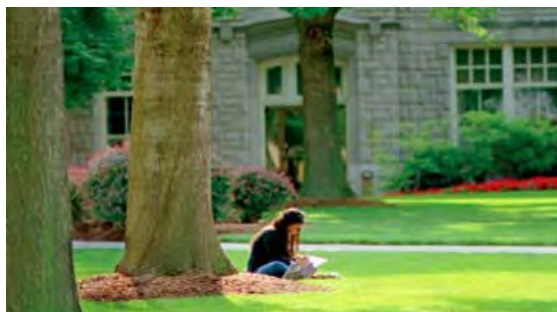
National League for Nursing

North Central Association of Schools and Colleges

Related Accreditation Commission of the Accreditation Board for Engineering & Technology (RACofABET)

## 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 <http://www.ucmo.edu/graduate/future/gradcost.cfm>

**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 and Veteran Services in person or by mail to Administration Building 104 Warrensburg, MO 64093, or by telephone: 800-729-2678 or 660-543-4040, FAX: 660-543-8080, or e-mail at [fedaid@ucmo.edu](mailto:fedaid@ucmo.edu)

**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.
- **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 at <http://www.ucmo.edu/sfs/explore/scholarships/grad.cfm> (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:**

<https://www.ucmo.edu/graduate/support/assist/>

**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 \$5,000 graduate 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](http://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 School Office**

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)  
 FAX: (660) 543-4778, Email: [gradinfo@ucmo.edu](mailto:gradinfo@ucmo.edu)  
 Enrollment in Courses: (660) 543-4621 or <http://www.ucmo.edu/registrar/enrollment/>  
 Graduate Assistantship and Scholarship, Thesis:  
 Marcia Clemens at (660) 543-4092 or [clemens@ucmo.edu](mailto:clemens@ucmo.edu)  
 Letters of Acceptance and Proof of Enrollment, Programs of Study, Graduation:  
 Tina Church-Hockett 660-543-4897 or [church@ucmo.edu](mailto:church@ucmo.edu)  
 Transcripts: Registrars Office at (660) 543-4900 or <http://www.ucmo.edu/registrar/>  
 Payment of Courses, Billing Questions: Revenue at (660)-543-4117 or <http://www.ucmo.edu/sfs/pay/>

**International Student Center:**

**Website:** <http://www.ucmo.edu/international/staff.cfm>  
 University of Central Missouri, Elliot Union 302, Warrensburg, MO 64093, U.S.A.  
 Phone: (660) 543-4195, FAX: (660) 543-4201, Email: [intladmit@ucmo.edu](mailto:intladmit@ucmo.edu)

**School of Technology – Program Contacts**

**Website:** <http://www.ucmo.edu/technology>

Faculty	Area	Office	Phone (660)	Email
Douglas Koch	SOT-Chair	Grinstead 009	543-4439	koch@ucmo.edu
Ronald Woolsey	MS & PhD Program Coordinator	G 009	543-4340	woolsey@ucmo.edu
Lynn Alkire	Fashion: Textiles and Clothing in Business	G 224	543-4202 or 543-8184	alkire@ucmo.edu
Mark Rankin	Graphic Arts Technology Mgt	G 103B	543-4849	rankin@ucmo.edu
Cynthia Horta	Technology Innovation	G 009	543-4340	chorta@ucmo.edu
William Ford	Management & Technology	TRG 318	543-4940	wford@ucmo.edu
Thomas Mitchell	Photography	G 105E	543-8914	mittchell@ucmo.edu
Ronnie Rollins	Electronics & Network Technology	TRG 304	543-4436	rollins@ucmo.edu
David McCandless	Construction Mgt	COT 203	543-4789	dmccandless@ucmo.edu
Kyle Palmer	Computer-Aided Drafting & Design Technology	G 207A	543-4303	palmer@ucmo.edu
Troy Ollison	Industrial & Engineering Technology	G 014B	543-8660	ollison@ucmo.edu
Scott Wilson	Automotive Technology Mgt	TRG 318C	543-4940 or 543-4065	swilson@ucmo.edu
Suhansa Rodchua	Industrial Mgt	TRG 318D	543-4438	rodchua@ucmo.edu

## **Appendix A:**

Course Descriptions  
Computer Requirement  
Creative Project/Thesis Topic Approval  
Course Schedule 2015-2021

## Course Descriptions

### **ATM - Automotive Technology Management**

**ATM 4025 Motorcycle Systems Maintenance (3: 2 lecture, 1 lab)** Theory, maintenance and repair of motorcycles and systems. Special emphasis on diagnostics, repair, and adjustment procedures. Students will need to provide a motorcycle.

**ATM 4032 Hydraulics and Pneumatics (3: 2 lecture, 1 lab)** Fluid power principles with practical application of hydraulics, pneumatics, and fluidics. Prerequisite: MATH 1111.

**ATM 4038 Advanced Hydraulics (3)** Hydraulic system analysis and troubleshooting along with servo and electronic control theory and application. Prerequisites: ATM 4032.

**ATM 4134 Advanced Vehicle Systems (2)** This course is a study of advanced peripheral electronic systems in automobiles. Emphasis is placed on systems as they pertain to hybrid and electric vehicles. Prerequisite: ATM 3134.

**ATM 4410 Intermodal Surface Transportation (3)** Surface transportation (motor vehicle, pipeline, rail, and water) in the United States as seen from an integrated, intermodal viewpoint. Major aspects include systems analysis, organization, operations, financing, research and development, training, and regulation. Economic, social, and political factors are considered.

### **AMT - Aerospace Manufacturing Technology**

**AMT 4060 Aerospace Manufacturing Safety (3)** Safety, health and environmental issues in aerospace manufacturing with an emphasis on the management of safety programs in manufacturing industries. Prerequisite: AMT 3210.

**AMT 4221 Manufacturing Problem Solving (3)** A micro-level look at issues that directly affect processes, procedures, and management within the manufacturing industry.

**AMT 4250 Project Management in Aerospace Manufacturing (3)** Managing aerospace manufacturing projects. Students deal with decision making, organizing, planning, and controlling manufacturing projects in the aerospace industry. Prerequisite: AMT 3510.

