TABLE OF CONTENTS

GRADUATE CATALOG

Forward-Looking Graduate-Level Degrees

Whether you're looking to learn new skills, narrow your expertise, or test inventions in the lab, Kettering's master's programs and graduate certificates enable you to do so. Here, you can master your technical and engineering skills, learn new concepts in data science or technology, or grow your expertise in fields such as autonomous vehicles and mobility technologies.

Find the graduate program that works for you.

Graduate Programs

- Master of Business Administration (MBA)
- Master of Engineering (M.Eng.)
  - M.Eng. Artificial Intelligence
  - M.Eng. Autonomous Vehicles
  - M.Eng. Electric Vehicles
  - M.Eng. General
- Master of Science in Applied Data Science and Data Analytics
- Master of Science in Engineering (M.S.E.)
  - M.S.E. Computer Engineering
  - M.S.E. Electrical Engineering
  - M.S.E. Electrical and Computer Engineering - Advanced Mobility*
  - M.S.E. Mechanical Engineering
  - M.S.E. Mobility Systems
- Master of Science in Engineering Management*
- Master of Science in Lean Manufacturing*
- Master of Science in Lean Systems*
- Master of Science in Supply Chain Management*
- Master of Science in Operations Management
- Tech MBA

** Program is offered fully online*

Certificates

- Core Technologies of Data Sciences and Data Analytics
- Data Analytics
- Foundations of Data Science
- Global Leadership
- Operations Management
- Technology Leadership
- Electric Vehicle Certificate*
- Lean Principles for Healthcare Management*
- Management and Leadership*
- Supply Chain Level 1*
- Supply Chain Level 2*

** Certification is offered fully online*

World-Class Graduate Programs and Faculty

From modern research labs to experienced and widely published faculty members, the Graduate School at Kettering is proud to offer excellence in all degree programs. Here's just part of what you'll experience in Kettering's master's programs and graduate certificates.

- **Cutting-edge research labs**
  Perform research for your graduate program in one-of-a-kind lab facilities. Kettering University is home to state-of-the-art research facilities, including the Internet of Things Laboratory, the Autonomous Driving and Artificial Intelligence Lab, a High-Performance Computing Cluster, the Mobility Research Center, and the Engineering and Collaborative Haptics Lab.
- **Active, expert faculty**
  Learn under seasoned faculty with both professional experience and the most advanced degrees in their subject areas. Many of Kettering's graduate program faculty are conducting ongoing research or have held professional positions in engineering, business, law, history, liberal studies, energy systems, and other fields.
- **On-campus and online graduate program options**
  Whether you're looking for in-person opportunities and experiences or a rigorous, engaging online format, at Kettering, you can complete your graduate study in a way that works for you. Many of our graduate-level degrees, from graduate engineering programs to top-ranked online MBA programs, are offered in either format.

About the Catalog

The online Kettering University catalog (Undergraduate, Graduate, Kettering University Online) reflects current academic policies, procedures, degree offerings, course descriptions, and other pertinent information. This digital version of the catalog is the official catalog of the University. The printed catalog is no longer the official catalog of the University, and in the case of any difference between the printed catalog and the online catalog, University officials will be guided by the online catalog.

The catalog should not be considered a binding contract between Kettering University and students, and the University reserves the right to make changes in curricula, degree requirements, course offerings, or academic policies at any time **with or without prior notice**.

2025-2026 Academic Calendar

This calendar also exists as a downloadable .pdf file on Kettering University's Academic Calendars Webpage. **Graduate Online does not use this calendar.**

Summer 2025

Date	Event
July 10	A-section Convocation, first year and transfer students move-in
July 10-13	New Student Orientation
July 12-13	Returning students move-in
July 14	Classes Begin
July 18 (Noon)	Last Day to add or drop courses for the term
August 10	Last Day for Course Withdrawal for Partial Refund
August 25 (Noon)	Undergraduate Student Midterm Grades Due
August 29-September 1	Labor Day Break (no classes)
September 7	Last Day for Undergraduate Course Withdrawal - No Refund
September 21	Last Day for Graduate Course Withdrawal - No Refund
September 23	Last Day of Classes (follow Friday schedule)
September 24	Reading Day (no classes)
September 25-27	Final Exam Period
September 27	Term Ends
September 29-October 3	Grading, Assessment & Professional Development for Faculty
October 3 (Noon)	Final Grades Due From Instructors. Final grade processing for the term will be completed by the next BUSINESS day.

Fall 2025

Date	Event
October 2	B-section Convocation, first year and transfer students move-in
October 2-5	New Student Orientation
October 4-5	Returning students move-in
October 6	Classes Begin
October 10 (Noon)	Last Day to Add or Drop Courses
November 2	Last Day for Course Withdrawal for Partial Refund
November 17 (Noon)	Undergraduate Student Midterm Grades Due
November 27-28	No classes
November 30	Last Day for Undergraduate Course Withdrawal - No Refund
December 14	Last Day for Graduate Course Withdrawal - No Refund
December 15-16	Last Day of Classes (follow Thursday/Friday schedule)
December 17	Reading Day (no classes)
December 18-20	Final Exam Period
December 20	Term Ends
December 22-26	Grading, Assessment & Professional Development for Faculty
December 29 (Noon)	Final Grades Due From Instructors. Final grade processing for the term will be completed by the next BUSINESS day.

Winter 2026

Date	Event
January 9	New Student Orientation (Virtual)
January 10-11	All students move-in
January 12	Classes Begin
January 16 (Noon)	Last Day to Add or Drop Courses
January 19	Dr. Martin Luther King Jr. Day - University Closed
February 8	Last Day for Course Withdrawal for Partial Refund
February 23 (Noon)	Undergraduate Student Midterm Grades Due
March 6	No classes
March 8	Last Day for Undergraduate Course Withdrawal - No Refund
March 22	Last Day for Graduate Course Withdrawal - No Refund

March 24	Last Day of Classes (follow Friday schedule)
March 25	Reading Day (no classes)
March 26-28	Final Exam Period
March 28	Term Ends
March 30-April 3	Grading, Assessment & Professional Development for Faculty
April 3 (Noon)	Final Grades Due From Instructors. Final grade processing for the term will be completed by the next BUSINESS day.

Spring 2026

Date	Event
April 3	New Student Orientation (Virtual)
April 4-5	All students move-in
April 6	Classes Begin
April 10 (Noon)	Last Day to Add or Drop Courses
May 3	Last Day for Course Withdrawal for Partial Refund
May 18 (Noon)	Undergraduate Student Midterm Grades Due
May 25	Memorial Day (University Closed)
May 31	Last Day for Undergraduate Course Withdrawal - No Refund
June 14	Last Day for Graduate Course Withdrawal - No Refund
June 15	Last Day of Classes
June 16	Reading Day (no classes)
June 17-19	Final Exam Period
June 19	Term Ends
June 20	Commencement
June 22-26	Grading, Assessment & Professional Development for Faculty
June 26 (Noon)	Final Grades Are Due From Instructors. Final grade processing for the term will be completed by the next BUSINESS day.

Graduate Level Academic Programs

Kettering University's graduate programs include several Master degrees that are offered to both on and off campus students, either part-time or full-time. The BS/Master option also allows Kettering University undergraduates to leverage approved courses toward a graduate degree.

Kettering University has been offering graduate programs since 1982. Each program is designed to prepare future leaders for a global workplace with 'first-class education that reflects the real world.' Many students are able to complete a program in less than two years. Our graduate programs leverage nationally-ranked faculty who are recognized for their commitment to practical education. Kettering University has long been admired by educational peers and businesses as a leader in developing top engineers and corporate managers.

Master Degree Programs and Certificates - offered both on campus and online unless otherwise noted.

Master of Business Administration (p. 16)

Technical Master of Business Administration (p. 17) (Available On Campus Only)

Master of Science in Applied Data Science (p. 10) and Data Analytics (Available On Campus Only)

Master of Science in Engineering:

- Computer Engineering (p. 7) (Available On Campus Only)
- Electrical Engineering (p. 8) (Available On Campus Only)
- Electrical & Computer Engineering-Advanced Mobility (p. 7) (Available Online Only)
- Mechanical Engineering (p. 9) (Available On Campus Only)
- Mobility Systems (p. 7) (Available On Campus Only)

Master of Science in Engineering Management (p. 18)

Master of Science in Operations Management

Master of Science in Lean Manufacturing - Available Online Only

Master of Science in Lean Systems - Available Online Only

Master of Science in Supply Chain Management - Available Online Only

Master of Engineering - Not available on Kettering University's main campus

- Master of Engineering in Artificial Intelligence (p. 12)
- Master of Engineering in Autonomous Vehicles (p. 13)
- Master of Engineering in Electric Vehicles (p. 13)
- Master of Engineering (General) (p. 14)

Certificates:

Core Technologies of Data Sciences and Data Analytics

Data Analytics (p. 25)

Electric Vehicle (Available Online Only)

Foundations of Data Science (Available Online Only)

Global Leadership (p. 25)

Lean Principles for Healthcare (p. 26)

Management and Leadership (p. 26) (Available Online Only)

Operations Management (p. 26)

Supply Chain & ERP (p. 26) (Available On Campus Only)

Supply Chain Management Level 1 (p. 26) (Available Online Only)

Supply Chain Management Level 2 (p. 26) (Available Online Only)

Technology Leadership (p. 25) (Available On Campus Only)

College of Engineering and Computer Science (Graduate)

Scott Grasman, Ph.D.

Dean of the College of Engineering and Computer Science
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coe@kettering.edu

Graduate Programs

The Master of Science in Engineering is a set of professional master's programs that build on an undergraduate engineering program by offering additional depth and greater mastery in a number of technical areas.

- The MS in Applied Data Science and Data Analytics is an interdisciplinary program that is a fusion of statistical and computing technologies with business and engineering applications. Technology courses include Data Mining, Machine Learning, Cloud Computing, and Data Visualization. Application courses include Managerial Sciences, Supply Chain Management, and Enterprise Resource Planning with future applications-related courses in the future. Students will have the option to work with faculty on a research project, on an internship with one of our co-op partners, or a capstone project in Applied Data Science and Data Analytics.
- The MSE in Mobility Systems (p. 7) (formerly Automotive Systems) is intended for individuals who desire a deeper understanding and knowledge of mechanical, electrical, computer, industrial, and manufacturing systems used in mobility. Courses cover subjects such as conventional and electric propulsion systems, safety systems, including connected and autonomous systems, and modern manufacturing systems. Students select courses from a structured framework in order to customize a program that best meets their individual and career needs.
- The MSE in Computer Engineering (p. 7) is an on-campus program designed to deepen students' understanding of computer engineering principles and applications and to develop their skills in independent research. Courses within the MSE Computer Engineering program include digital systems design, real-time embedded systems, artificial intelligence and computer vision for autonomous vehicles, mobile robotics, IoT, and virtual reality systems. The program requires a minimum of 40 credit hours of graduate work. There are two options available; 1) Thesis option (consists of coursework, research, and a thesis), and 2) Non-thesis Option (consists of only coursework).
- The MSE in Electrical & Computer Engineering - Advanced Mobility (p. 7) is designed for individuals who wish to acquire a deeper understanding and applied knowledge of the engineering principles of autonomous and electric mobility. The 30-credit MS Engineering-ECE-Advanced Mobility curriculum includes 10 courses consisting of 9 core courses and an integrative capstone project. Students in the program study dynamic systems modeling, introduction to autonomous driving, automotive control systems, mobile robotics, AI for Autonomous Driving, DSP, power electronics for vehicle electrification, machine drives for electric vehicles, and business communication and presentation. This program is available online only through Kettering University Online.
- The MSE in Electrical Engineering (p. 8) is an on-campus program designed for individuals who wish to deepen their understanding of electrical engineering principles and applications and to develop their skills in independent research. Students study topics such as dynamic systems modeling, digital signal processing and digital control, vector control of AC electric machines, energy storage systems, modeling and control of e-mobility systems, and robot dynamics and control. The program requires a minimum of 40 credit hours of graduate work. There are two options available; 1) Thesis option (consists of coursework, research, and a thesis), and 2) Non-thesis Option (consists of only coursework).
- The MSE in Mechanical Engineering program is designed for individuals who wish to deepen their understanding of mechanical engineering principles and applications and to develop their skills in independent research. Students can study a variety of topics including fuel cells, new energy, decarbonization, additive manufacturing, machine learning, and thermal management.