### **CMGT - Construction Management**

**CMGT 4310 Construction Safety (3)** Construction safety and health conditions on the job as they relate to workers, supervisors, inspectors, and the public. Prerequisite: CMGT 2310 or junior status or instructor consent.

**CMGT 4325 Advanced Estimating and Cost Analysis (3: 2 lecture, 1 lab)** An advanced course in construction cost estimating utilizing the computer and associated professional software to assist the estimator. Prerequisites: CMGT 2310 and CMGT 2325.

**CMGT 4330 Mechanical Systems for Buildings (3)** Mechanical systems integrated with buildings and other equipment. Prerequisite: CMGT 2310 or junior status.

**CMGT 4340 Solar Energy for Building Construction (3)** An analysis of solar energy systems and components as they apply to types of structure, sites, and climate regions.

**CMGT 4355 Computer-Based Project Control (3: 2 lecture, 1 lab)** An advanced course in construction project scheduling utilizing the computer and associated professional software to assist the project scheduler. Prerequisite: CMGT 3355.

**CMGT 4380 Heavy Construction: Methods and Materials (3)** This course explores heavy construction methods and materials. Included are the concepts of site investigation, heavy construction means and methods, heavy

construction material characteristics and costs, heavy equipment types and uses, and equipment costs, production rates and unit cost of production. Prerequisites: CMGT 2310 and MATH 1111.

### **CADD - Design and Drafting Technology**

**CADD 4114 Advanced Technical Problems in Drafting (1-3)** Individual or group work on advanced technical problems in drafting. Provide exploration of content not available through normal course offerings. May be repeated for a maximum of 6 semester hours. Prerequisites: 2.5 GPA, written contract/proposal with objectives and written department consent.

**CADD 4124 Geometric Dimensioning and Tolerancing Principles for Engineering Technology (2)** Basic theory and application of geometric dimensioning and tolerancing practices applicable to working drawings of machine parts. Prerequisite: CADD 1120.

**CADD 4150 Applied Civil Design/Drafting (3)** 3D modeling applications for design objects such as concepts will assist graduates working in the fields of civil design and engineering. Prerequisites: CADD 3150 with a grade of C or better and CMGT 2340. Available to graduate students with instructor consent.

**CADD 4162 Commercial Architectural Design/Drawing (BIM) (3)** Light commercial architectural plans and problems are studied and drawings are developed using manual and CADD techniques including BIM. Prerequisite: CADD 3160. An additional fee is associated with this course.

**CADD 4170 Computer Aided Drafting and Design for Engineering Technology (3: 3 lecture, 0 lab)** Advanced industrial applications of computer aided drafting systems. Three dimensional modeling and design using interactive graphics techniques and standard design elements. Prerequisite: CADD 2170. An additional fee is associated with this course.

**CADD 4172 MEP (Mechanical, Electrical and Piping/Plumbing) (3)** MEP (Mechanical, Electrical and Piping/Plumbing) systems are designed and drawings are developed using manual and CADD techniques including BIM. Prerequisites: CADD 4162 with a grade of C or better.

**CADD 4174 Machine Design (3:3 lecture, 0 lab)** Drafting problems involving the elements of the designing and/or redesigning of mechanisms and machines. Prerequisites: CADD 1120 with a grade of C or better and CADD 4170 with a grade of C or better; CMGT 2020 and ENGT 2530. An additional fee is associated with this course.

**CADD 4175 Advanced 3D Analysis and Rapid Prototyping (3)** Advanced course which surveys the application of computer drafting and design systems and how they relate to 3D analysis and rapid prototyping. Prerequisites: CADD 1110, CADD 2170, CADD 4170, CMGT 2020.

**CADD 4180 Industrial Design (3)** Study and application of the design process and design principles related to industrial products. Prerequisite: CADD 4170. An additional fee is associated with this course.

### **ENGT - Engineering Technology**

**ENGT 4060 Aerospace and Manufacturing Safety (3)** Safety, health and environmental issues in aerospace manufacturing with an emphasis on the management of safety programs in manufacturing industries.

**ENGT 4221 Manufacturing Problem Solving (3)** A micro-level look at issues that directly affect processes, procedures, and management within the manufacturing industry.

**ENGT 4520 Robotics and Automation (3)** Automated manufacturing equipment, computer integrated manufacturing systems, and the use of industrial robots. Computer programming background recommended.

**ENGT 4550 Simulation in Engineering Technology (3)** Collection of methods and applications to simulate the behavior of manufacturing and service systems. Emphasis on hands-on time with Software utilizing case studies, and lab exercises. Prerequisite: Graduate status.

**ENGT 4580 Quality Systems Engineering (3)** The principles and practices of Total Quality Managements and the decision making tools and techniques utilized by professionals in today's successful industries.

**ENGT 4590 Computer Integrated Manufacturing (CIM) (3)** Emphasis on product planning and engineering, production planning, control, and execution. Includes integration of computer numerical control (CNC) machines, robotics, material handling, and quality control. Prerequisite: ENGT 4520 or instructor consent.

**ET - Electronics Technology**

**ET 4000 Special Projects in Electronics Technology (1-3)** Investigation of contemporary problems and issues in electronics technology by selected individuals or groups. May be repeated for a maximum of 6 semester hours.

**ET 4014 Advanced Technical Problems in Electronics (1-4)** Individual/group work on recent developments and advanced technical concepts. Experimentation and technical exploration of content not available through formal course offerings. May be repeated for a maximum of 8 semester hours.

**ET 5010 Special Problems in Electronics Technology (1- 3)** Meets individual student needs for additional research and/or laboratory experiences in the development of technical knowledge and skills in electronics technology. May be repeated for a maximum of 6 semester hours.

**FAME - Fashion and Apparel Merchandising**

**FAME 4410 Materials for Interior Furnishings (3)** A concentrated study of materials used for residential and commercial environments that include window and wall coverings, upholstered furniture, floor coverings, linens and accessories. Textile fabrics appropriate for various architectural period styles will be covered as well as trends for sustainable products.

**FAME 4414 Advanced Technical Problems in Fashion (1- 3)** Individual or group work on advanced technical problems in Fashion/Apparel Merchandising. Provide exploration of content not available through normal course offerings. May be repeated for a maximum of 6 semester hours. Prerequisites: minimum 2.5 Cumulative GPA, written contract/proposal with objectives/learning competency and written department consent.

**FAME 4424 Pattern Design (3)** The design and construction of garments from a basic pattern, using the principles of art as applied to dress design. Prerequisites: FAME 2430 and 3 semester hours of clothing construction.

**FAME 4425 Fashion Entrepreneurship (3)** Students will create a business plan based on fashion industry trends and consumer needs. Current computer software will be used to create retail sales plans and analyze profit/loss statements. Fashion retail personnel needs and store operations and management strategies will also be addressed. Prerequisites: FAME 3435.

**FAME 4430 Merchandising Applications (3)** Builds upon the necessary understanding, knowledge, and working applications of the basics for profitable fashion merchandising. Prerequisites: ACCT 2101 and must be taken concurrently with FAME 4444.

**FAME 4433 International Apparel Technology (3)** An analysis of economic, political, and cultural systems affecting international textile and apparel trade. An emphasis on how technology has influenced importing and exporting in the global fashion marketplace.

**FAME 4442 Advanced Textiles (3)** Comparative study of factors influencing the properties of fibers and fabrics as well as the performance of textile and apparel products. Lab period is used to test textile performance with standardized test procedures. Prerequisites: CHEM 1104 or equivalent and FAME 2442.

**FAME 4444 Fashion Merchandising (3)** Principles and practices of fashion manufacturing and merchandising. Prerequisites: FAME 3444, MKT 3410 and must be taken concurrently with FAME 4430.

**FAME 4445 Senior Seminar in Fashion and Apparel Merchandising (3)** This course provides hands-on learning experiences using technology that could be used by industry professionals. Students will use higher-order thinking to analyze location, competition, customers, and financial documents. This class not only teaches students how to compute retail math, but how to analyze and apply the figures to improve profits for existing and new businesses. Critical thinking, teamwork, and communication skills will all be emphasized, which will help graduates to succeed in an ever-changing work environment. Prerequisite: FAME 3435.

**FAME 4450 Special Problems in Textiles and Clothing (2-3)** Recent trends. Group and individual problems which will include reports, discussions, bibliographies, research, and experiments. May be repeated for a maximum of 6 semester hours. Prerequisite: FAME 2442.

**FAME 4490 Internship in Fashion and Apparel Merchandising (1-3)** Students will participate in a management training program to broaden intellectual awareness while gaining practical fashion industry experience. Performance-based goals and learning experiences will be evaluated by a company supervisor in coordination with the faculty instructor. Can be repeated for a maximum of 6 hours. Prerequisite: FAME 2442.

**FAME 5460 Seminar in Textiles and Clothing (2-3)** Investigation and discussion of particular problems in fashion and apparel merchandising. Students may conduct minor research studies of a professional nature which may lead to a thesis.

#### **GRAP - Graphic Arts/ Graphics**

**GRAP 4014 Advanced Technical Problems in Graphic Arts (1-3)** Individual/group work on recent developments and advanced technical concepts. Experimentation and technical exploration of content not available through formal course offerings in the department. By arrangement for qualified students. May be repeated for a maximum of 6 semester hours. Prerequisites: Written contract/proposal with objectives and written department consent.

**GRAP 4038 Color Science (3)** Technical aspects of process color reproduction; includes color theory, ink evaluation, densitometry, tone reproduction, printing characteristics, color correction, gray balance, color separation, and proofing. Laboratory experiences support lecture/theory content. Prerequisites: GRAP 2031 and GRAP 3045.

**GRAP 4040 Applied Color Management (1)** Application of color theory to the measurement and process control of color printing with a concentration on densitometry and colorimeter in order to meet industry production standards. Prerequisite: GRAP 4038.

**GRAP 4051 Print Production (3)** Applied experiences in management and technological applications in the production of printed material including prepress, press, and post press operations. Prerequisites: GRAP 2032, GRAP 2035, and GRAP 3051.

**GRAP 4053 Production Analysis (3)** A variety of printing requests are analyzed to determine printing specifications, production sequence, cost factors, material ordering, and technical problems that may arise during the actual printing. Course emphasis utilizes this analysis into a planning sequence of communications, scheduling, routing, dispatching, and work and material flow required for printing production. Prerequisites: GRAP 3034 and GRAP 3043.

**GRAP 4055 Estimating and Cost for Print (3)** Identification of costs relative to materials, operations, and labor utilized in the production of printed matter. Budgeting, forecasting, cost accounting, and budgeted hourly rates. Prerequisites: GRAP 4053.

**GRAP 4095 Senior Seminar in Graphic Tech (1)** Professional preparation integrating team building skills, problem solving, and analysis of current trends specific to graphic arts. Prerequisite: GRAP 3051.

**GRAP 4500 Special Projects in Graphics (1-3)** Investigation of contemporary problems and issues in graphics by selected individuals or groups. May be repeated for a maximum of 6 semester hours. Prerequisites: written contract/proposal with objectives and written department consent.

**GRAP 5500 Special Problems in Graphics (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 graphics. May be repeated for a maximum of 6 semester hours. Prerequisites: Written contract/proposal with objectives and written department consent.

### **INDM - Industrial Management**

**INDM 4010 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 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 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 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 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 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 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 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 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 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.

#### **MMGT - Manufacturing Management**

**MMGT 5562 Computer Numerical Control Applications (3)** Advanced applications in computer numerical control. Students will apply their knowledge of manufacturing processes and CNC programming in completing advanced projects. Prerequisite: MMGT 3562.

#### **NET - Networking**

**NET 4000 Special Projects in Networking (1-3)** Investigation of contemporary problems and issues in networking. Maybe repeated for a maximum of 6 hours.

**NET 4014 Advanced Technical Problems in Networking (1-4)** Individual/Group work on recent developments and advanced technical concepts in networking. Experimentation and technical exploration of content not available through formal course offerings. Written contract/proposal with objectives and written department consent. Maybe repeated for a maximum of 6 hours.