MS in Engineering: Computer Engineering

Home Department: Electrical and Computer Engineering

Available: On Campus Only

Program Advisor/Contact:
Dr. Girma Tewolde
gtewolde@kettering.edu
810-762-7934

Program Overview

The Master of Science in Engineering is a professional master's program that builds on an undergraduate engineering program by offering additional depth and greater mastery in a number of technical areas.

Program Objectives

All graduates of the Master of Science in Engineering program will:

- Deepen their knowledge and increase their mastery of technical areas that match their personal career goals.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering through continuing self-directed learning and professional development activities.

The MSE in Computer Engineering program is an on-campus program designed to deepen students' understanding of computer engineering principles and applications and to develop their skills in independent research. Courses within the MSE Computer Engineering program include digital systems design, real-time embedded systems, artificial intelligence and computer vision for autonomous vehicles, mobile robotics, IoT, and virtual reality systems. The program requires a minimum of 40 credit hours of graduate work. There are two options available: 1) Thesis option (consists of coursework, research, and a thesis), and 2) Non-thesis option (consists of only coursework).

Graduate Assistantship

Financial support, in the form of a tuition waiver or stipend, is available on a competitive basis. Students who receive a stipend are required to serve as a Research Assistant (RA), Teaching Assistant (TA), or a Staff Assistant (SA) for up to 20 hours per week (depending on the level of financial support offered). For more information on graduate funding, please contact the Graduate School at gsr@kettering.edu.

Program Curriculum Requirements

Completion of 40 credits as follows:

Code	Title	Credit Hours
Thesis option: Select four of the following:		
Non-thesis option: Select six of the following:		
CE-612	Digital Systems Design	
CE-620	Microcomputer Systems	
CE-622	Computer Architecture and Organization	
CE-624	VLSI Design	
CE-626	Real-Time Embedded Systems	
CE-642	Mobile Robotics	
CE-651	Introduction to Autonomous Driving	
CE-652	Artificial Intelligence for Autonomous Driving	
CE-654	Computer Vision for Autonomous Driving	
CE-672	Virtual Reality Systems: M&C	
CE-680	Computer Networks	
CE-684	Internet of Things (IoT)	
CE-691	Computer Engineering Special Topics	
CE-699	Computer Engineering Independent Study	
ECE-610	Modeling of Dynamic Systems	
Thesis option: Two graduate-level elective courses		8
CE-695	Graduate Research in Computer Engineering	8
CE-695	Graduate Research in Computer Engineering	8
Completion and successful defense of a master's thesis		
Non-thesis option: Four graduate-level elective courses		16

Undergraduate-level coursework might also be required for some students as a prerequisite for either graduate-level coursework or research, depending on the student's background and the nature of the coursework or research. If required, undergraduate-level credit cannot be used to satisfy the graduate-level credit requirements given above.

The program operates on a calendar similar to a conventional quarter system: Fall, Winter, and Spring terms are 'regular' academic terms during which students normally enroll full-time, and the Summer term is optional. The nominal plan of study calls for a total of six terms of study over 21 months.

First Year	Fall	8 credits coursework
First Year	Winter	8 credits coursework
First Year	Spring	8 credits coursework
	Summer	
Second Year	Fall	8 credits coursework
Second Year	Winter	8 credits coursework
Second Year	Spring	Thesis defense and submission

Many variations of this plan are possible. In particular, students may begin the program in any term, not just Fall, and may elect to register for coursework or research during Summer. Students may not, however, register for more than eight credits in a term.

MS in Engineering: Electrical & Computer Engineering-Advanced Mobility

This program is available online.

Kettering University is shaping the future of automotive engineering and advanced mobility with a groundbreaking online program: the MS Engineering-ECE-Advanced Mobility. The first of its kind, this cutting-

edge advanced engineering degree equips graduates with the technical expertise to play an integral role in the development of electric and autonomous vehicles, mobile robotics and other dynamic systems. This program is specifically designed to meet growing demands within the automotive and advanced mobility industry, and it focuses on systems essential to the future of transportation, such as:

- **Integration of electrical and computer systems** for autonomous vehicles and other advanced mobility applications
- **Development of advanced mobility applications** for electric, hybrid and autonomous vehicles, transportation systems, artificial intelligence and robotics as it applies to mobility
- **Design of dynamic systems** that work to enhance and support autonomous functionality
- **Robotics** enhanced by artificial intelligence

Code	Title	Credit Hours
ECE-6103	Modeling of Dynamic Systems	3
ECE-6303	Digital Signal Processing Techniques for Automotive Engineering	3
ECE-6423	Machine Drives for Electric Vehicles	3
CE-6523	Artificial Intelligence for Autonomous Driving	3
EE-6263	Power Electronics for Vehicle Electrification	3
ECE-6323	Automotive Control Systems	3
CE-6423	Mobile Robotics	3
CE-6513	Introduction to Autonomous Driving	3
Management Elective		3
Capstone		3
Total Credit Hours		**30**

MS in Engineering: Electrical Engineering

Home Department: Electrical and Computer Engineering

Available: On Campus Only

Program Advisor/Contact:

Dr. Girma Tewolde
gtewolde@kettering.edu
810-762-7934

Program Overview

The Master of Science in Engineering is a professional master's program that builds on an undergraduate engineering program by offering additional depth and greater mastery in a number of technical areas.

Program Objectives

All graduates of the Master of Science in Engineering program will:

- Deepen their knowledge and increase their mastery of technical areas that match their personal career goals.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering through continuing self-directed learning and professional development activities.

The MSE in Electrical Engineering program is an on-campus program designed for individuals who wish to deepen their understanding of electrical engineering principles and applications and to develop their skills in independent research. Students study topics such as dynamic systems modeling, digital signal processing, and digital control, vector control of AC electric machines, energy storage systems, modeling and control of e-mobility systems, and robot dynamics and control. The program requires a minimum of 40 credit hours of graduate work. There are two options available: 1) Thesis option (consists of coursework, research, and a thesis), and 2) Non-thesis option (consists of only coursework).

Graduate Assistantship

Financial support, in the form of a tuition waiver or stipend, is available on a competitive basis. Students who receive a stipend are required to serve as a Research Assistant (RA), Teaching Assistant (TA), or a Staff Assistant (SA) for up to 20 hours per week (depending on the level of financial support offered). For more information on graduate funding, please contact the Graduate School at gsr@kettering.edu.

Program Curriculum Requirements

Completion of 40 credits as follows:

Code	Title	Credit Hours
ECE-610	Modeling of Dynamic Systems	4
Thesis option: Select three of the following:		12
Non-thesis option: Select five of the following:		20
CE-612	Digital Systems Design	
CE-624	VLSI Design	
ECE-630	Digital Signal Processing Techniques for Automotive Engineering	
or EE-634	Digital Signal Processing	
ECE-642	Machine Drives for Electric Vehicles	
or EE-646	Vector Control of AC Electric Machines	
ECE-648	Electromagnetic Compatibility	
EE-610	eMobility System Analysis & Control	
EE-621	Energy Storage Systems with EV Applications	
EE-626	Power Electronics for Vehicle Electrification	
or EE-624	Power Electronics & Applications	
EE-633	Digital Control Systems	
EE-643	Fundamentals of Power Systems	
EE-682	Robot Dynamics and Control	
EE-691	Graduate Special Topics in EE	
EE-699	Graduate Level Independent Study in Electrical Engineering	
Thesis option: Any two graduate-level elective courses		8
EE-695	Graduate Research in Electrical Engineering	8
EE-695	Graduate Research in Electrical Engineering	8

Completion and successful defense of a master's thesis	
Non-thesis option: Any four graduate-level elective courses	16

Undergraduate-level coursework might also be required for some students as a prerequisite for either graduate-level coursework or research, depending on the student's background and the nature of the coursework or research. If required, undergraduate-level credit cannot be used to satisfy the graduate-level credit requirements given above.

The program operates on a calendar similar to a conventional quarter system: Fall, Winter, and Spring terms are "regular" academic terms during which students normally enroll full-time, and the Summer term is optional. The nominal plan of study calls for a total of six terms of study over 21 months.

First Year	Fall	8 credits coursework
First Year	Winter	8 credits coursework
First Year	Spring	8 credits coursework
	Summer	
Second Year	Fall	8 credits coursework
Second Year	Winter	8 credits coursework
Second Year	Spring	Thesis defense and submission

Many variations of this plan are possible. In particular, students may begin the program in any term, not just Fall, and may elect to register for coursework or research during Summer. Students may not, however, register for more than eight credits in a term.

MS in Engineering: Mechanical Engineering

Home Department: Mechanical Engineering

Available: On Campus Only

Program Advisor/Contact:
Dr. Javad Baqersad

Program Overview

The Master of Science in Engineering is a professional master's program that builds on an undergraduate engineering program by offering additional depth and greater mastery in a number of technical areas.

Program Objectives

The MSE-Mechanical Engineering program is intended for individuals who desire a deeper understanding and knowledge of mechanical engineering as applied to various systems. Students select courses from a structured framework in order to customize a program that best meets their individual and career needs.

To receive the M.S. degree a student in the ME graduate program must complete 40 credit hours of graduate work. There are two plans to choose from:

- Plan A (consists of 32 credit hours of coursework, research, and an 8 credit hour thesis)
- Plan B (consists of 40 credit hours of coursework)

MSE-Mechanical Engineering Program Curriculum Requirements

Completion of 40 credits as follows:

Program of Study

Code	Title	Credit Hours
Required Courses		
MECH-600	Advanced Engineering Mathematics with Computational Tools	4
Select up to four Mechanical Engineering courses from the 400 level course list **		16
Select at least five Mechanical Engineering courses from the 600 level course list (Or three courses and Thesis) **		20
** Course prerequisites must be observed.		
Total Credit Hours		**40**

400 Level Course Electives

(Course prerequisites must be observed.)

Code	Title	Credit Hours
MECH-416	Introduction to Finite Element Analysis with Structural Applications	4
MECH-424	Vehicle Electrification Overview	4
MECH-425	Sustainable Energy: Analysis and Modeling	4
MECH-426	Fuel Cell Science and Engineering	4
MECH-427	Energy and the Environment	4
MECH-428	Bio and Renewable Energy	4
MECH-443	Noise and Vibration	4
MECH-4XX or Two 400 Level Technical Electives		8

600 Level Course Electives

(Course prerequisites must be observed.)