**NET 4040 Fundamentals of Network Operating Systems (3)** Installing, configuring, and administering Network Operating Systems. Prerequisite: NET 2058 or instructor consent.

**NET 4042 Network Servers and Services (3)** Implementing and Administering of Network Infrastructure and Directory Services Infrastructure. Prerequisite: NET 4040 or instructor consent.

**NET 4043 Network Services and Infrastructure (3)** Advanced implementing and administering of network infrastructure and directory services infrastructure. Prerequisite: NET 4042 or instructor consent.

**NET 4063 Network Support (3)** Topics in Local and Wide Area Network documenting, baselining, and troubleshooting methodologies and tools are used to troubleshoot OSI layers 1 to 7 utilizing Cisco Systems hardware. Prerequisite: NET4062 or instructor consent.

**NET 4064 Advanced Network Design (3)** Cisco Systems design considerations for IPv6, popular routing protocols, the Security Ecosystem, and both Traditional and Integrated Voice architectures. Prerequisites: NET 3062 or NET 4100 or instructor consent.

**NET 4100 Network Device Configuration (3)** A comprehensive overview of Cisco Systems device configuration. Prerequisites: Required for non-NET specialist. Not open to NET specialist. See your Adviser.

**NET 4500 Managerial Design for Secure Networks (3)** 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. Prerequisite: NET 4064 or NET 4100 or instructor consent.

**NET 4501 Network Security Management I (3)** 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. Prerequisite: NET 4100 or instructor consent.

**NET 4502 Network Security Management II (3)** An emphasis on security policy design and management, security technologies, firewall and secure router design, installation, configuration and maintenance, AA and VPN implementation using Cisco Systems' routers and firewalls. Prerequisite: NET 4501.

**NET 5000 Special Problem in Networking (2-6)** Meets individual student needs for additional research and/or laboratory experiences in the development of knowledge and skills in area of networking. Maybe repeated for a maximum of 6 hours.

#### **PHOT - Photography**

**PHOT 4214 Independent Studies (1-3)** A mentored course for student initiated research and discovery on advanced technical, aesthetic, or conceptual issues in photography. The student identifies the topic, and writes a detailed proposal of the purpose and outcomes of the project. This course is designed to provide an investigation of content not available through normal course offerings, and maybe repeated for a maximum of 6 semester hours. Prerequisites: Minimum 2.5 GPA, written contract/proposal with objectives and written department consent.

**PHOT 4215 Critique of Contemporary Photography (3)** This course surveys the modern development of photography beginning with 1900 to contemporary imaging styles, photographers, and systems. Course includes on-line discussion, written assignments, and critique concerning the comparative analysis of various periods, schools of thought, and particular individuals. Prerequisite: PHOT 3215 or instructor consent.

**PHOT 4230 Business Management for Photographers (3)** Explore the reality of owning and/or running a successful photographic business built on strong management principles, ethical standards, and other professional practices. Student assignments, reading materials, and group discussions will focus on production individual business plans and supportive material for projected photography specialty areas. An additional fee is associated with the course. Prerequisite: Senior status.

**PHOT 4240 Investigative Photography (3)** This course explores the myth that a visual image reveals meaning located in the subject represented. The idea of photographic truth is considered within concrete examples such as forensic, documentary, and scientific applications. Photography, as a recorder of light, simultaneously investigates reality and investigates the method of investigation that reality. This leads to novel seeing, producing a vision of things previously unseen, or abstract. An additional fee is associated with this course. Prerequisites: PHOT 1210, PHOT 1211, and PHOT 2220.

**PHOT 4250 Advanced Portrait Photography (3)** This course further develops the student's skills in portrait photography involving both studio and location. An emphasis is placed on sophisticated lighting techniques and conceptual approaches used to communicate essential aspects of personality and identity. An additional fee is associated with this course. Prerequisites: PHOT 1210, PHOT 1211, and PHOT 2250.

**PHOT 4260 Photography, Advertising, and Society (3)** This is an exploration of the use, context, and meaning of photography within advertising, mass media, and society. In addition to creating images, students will investigate how images in advertising and mass media are used and consumed by society. Effects on image meaning created by varying conceptual approaches, as well as the manipulation of the elements and principles of design are considered. An additional fee is associated with this course. Prerequisite: PHOT 3280 or consent of instructor.

**PHOT 4270 Portfolio (3)** Culminating experience in photography providing for the creation and production of portfolio to reflect personal career goals. An additional fee is associated with this course. Prerequisite: Senior status.

**PHOT 5200 Special Problems in Photography (1-6)** Individualized research or experience in Photography/ Imaging. Prerequisites: PHOT 1210, PHOT 1211.

**PHOT 5220 Readings in Photographic Imaging (3)** Students will conduct literature searches and address contemporary concepts and methodologies. Students will engage in a rigorous group critique process to develop a mature body of work, which combines experimental and analytical learning methods. The student will develop aesthetic and technical strategies for the production and presentation of photographic images. Prerequisite: Admission into the MS in Technology Program.

**PHOT 5230 Creative Project and Exhibition in Photography (3)** This course is considered to be the culminating experience in the program, involving the development of an independent creative project leading to new work. This course is taken the last semester of a student's program and may be repeated until all requirements are met. Prerequisite: Admission into the MS in Technology program.

**PHOT 5260 Contemporary Digital Imaging Systems (3:1 lecture, 2 lab)** This lecture and laboratory course gives an in-depth look at the tools and techniques of digital imaging systems. Students pursue research projects in both the aesthetic and technical aspects of electronic photographic imaging. The student's final project is self-defined. Prerequisite: Admission into the MS in Technology Program.

#### **SOT - School of Technology**

**SOT 4000 Special Projects in Technology (1-3)** Investigation of contemporary problems and issues in technology by selected individuals or groups. May be repeated for a maximum of 6 semester hours.

**SOT 4570 Computer Graphics (3)** Computer-generated presentation graphics utilizing a variety of software programs on numerous hardware configurations. Experiences will include production of laser prints, ink-jet prints, transparencies, color slides, and plots.

**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)** 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. Prerequisite: 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.