Code	Title	Credit Hours
MECH-610	Application of Artificial Intelligence in Mechanical Engineering	4
MECH-615	Engineering Optimization	4
MECH-623	Battery Science and Engineering with Applications	4
MECH-629	Thermal Management Systems	4
MECH-633	Multibody Dynamics	4
MECH-634	Introduction to MPC	4
MECH-635	Digital Twins and Model-Based Engineering	4
MECH-645	Hybrid Electric Vehicle Propulsion	4
MECH-682	Mechanics and Design Simulation of Fiber-Reinforced Composite Materials	4
MECH-6XX or Two 600 Level Technical Electives		8
Thesis		8

MS in Applied Data Science and Data Analytics

Home Department: Computer Science

Availability of unprecedented amounts of data and emerging scalable technologies are changing the way we make decisions. Data Science and Data Analytics are the study of collecting, maintaining, processing and communicating intelligent insights about complex data and applying these insights to various endeavors ranging from healthcare to marketing. The professional Master of Science in Applied Data Science and Data Analytics program is a multi-disciplinary program designed to create tomorrow's leading applied data scientists and analysts.

MS in Applied Data Science and Data Analytics is an interdisciplinary program that is a fusion of statistical and computing technologies with business and engineering applications. Technology courses include Data Mining, Machine Learning, Cloud Computing, and Data Visualization. Application courses include Managerial Sciences, Supply Chain Management, and Enterprise Resource Planning with future applications-related courses in the future. Students will have the option to work with faculty on a research project, on an internship with one of our co-op partners, or a capstone project in Applied Data Science and Data Analytics.

The program also features a Special Topics course to address the ever changing current issues and techniques in Data Science and Data Analytics. Potential Special Topics courses include data science applications in Advanced Mobility, Security and Privacy in Data Science and Deep Learning.

In addition to completing this program as a traditional MS degree, the student may take advantage of the unique 'stacked credentials' structure that is also available. The program has two introductory certificates that may be earned first. Then the student can complete the remaining four courses to complete the MS in Applied Data Science and Data Analytics degree. The two certificates that may be earned on the path to earning this MS degree are:

-Foundations in Data Science (p. 25)

- Core Technologies for Data Science and Data Analytics

Note these certificates should be completed in the order provided here. If students are interested in further tailoring their educational experience, there is a third certificate that can be completed by selecting the appropriate Management elective in the program. That certificate is:

- Data Analytics (p. 25)

Code	Title	Credit Hours
COMM-601	Communicating about Data	4
CS-641	Foundations of Data Science	4
CS-665	Information Retrieval and Data Mining	4
CS-682	Machine Learning	4
MATH-630	Statistical Methods for Data Science	4
MGMT-623	Data Analytics	4
Select at least one of the following:		4
CS-601	Programming Methods for Data Science	
CS-651	Cloud Computing: Architecture & Applications	
CS-661	Database Systems	
CS-691	Data Science Special Topics	
Select no more than two of the following:		8 or 4
IME-654	Enterprise Resource Planning	
MGMT-625	Digital Strategy and Competitive Advantage	
MGMT-629	Management Science	
SCM-610	Foundations Supply Chain Management	
Select one of the following (CS-695 must be elected twice, and CS-693 may be selected twice):		4 or 8
CS-690	Data Science Capstone Project	
CS-693	Internship in Data Science	
CS-695	Thesis in Data Science	
	Credit Hours Subtotal:	*40*
Total Credit Hours		**40**

Graduate School & Research

Scott W. Reeve, Ph.D.

Dean of the Graduate School & Sponsored Research
4-321 CC, 810-762-9711, gsr@kettering.edu

Kettering University Graduate Learning Outcomes

In keeping with its mission, core values, and goals, Kettering University strives to ensure that graduates of its graduate degree programs achieve the following Graduate Learning Outcomes:

- **Communication** – demonstrate effective communication to a diverse range of professional audiences
- **Research and analytical skills** – demonstrate the ability to collect and synthesize information in ways consistent with the highest professional standards
- **Ethics** – develop a framework that recognizes and chooses ethical courses of action
- **Leadership and teamwork** – exhibit professional integrity, ethical leadership, and effective collaboration skills
- **Global perspective** – contribute to a sustainable world as informed by a global perspective
- **Entrepreneurial Mindset** – possess the skills necessary for creative and innovative problem-solving, awareness of customer needs, and opportunity recognition

MS in Lean Manufacturing

This program is available online.

One of a kind – Developed in Partnership with General Motors

Kettering University's online Master of Science in Lean Manufacturing emphasizes engineering and practical application of theory and is the only program of its kind. What better place to learn modern manufacturing process knowledge and Lean Six Sigma skills than the university that taught the brightest minds in automotive manufacturing? Kettering University's online Lean Manufacturing degree was developed in collaboration with General Motors to provide the skills needed to improve quality output, streamline processes and reduce waste. General Motors employees who complete the Capstone course bring the results of this course back to the company to share waste reduction and cost savings ideas. Within a ten year period the program is reported to have saved General Motors over $30M.

The curriculum for the Lean Management program involves 10 courses totaling 40 credit hours including:

- Seven core courses for 28 credits, plus
- Three certificate courses for 12 credits

Code	Title	Credit Hours
MFGO-601	Globally Integrated Manufacturing Company	4
MFGO-619	Six Sigma: Introduction to DMAIC	4
MFGO-633	Lean Production Systems	4
MFGO-635	Work Analysis for Lean Production Application	4
MFGO-639	Quality Assurance and Reliability	4
MFGO-649	Metrics for Lean Production Improvement	4
MFGO-659	Integrative Capstone Project	4
	Credit Hours Subtotal:	*28*

Certificate options are Global Leadership, Lean Principles for Healthcare, Operations Management , Supply Chain Management Level I & Level II and Management and Leadership.