The following bulleted items are students **MINIMUM 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 2003, 2007, 2010 for XP, Vista, Windows 7
- Video/Audio (WMV/WMA)- Windows Media Player - Free Download
- Universal PDF - Adobe Reader - Free Download

Suggested software includes:

Presentations - MS PowerPoint 1997, 2003, 2007, 2010 for XP, Vista, Windows 7

Spreadsheet - MS Excel 1997, 2003, 2007, 2010 for XP, Vista, Windows 7

Database - MS Access 1997, 2003, 2007, 2010 for XP, Vista, Windows 7

Statistics - SPSS v14.0 Student Version

Graphics Editor (GIF/JPG) - Paint Shop Pro

**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.*



## **Creative Project/Thesis (Example - a brief proposal)**

**Category:** Technical Management  
**Title:** Curriculum Currency for an Industrial Management Masters 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 Masters 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.



## **Appendix B:**

Application for Graduate Admission  
International Admission Application  
Application for Approval of Program of Study  
Application for Change in Program of Study  
Program of Study – Examples of MSIM and MST  
Program of Study – Examples of PhD  
Contract Special Projects, Problems, and/or Investigations



Have you ever applied/been admitted to UCM?  Yes  No

If Yes, did you enroll?  Yes  No If Yes, date last enrolled: \_\_\_\_\_

Have you taken graduate work at another college/university since last enrolled at UCM?  Yes  No

Admission requested for:  Fall  Spring  Summer Year: \_\_\_\_\_

Please be advised that courses taken as non-degree student may not count toward a future degree.

Do you wish to seek a graduate degree at this time?  Yes  No

If Yes, please choose from the list below If No, are you seeking Teacher Certification?  Yes  No

**Master of Arts (MA - 52)**

**Master of Science (MS - 53)**

- Accountancy (504)
- Communication/
  - Mass Communication (350)
  - Speech Communication (361)
- English (308)
- Environmental Studies (860)
- History (423)
- Music (438)
- Sociology (758)
- Teaching English as a Second Language (473)
- Theatre (367)

- Aviation Safety (158)
- Biology (382)
- Counseling (820)
  - Elementary School Counseling Concentration
  - Secondary School Counseling Concentration
  - Community Counseling Concentration
- College Student Personnel Administration (770)
- Criminal Justice (704)
- Educational Technology (846)
- Industrial Hygiene (179)
- Industrial Management (141)
- Industrial Technology (151)
- Information Technology (547)
- Library Science and Information Services (775)
- Mathematics (456)
- Mathematics/Applied (457)
- Nursing (Rural Family Nursing - 242)
  - Family Nurse Practitioner Concentration
  - Nurse Educator Concentration
- Occupational Safety Management/
  - Industrial Safety Option (232)
  - Transportation Safety Option (233)
  - Public Safety Option (234)
  - Loss Control Option (235)
  - Fire Science Option (236)
  - Security Option (237)
- Physical Education, Exercise & Sport Science (818)
  - Athletics and Sports Business Administration
  - Athletic Training
  - Fitness/Wellness
  - Pedagogy
- Psychology (749)
- Social Gerontology (760)
- Speech-Language Pathology and Audiology (810)
- Technology & Occupational Education/
  - Technology Education (245)
  - Occupational Education (246)

**Master of Arts in Teaching (MAT - 54 - 800)**

- Middle School Education
- Secondary Education

**Master of Business Administration (MBA - 55 - 505)**

- Accounting Concentration
- Finance Concentration
- Information Systems Concentration
- Marketing Concentration

**Master of Science in Education (MSE - 51)**

- Elementary Education/
  - Curriculum & Instruction (721)
  - School Administration (764)
- K-12 Education/
  - Curriculum & Instruction (725)
  - Special Education (834)
- Literacy Education (836)
- Secondary Education/
  - Curriculum & Instruction (727)
  - School Administration (765)

**Education Specialist (EDS - 61)**

- Curriculum and Instruction (835)
- Human Services/
  - Guidance and Counseling (754)
  - Learning Resources (776)
  - Special Education (786)
  - Technology and Occupational Education (247)
- School Administration/
  - Elementary School Principalship Option (766)
  - Secondary School Principalship Option (768)
  - Superintendency Option (767)

**Doctoral Degree Programs**

- Ed.D. in Educational Leadership (845)
- Ph.D. in Technology Management (230)

**University of Central Missouri**  
**The Graduate School**  
**Ward Edwards 1800**  
**Warrensburg, MO 64093**  
 Phone: (877) 729-8266 or (660) 543-4621  
 Fax: (660) 543-4778  
 gradinfo@ucmo.edu  
 www.ucmo.edu/graduate

**A \$30 nonrefundable application fee is required to process the graduate application for admission.**

I certify that the answers to the questions on this application are complete and accurate to the best of my knowledge without evasion or misrepresentation. I understand that if it is found to be otherwise, it is sufficient cause for denial or suspension and forfeiture of all fees and deposit.

Student Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Programs of Study

B - Bachelor M - Master of Arts, Master of Arts in Teaching, Master of Science, Master of Science in Education MBA - Master of Business Administration ES - Education Specialist D - Doctoral