MS in Lean Systems

Lean thinking has emerged as a powerful approach for enhancing efficiency, reducing waste, and achieving operational excellence in both manufacturing and service industries. While other Lean programs focus primarily on manufacturing, the Master of Science in Lean Systems (MSLS) provides the knowledge and tools necessary to understand, implement, and lead Lean practices in a variety of organizational settings.

The Master of Science in Lean Systems (MSLS) provides students with a deep understanding of Lean principles, systems thinking, and their application across diverse industries. The program combines the core tenets of Lean methodology with cutting-edge systems engineering concepts to produce graduates who are adept at optimizing complex systems, driving operational excellence, and leading transformative change within organizations.

Program Structure: The MSLS program is typically structured over a span of two academic years and
comprises a blend of core courses, elective courses, and a culminating capstone experience.

Code	Title	Credit Hours
MFGO-610	Foundations of Lean Organizations	4
MFGO-619	Six Sigma: Introduction to DMAIC	4
MFGO-633	Lean Production Systems	4
MFGO-635	Work Analysis for Lean Production Application	4
MFGO-639	Quality Assurance and Reliability	4
MFGO-649	Metrics for Lean Production Improvement	4
MFGO-659	Integrative Capstone Project	4
Total Credit Hours		**28**

Plus, one of the three-course graduate certificates listed below:

- Global Leadership
- Operations Management
- Lean Principles in Healthcare
- Management and Leadership
- Supply Chain Level I
- Supply Chain Level II

Master of Engineering in Artificial Intelligence

Home Department: Graduate School

Available: Off Campus Only

Program Advisor/Contact:

Dean of the Graduate School & Sponsored Research
4-321 CC, 810-762-9711, gsr@kettering.edu

Program Overview

The Master of Engineering in Artificial Intelligence degree is designed for engineering professionals working in the mobility (automotive) industry. Students can broaden their skill set for careers using Artificial Intelligence in the design and development of new automotive systems. All students must complete two mobility systems fundamentals courses (which two depend on your undergraduate degree), courses in automotive controls and signal processing, two management courses, and four technical courses specifically in Artificial Intelligence.

Program Objectives

All graduates of the Master of Engineering in Artificial Intelligence program will:

- Deepen their knowledge and increase their mastery of applications using Artificial Intelligence
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering, through continuing self-directed learning and professional development activities.

To receive the MEng Artificial Intelligence degree a student must complete 30 credit hours of approved graduate work. There is no option for thesis work.

Graduate Assistantship

There are no opportunities for graduate assistant positions in the M. Eng. Program.

Program of Study (Total Credit Hours: 30)

Required Courses

Automotive Fundamentals (Students with an undergraduate degree in engineering take the two courses outside of their undergraduate major. Students without an undergraduate engineering degree take all three.)

MENG-6013 Electrical and Computer Engineering Principles for Mobility Systems
MENG-6023 Industrial and Manufacturing Engineering Principles for Mobility Systems
MENG-6033 Mechanical Engineering Principles for Mobility Systems

Engineering Courses

MENG-6303 Digital Signal Processing Techniques for Automotive Engineering
MENG-6323 Automotive Control Systems

Management Courses

MENG-6093 Technology Management
MENG-6193 Project Management

Artificial Intelligence Core

MENG-6823 Machine Learning
MENG-6813 Artificial Intelligence
MENG-6523 AI for Autonomous Driving
MENG-6653 Information Retrieval & Data Mining

Master of Engineering in Autonomous Vehicles

Home Department: Graduate School

Available: Off Campus Only

Program Advisor/Contact:

Dean of the Graduate School & Sponsored Research
4-321 CC, 810-762-9711, gsr@kettering.edu

Program Overview

The Master of Engineering in Autonomous Vehicles program is designed for engineering professionals working in the mobility (automotive) industry. Students can broaden their skill set for careers in Autonomous Vehicle design and development. All students must complete two mobility systems fundamentals courses (which two depend on your undergraduate degree), courses on automotive controls and signal processing, two management courses, and four technical courses specifically in Autonomous Vehicles.

Program Objectives

All graduates of the Master of Engineering in Autonomous Vehicles program will:

- Deepen their knowledge and increase their mastery of technical areas in Autonomous Vehicle design and development.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering, through continuing self-directed learning and professional development activities.

To receive the MEng Autonomous Vehicle degree a student must complete 30 credit hours of approved graduate work. There is no option for thesis work.

Graduate Assistantship

There are no opportunities for graduate assistant positions in the M. Eng. Program.

Program of Study (Total Credit Hours: 30)

Required Courses

Automotive Fundamentals (Students with an undergraduate degree in engineering take the two courses outside of their undergraduate major. Students without an undergraduate engineering degree take all three.)

MENG-6013 Electrical and Computer Engineering Principles for Mobility Systems
MENG-6023 Industrial and Manufacturing Engineering Principles for Mobility Systems
MENG-6033 Mechanical Engineering Principles for Mobility Systems

Engineering Courses

MENG-6303 Digital Signal Processing Techniques for Automotive Engineering
MENG-6323 Automotive Control Systems

Management Courses

MENG-6093 Technology Management
MENG-6193 Project Management

Autonomous Vehicle Core

MENG-6423 Mobile Robotics
MENG-6523 AI for Autonomous Driving
MENG-6543 Computer Vision for Autonomous Driving
MENG-6843 Internet of Things (IoT)

Master of Engineering in Electric Vehicles

Home Department: Graduate School

Available: Off Campus Only

Program Advisor/Contact:

Dean of the Graduate School & Sponsored Research
4-321 CC, 810-762-9711, gsr@kettering.edu

Program Overview

The Master of Engineering in Electric Vehicles program is designed for engineering professionals working in the mobility (automotive) industry. Students can broaden their skill set for careers in Electric Vehicle design and development. All students must complete two mobility systems fundamentals courses (which two depend on your undergraduate degree), courses on automotive controls and signal processing, two management courses, and four technical courses specifically in Electric Vehicles.

Program Objectives

All graduates of the Master of Engineering in Electric Vehicles program will:

- Deepen their knowledge and increase their mastery of technical areas in Electric Vehicle design and development.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering, through continuing self-directed learning and professional development activities.

To receive the MEng Electric Vehicles degree a student must complete 30 credit hours of approved graduate work. There is no option for thesis work.

Graduate Assistantship

There are no opportunities for graduate assistant positions in the M. Eng. Program.

Program of Study (Total Credit Hours: 30)

Required Courses

Automotive Fundamentals (Students with an undergraduate degree in engineering take the two courses outside of their undergraduate major. Students without an undergraduate engineering degree take all three.)

MENG-6013 Electrical and Computer Engineering Principles for Mobility Systems
MENG-6023 Industrial and Manufacturing Engineering Principles for Mobility Systems
MENG-6033 Mechanical Engineering Principles for Mobility Systems

Engineering Courses

MENG-6303 Digital Signal Processing Techniques for Automotive Engineering
MENG-6323 Automotive Control Systems

Management Courses

MENG-6093 Technology Management
MENG-6193 Project Management

Electrified Vehicle Core

MENG-6213 Energy Storage Sys w/ EV App
MENG-6263 Power Electronics for Vehicle Electrification
MENG-6463 Introduction to Vector Control of AC Electric Machines
MENG-6453 Introduction to Electrified Vehicle Propulsion

Master of Engineering (General)

Home Department: Graduate School

Available: Off Campus Only

Program Advisor/Contact:

Dean of the Graduate School & Sponsored Research
4-321 CC, 810-762-9711, gsr@kettering.edu

Program Overview

The Master of Engineering (General) degree is designed for engineering professionals working in the mobility (automotive) industry. Students can broaden their skill set for subjects including Autonomous Vehicles, Electric Vehicles and Artificial Intelligence. All students must complete two mobility systems fundamentals courses (which two depend on your undergraduate degree), courses on automotive controls and signal processing, two management courses, and four technical courses.

Program Objectives

All graduates of the Master of Engineering (General) program will:

- Deepen their knowledge and increase their mastery of technical areas in modern automotive system design and development.
- Be better prepared to advance in positions of technical and/or managerial leadership.
- Develop their ability to sustain a life-long career in engineering, through continuing self-directed learning and professional development activities.

To receive the Master of Engineering (General) degree a student must complete 30 credit hours of approved graduate work. There is no option for thesis work.

Professional Development Seminars

Students in the professionally-oriented Master of Engineering General program may receive credit for taking seminars either through Kettering University's Professional Development Program or SAE International's Professional Development Program.

To receive credit students must complete a total of four Continuing Education Units (CEU), equivalent to 40 hours of instruction, which have been reviewed and approved by a faculty review committee, consistent with Graduate academic policy.

The transfer of credit must be supported by documentation from the provider for each individual applicant seeking such transfer.

Graduate Assistantship

There are no opportunities for graduate assistant positions in the M. Eng. Program.

Program of Study (Total Credit Hours: 30)

Required Courses

Automotive Fundamentals (Students with an undergraduate degree in engineering take the two courses outside of their undergraduate major. Students without an undergraduate engineering degree take all three.)

MENG-6013 Electrical and Computer Engineering Principles for Mobility Systems
MENG-6023 Industrial and Manufacturing Engineering Principles for Mobility Systems
MENG-6033 Mechanical Engineering Principles for Mobility Systems

Engineering Courses

MENG-6303 Digital Signal Processing Techniques for Automotive Engineering
MENG-6323 Automotive Control Systems

Management Courses

MENG-6093 Technology Management
MENG-6193 Project Management

Electives (Select Four)

MENG-6423 Mobile Robotics
MENG-6523 AI for Autonomous Driving
MENG-6543 Computer Vision for Autonomous Driving
MENG-6843 Internet of Things (IoT)
MENG-6213 Energy Storage Sys w/ EV App
MENG-6263 Advanced Power Electronics for Vehicle Electrification
MENG-6463 Vector Control of AC Electric Machines
MENG-6453 Electrified Vehicle Propulsion
MENG-6823 Machine Learning
MENG-6813 Artificial Intelligence
MENG-6653 Information Retrieval & Data Mining
MENG-6953 Mobility Systems Seminar I
MENG-6963 Mobility Systems Seminar II

School of Management

The School of Management is home to the Department of Business. The programs offered by the School develop business leaders through management education. The School of Management offers an undergraduate degree in Management and a variety of Master's programs including Master of Business Administration, Technical Master of Business Administration, Master of Science in Engineering Management, Master of Science in Operations Management, and Master of Science in Supply Chain Management.

The Vision of School of Management

Kettering University School of Management aims to be a premier technology-oriented business school that connects transformational experiences with rigorous management education to produce innovation-driven managers who are known for their leadership.

The Mission of School of Management

Kettering University School of Management provides industry-relevant management education integrating emerging technologies, innovation, and entrepreneurship for the solution of critical business and social problems.

The Statement of Social & Community Responsibility

The Kettering University School of Management prepares technologically sophisticated leaders that foster economic and societal progress in a globally responsible and sustainable way.

GRADUATE PROGRAMS

Master of Business Administration (p. 16)

Kettering University's Master of Business Administration (MBA) program provides students with an educational experience that enables graduates to perform as effective management professionals and leaders in modern organizations. This program is offered both online and on campus.