Degree	B	M	MBA	ES	D	Degree	B	M	MBA	ES	D	Degree	B	M	MBA	ES	D	
Accountancy		•				Education K-12		•				Music	•	•				
Accounting	•			•		• Special Education	•					• Jazz/ Commercial	•					
Actuarial Science & Mathematics	•					• Subject matter teaching fields						• Music Technology	•					
Agricultural Technology						Educational Leadership					•	• Performance (Instrumental, Piano, Voice)	•					
• Agricultural Mechanization	•					Educational Technology		•				Music Education						
• Agronomic Technology	•					Electronics Technology	•					• Instrumental	•					
• Animal Technology	•					Elementary Education						• Voice	•					
• Horticultural Technology	•					• Curriculum & Instruction		•				Nursing & Rural Family Nursing	•	•				
Agriculture Business	•					• Grades 1 - 6	•					Occupational Education	•					
Art	•					• School Administration	•					Occupational Safety & Health		•				
Athletic Training	•					Engineering Technology						Photography	•					
Automotive Technology Management	•					• Drafting/Design Engineering Technology	•					Physical Education						
Aviation Safety		•				• Electronic Engineering Technology	•					• Corporate Fitness	•					
Aviation Technology						• Industrial Engineering Technology	•					• Exercise Science	•					
• Airport Management	•					English	•	•				• Exercise & Sports Science	•	•				
• Avionics Management	•					Environmental Studies		•				• K-12	•					
• Flight Operations Management	•					English - Teaching as a Second Language			•			Physics	•					
• Professional Pilot	•					Fashion: Textiles & Clothing in Business	•					Political Science	•					
• Systems Design Technology	•					Finance	•		•			Psychology	•	•				
Biology	•	•				French	•					Public Relations	•					
Broadcast Media	•					General Recreation	•					Safety Management	•					
Business Education	•					Geography	•					School Administration						
Chemistry	•					Geology	•					• Elementary School Principalship						•
Child & Family Development	•					Graphic Arts Technology Management	•					• Secondary School Principalship						•
College Student Personnel Administration		•				History	•	•				• Superintendency						•
Commercial Art						Hotel & Restaurant Administration	•					Secondary Education						
• Graphic Design	•					Human Services						• Curriculum & Instruction	•					
• Illustration	•					• Guidance & Counseling						• School Administration	•					
Communication	•	•				• Learning Resources						Social Gerontology		•				
Computer-Aided Drafting & Design Technology	•					• Special Education						Social Studies	•					
Computer Information Systems	•					• Technology & Occupational Education						Social Work	•					
Computer Science	•					Industrial Hygiene		•				Sociology	•	•				
Construction Management	•					Industrial Management			•			Spanish	•					
Cooperative Engineering	•					Industrial Technology	•	•				Special Education						
Corporate Communication	•					Industrial Technology Manufacturing Management	•					• Early Childhood	•					
Counseling		•				Information Systems				•		• Cross Categorical Disabilities	•					
Criminal Justice	•	•				Information Technology				•		• Severely Developmentally Disabled	•					
Crisis & Disaster Management	•					Interior Design	•					Speech Communication	•					
Curriculum & Instruction					•	Journalism	•					Speech Communication & Theatre	•					
Dietetics	•					Library Science & Information Services		•				Speech Language Pathology	•					
Early Childhood & Elementary Education (Birth - Grade 3)	•					Literacy Education			•			Speech Language Pathology & Audiology		•				
Earth Science	•					Management	•					Studio Art	•					
Economics	•					Marketing	•			•		Technology & Occupational Education		•				
						Mathematics	•	•				Technology Education	•					
						Mathematics Education	•					Technology Management						•
						Medical Technology	•					Theatre						
						Middle School Education	•	•				• Performance	•					
												• Design/ Technology	•					
												Tourism	•					
												Vocational Agriculture Education	•					
												Vocational Family & Consumer Sciences	•					

Discrimination Policy - University of Central Missouri actively follows a policy of nondiscrimination in regard to age, race, color, religion, sex, national origin, sexual orientation, marital status, Vietnam Era veterans, and persons with handicaps and disabilities. This policy applies to the awarding of student financial aid, and the recruitment, admission, housing, placement and retention of students, faculty and staff. The university complies with the regulations implementing Title VI and Title VII of the Civil Rights Act of 1964 regarding race, color, national origin, religion and sex discrimination; Title IX of the Education Amendments Act of 1972 regarding sex discrimination; the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 regarding discrimination based on disabilities and handicaps; the Age Discrimination in Employment Act; and other state and federal laws and regulations. Persons having inquiries concerning the university's compliance with the regulations implementing any of the above are directed to contact the General Counsel, Administration 208, 660-543-4730, or the Director of Human Resources, Administration 101, 660-543-4255, University of Central Missouri, Warrensburg, MO 64093. Toll-free numbers for Relay Missouri are 711 or 800-735-2966 for TTY, and 866-735-2460 for voice callers.

APPLICATION FOR APPROVAL OF PROGRAM OF STUDY  
**Master of Science Degree (MS)**

Name: \_\_\_\_\_ Student #: \_\_\_\_\_  
Last Name First Name Middle Initial

Address: \_\_\_\_\_  
Street, Apt City State Zip

Phone: \_\_\_\_\_ - \_\_\_\_\_  
Home Office Extn Mobile

Email: \_\_\_\_\_

Tests Required by Department/College			
Name of the Test Taken	Raw Score	Percentile	Rating
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**University Requirements at the time the program of study is filed:**

Student's transcript indicates the grade record to date on all graduate work attempted is as follows:

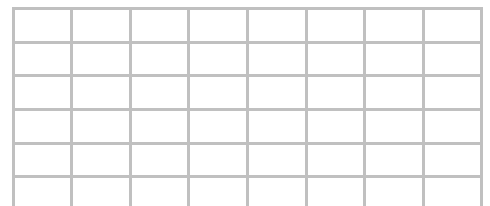
A \_\_\_\_\_ B \_\_\_\_\_ C \_\_\_\_\_ D \_\_\_\_\_ F \_\_\_\_\_ U \_\_\_\_\_ Transfer Hrs \_\_\_\_\_ Cumulative GPA \_\_\_\_\_

Number of semester hours included in this program at the 5000/6000 level \_\_\_\_\_  
**(Minimum at the 5000 and 6000 level is 15 semester hours)**

It is recommended that the Program of Study be submitted to the graduate program advisor as soon as admission procedures are complete. **Students must file the Program of Study within one month after the completion of 12 hours of graduate study.**

Student is to submit one copy to program advisor; when approved by advisor, form will be forwarded to appropriate college representative; when approved by the college, form will be forwarded to The Graduate School. When final approval is granted by the Graduate Dean, copies will be returned to the college representative/advisor for distribution to the advisors and student.

<b>Signatures:</b>		
	_____	_____
	Student	Date
<input type="checkbox"/> Approved		_____
<input type="checkbox"/> Denied	_____	_____
	Advisor	Date
<input type="checkbox"/> Approved		_____
<input type="checkbox"/> Denied	_____	_____
	College Representative (if applicable)	Date
<input type="checkbox"/> Approved		_____
<input type="checkbox"/> Denied	_____	_____
	Dean of the Graduate School	Date





Sample Industrial Management

APPLICATION FOR APPROVAL OF PROGRAM OF STUDY  
**Master of Science Degree (MS)**

Name: Johnston Michael R Student #: 700-xx-xxxx  
Last Name First Name Middle Initial

Address: 123 Main Street Kansas City MO 66091  
Street, Apt City State Zip

Phone: \_\_\_\_\_ - \_\_\_\_\_  
Home Office Extn Mobile

Email: richardmjohnton@store.net

**Tests Required by Department/College**

Name of the Test Taken	Raw Score	Percentile	Rating

**University Requirements at the time the program of study is filed:**

Student's transcript indicates the grade record to date on all graduate work attempted is as follows:

A 12 B 3 C   D   F   U   Transfer Hrs 0 Cumulative GPA 2.90

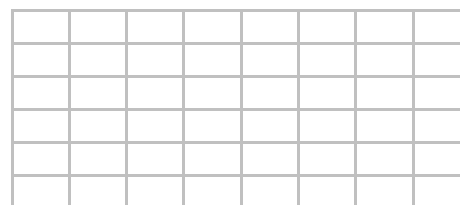
Number of semester hours included in this program at the 5000/6000 level 21  
**(Minimum at the 5000 and 6000 level is 15 semester hours)**

It is recommended that the Program of Study be submitted to the graduate program advisor as soon as admission procedures are complete. **Students must file the Program of Study within one month after the completion of 12 hours of graduate study.**

Student is to submit one copy to program advisor; when approved by advisor, form will be forwarded to appropriate college representative; when approved by the college, form will be forwarded to The Graduate School. When final approval is granted by the Graduate Dean, copies will be returned to the college representative/advisor for distribution to the advisors and student.

**Signatures:**

Student	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	Date
Advisor	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	Date
College Representative (if applicable)	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	Date
Dean of the Graduate School	Date



Program of Study - **Master of Science Degree (MS)**

Name: Johnston Michael R Student #: 700-xx-xxxx  
 Last Name First Name Middle Initial

Proposed Program (Major/Concentration): **Industrial Management**

A Student submitting a Program of Study must use, as a basis for program requirements, the *Graduate Catalog current at the time the Program of Study is approved.*

**Background Qualifications:**

Undergraduate Major: **B.S. Electronics Technology** Undergraduate Minor: **Network Security**

To meet the minimum requirements of **15 hours** of either graduate or undergraduate study in the area of proposed graduate program (in addition to the Master's Program) when undergraduate major or minor has not been in the same field as proposed program and/or to meet departmental background course requirements, the following courses are submitted:

Dept Prefix	Course Number	Course Title	Semester Hours	If Completed/Enrolled	
				Grade	Semester-Year
<b>Pre-requisites:</b>					
		n/a			

**Requirements to be completed:**

Thesis  Research Paper(s) Number of Research Papers  Portfolio  Comprehensive Exams  Internship  None

**Proposed graduate course requirements:**

Dept	Course	Course Title	Semester Hours	Grade	Semester-Year
INDM	4210	Industrial Management	3	A	Sp07
INDM	4260	Organizational Dynamics	3	A	Sp07
ENGT	4580	Quality Systems	3	A	Su07
INDM	5212	Production and Operations Management	3	B	Fa07
INDM	4010	Current Issues in Industry	3	A	Fa07
INDM	5240	Engineering Economy	3		Sp08
SOT	5010	Applied Research in Technology	3		Sp08
INDM	5015	Legal Aspects in Industry	3		Su08
INDM	5020	International Technology Management	3		Fa08
INDM	5260	Systems Analysis & MIS	3		Fa08
INDM	5230	Seminar in Industrial Management	3		Sp09

**Transfer Courses: (If applicable). Official Transcripts must be on file (9 Semester Hours Maximum)**

Dept	Course	Course Title	Semester Hours	Grade	Semester-Year

5000+6000 hrs = **21** Graduate Program Semester Hour Total: **33**

Transcript Not On File. Program approved contingent on receipt of transcript showing graduate credit for transfer courses.  
 Transcript On File. Date received: \_\_\_\_\_

**APPLICATION FOR APPROVAL OF PROGRAM OF STUDY  
Master of Science Degree (MS)**

Name: Smith R Joeph Student #: 700xxxxxx  
Last Name First Name Middle Initial

Address: 5515 D Street Jefferson City Mo 65101  
Street, Apt City State Zip

Phone: \_\_\_\_\_ - \_\_\_\_\_ (816) 555-9155  
Home Office Extn Mobile

Email: RJS51790@UCMO.EDU

Tests Required by Department/College			
Name of the Test Taken	Raw Score	Percentile	Rating

**University Requirements at the time the program of study is filed:**

Student's transcript indicates the grade record to date on all graduate work attempted is as follows:

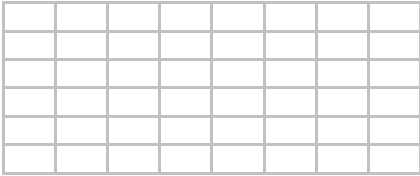
A 2 B 1 C   D   F   U   Transfer Hrs   Cumulative GPA 3.75

Number of semester hours included in this program at the 5000/6000 level 18  
**(Minimum at the 5000 and 6000 level is 18 semester hours)**

It is recommended that the Program of Study be submitted to the graduate program advisor as soon as admission procedures are complete. Students must file the Program of Study within one month after the completion of 12 hours of graduate study.

Student is to submit one copy to program advisor; when approved by advisor, form will be forwarded to appropriate college representative; when approved by the college, form will be forwarded to The Graduate School. When final approval is granted by the Graduate Dean, copies will be returned to the college representative/advisor for distribution to the advisors and student.

<b>Signatures:</b>	<u>R Joe Smith</u>	<u>5/25/2015</u>
	Student	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	_____	_____
	Advisor	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	_____	_____
	College Representative (if applicable)	Date
<input type="checkbox"/> Approved <input type="checkbox"/> Denied	_____	_____
	Dean of the Graduate School	Date





## Sample PhD Program of Study (Manufacturing Specialization)

### I. Prerequisites

- a. None required (Determined during the admissions review)

### II. Technology Core: 15 credit hours

- a. ECU – Fall 2006: ITEC 6050 Strategies For Technical Mgt. and Communications
- b. ISU – Fall 2006: ITE 679 Strategic Planning of Technological Processes
- c. NC A&T – Spring 2007: TECH 708-5A Impacts of Technology
- d. UCM – Spring 2007: INDM 5015 – Legal Aspects of Industry
- e. BGSU – Summer 2007: TECH 682 – Technological Systems, Assessment & Innovation

### III. Major Area of Specialization: 24-30 credit hours

- a. UCM – Fall 2002: INDM 4240 Facilities Engineering (MS)
- b. UCM – Spring 2002: INDM 4220 Human Factors Engineering (MS)
- c. ISU – Spring 2007: MF&C 6500: Manufacturing Systems (3 hours)
- d. BGSU – Summer 2007: TECH 750 Computer Based Tools in Manufacturing
- e. ISU – Fall 2007: ECT 634 Computer Based Automated System Integration
- f. ISU – Spring 2008: MCT 671: Systems in Manufacturing (3 hours)
- g. ECU – Spring 2008: ITEC 6200 Project Management for Manufacturing
- h. BGSU – Summer 2008: TECH 728 Computer Integrated Manuf. Management
- i. ECU – Fall 2008: ITEC 6112 Anal. Studies and Planned Experiments in Industry
- j. UCM – Fall 2008: TMD 6525 Manufacturing Economy

### IV. Cognate Studies: 18 credit hours

- a. UCM – Summer 2000: INDM 4210 Industrial Management (MS)
- b. UCM – Spring 2001: INDM 4230 Quality Control Management (MS)
- c. UCM – Summer 2001: INDM 4260 Industrial Supervision (MS)
- d. UCM – Summer 2001: INDM5240 Engineering Economy) (MS)
- e. UCM – Fall 2001: INDM 5212 Production & Operations Management (MS)
- f. UCM – Spring 2002: INDM 5020 International Technology Management (MS)

### V. Research Core: 36 credit hours (12-Research, 6-Internship, 18-Dissertaion)

- a. UCM – Spring 2002: INDM 5010 Research Methods for Technology (MS)
- b. ISU – Spring 2007: SOT 709 Resident Seminar
- c. ISU – Summer 2007: SOT 702 Advanced Technological Research Methods
- d. ISU – Fall 2006: SOT 703 Advanced Statistical Analysis in Technology
- e. UCM – Fall 2006 / Spring 2007: TMD 8590 Internship (Advisor Approved 6 hrs.)
- f. ISU – Fall 2009/ Spring 2011: COT 899 Dissertation (Advisor Approved 9 hrs.)
- g. UCM – Fall 2011/ Spring 2014: TMD 8990 Dissertation (Advisor Approved 9 hrs.)

**Total Credit Hours: 93**

**Note:** Twenty-one to twenty-seven credit hours can usually be applied from an appropriate master's degree program with a total of 48 to 54 credit hours of doctoral level coursework, admission to candidacy, and 18 credit hours of dissertation to completion of the program.

**CONTRACT**  
**SPECIAL PROJECTS, PROBLEMS, AND/OR INVESTIGATIONS**

Course Prefix & Number \_\_\_\_\_ Course Title \_\_\_\_\_

ID# \_\_\_\_\_ Student's Name \_\_\_\_\_  
(last) (first) (MI)

Semester / Year \_\_\_\_\_ Semester Hours Credit \_\_\_\_\_  UG  G  
(Check one)

Guidelines for completion of the contract are located on the back of this sheet

List Experiences in Detail

Date Experiences Due

(Attach additional sheets(s) if necessary)

Evaluation Scheme:

Conference Time \_\_\_\_\_

\_\_\_\_\_  
Graduate Advisor's Signature (if applicable)

\_\_\_\_\_  
Student's Signature

\_\_\_\_\_  
Participating Faculty Member's Signature

\_\_\_\_\_  
Instructor of Record

\_\_\_\_\_  
Department Chair

# Guidelines for Completion of Special Projects, Problems and/or Investigation

The student shall complete the special projects/problems/investigations contract prior to enrolling in the course. This must be accomplished prior to the start of the semester when credit is desired or within the first 3 days of the scheduling period. ALL INFORMATION ON THE CONTRACT SHOULD BE TYPED.

## Overview:

These special courses are designed to provide students the opportunity to study a topic of their special interest, i.e. a topic which the University or department does not make available through a regularly organized course. (Exception to this procedure must be approved by the advisor/course coordinator/department chair). These special courses may be arranged for individual study or for a small group study. Principle study topics and/or laboratory experience are to be explored by the student under the supervision of a faculty member.

## Study Plan:

1. It is the responsibility of the student to identify the area/topic of study.
  - a. Undergraduate students may obtain assistance from their faculty program advisor or program coordinator.
  - b. Graduate students may obtain assistance from their faculty graduate advisor or program coordinator.
2. The student must meet all background requirements necessary to complete the activity as prescribed by their faculty advisor.
  - a. Since individual study topics place an additional teaching load on an instructor, students must obtain an instructor's consent to direct and assist them prior to initiation of a contract.
3. It is the faculty advisors' responsibility to be sure each student's contract is completed. The information below must be completed before a grade is issued.
  - a. A written final report is required on all special courses. These reports are to be typed and prepared following A.P.A. guidelines.
  - b. An appropriate research component must be incorporated into contracts where the student desires graduate credit. (A graduate level course involving methods of research is strongly recommended as a prerequisite).

Students are to obtain signatures from all persons involved with the contractual agreement. One copy of the contract should be made for each person who has signed the contract. The original contract is filed in the office of the Chair, School of Technology.

For additional information contact:  
University of Central Missouri  
School of Technology,  
Grinstead Building, Suite 009  
Warrensburg, MO 64093  
Phone: 660-543-4439, Fax: 660-543-4578  
or 1-877-SAY-UCMO  
Visit website: [www.ucmo.edu/technology](http://www.ucmo.edu/technology)