Technical Master of Business Administration

The Technical Master of Business Administration (TECH MBA) provides graduates of STEM undergraduate degree programs with a stimulating on-campus educational experience that is at the intersection of contemporary business and cutting edge technical fields. The STEM-designated program prepares graduates who can be ambidextrous with business and technology in leading organizations, both as technology experts and digital value creators while competing in an economy characterized by disruptive innovations and digital reinvention & reconfiguration. This program is offered on campus only.

Master of Science in Engineering Management (p. 18)

The Master of Science in Engineering Management (MSEM) program blends education in traditional business topics with technical coursework in Engineering. This program is offered both online and on campus.

Master of Science in Operations Management (p. 20)

The Master of Science in Operations Management (MSOM) program focuses on the management skills, knowledge, and attitudes required to lead organizations that create goods and services. This program is offered both online and on campus.

Master of Science in Supply Chain Management

The Master of Science in Supply Chain Management program positions graduates for career advancement and leadership opportunities within the import and export, manufacturing and transport, and logistics management industries. This program is offered online only.

Master of Business Administration (MBA)

Home Department: School of Management

Program Advisor/Contact:

School of Management
810-762-9630
som@kettering.edu

Program Overview

Kettering University's Master of Business Administration (MBA) program provides students with an educational experience that enables graduates to perform as effective management professionals and leaders in modern organizations. Students may start this program in any term. This program does not have a thesis option.

The BS-Masters Pathway (Bachelor/Master) option is available to qualified students irrespective of their intent to complete the graduate degree, taking courses on campus or online. Kettering University BS-Masters (BS/MS-BS/MBA) Program rules apply.

On-campus MBA students may select a management internship course (MGMT-693) as part of the core program and may start the program in any term.

In addition to the seven core courses, students complete one of the approved certificates, each of which comprises three graduate-level business courses. The MBA is offered both online and on campus.

MBA PROGRAM GOALS

Students should:

1. demonstrate the personal, interpersonal, teamwork, and ethical skills required to lead and manage effectively and ethically. (Personal Effectiveness)
2. be able to identify, evaluate, and choose among alternative solutions to global organizational problems. (Cognitive Reasoning)
3. be able to evaluate the effects of technology on organizational development. (Technological Mindset)
4. be able to explain the importance of an entrepreneurial mindset in managing organizational talent, resources, and innovation in a complex global economy. (Value Creation in a Global Economy)
5. demonstrate knowledge, skills, and abilities in core disciplines, focusing on identifying, solving, and managing organizational value creation. (Core Domain Knowledge)

Program Curriculum Requirements

The Curriculum for the MBA involves 10 courses totaling 40 credit hours including:

- Seven core course for 28 credits, plus
- Three concentration or certificate courses for 12 credits.

Prerequisites

A foundational level of knowledge in critical functional and tool areas is required for the Master of Business Administration (MBA) program. This foundation helps to ensure that students are prepared to fully engage and succeed in the coursework associated with graduate programs in management. Students must have an undergraduate course in each of the following areas, or complete MGMT-510 Foundations of Business, or test out of individual prerequisite courses through self-directed study.

Areas of prerequisite knowledge:

Code	Title	Credit Hours
Economics		
Managerial Accounting		
Statistics		
Management		
Marketing		

Required Courses

Code	Title	Credit Hours
Required Courses [1]		
ACCT-639	Managerial Accounting	4
FINC-619	Financial Management	4
Choose One		4
BUSN-689	Organizational Behavior	
MGMT-639	Managing People & Organization	
MGMT-679	Leadership	
MRKT-679	Marketing Management	4
MGMT-665	Strategic Management	4
Choose One		4
BUSN-659	International Business	
MGMT-619	Project Management	
BUSN-779	MBA Capstone: Innovation & New Ventures	4
or MGMT-693	Internship in Management	
Total Credit Hours		**28**

Concentration & Certificates

Code	Title	Credit Hours
General Concentration		
(This is a Concentration only.)		
Select three 600-level electives from ISYS, IME, MFGO, or MGMT		12
	Credit Hours Subtotal:	*12*
Global Leadership Certificate		
BUSN-689	Organizational Behavior	4
MGMT-649	Ethics and Leadership	4
MGMT-679	Leadership	4
	Credit Hours Subtotal:	*12*
Supply Chain & ERP Certificate (Available on Campus Only)		
IME-652	Production System Design	4
IME-654	Enterprise Resource Planning	4
MGMT-669	Supply Chain Management	4
or IME-653	Supply Chain Design	
	Credit Hours Subtotal:	*12*
Operations Management Certificate		

MGMT-661	Operations Management	4
or IME-676	Lean Six Sigma	
MGMT-609	Technology Management	4
MGMT-619	Project Management	4
	Credit Hours Subtotal:	*12*
Data Analytics Certificate		
CS-601	Programming Methods for Data Science	4
MGMT-623	Data Analytics	4
MGMT-624	Data Visualization	4
or MGMT-625	Digital Strategy and Competitive Advantage	
	Credit Hours Subtotal:	*12*
Lean Principles for Healthcare Certificate (Available Online Only)		
IME-656	Engineering for Healthcare Systems	4
HMGT-609	Healthcare Management	4
Choose One of the Following:		4
IME-676	Lean Six Sigma	
MGMT-669	Supply Chain Management	
SCM-610	Foundations Supply Chain Management	
	Credit Hours Subtotal:	*12*
Supply Chain Management Level 1 Certificate (Available Online Only)		
SCM-610	Foundations Supply Chain Management	4
SCM-611	Collaboration Supply Chain Management	4
SCM-612	Customer Relationship Management	4
	Credit Hours Subtotal:	*12*
Supply Chain Management Level 2 Certificate (Available Online Only)		
SCM-613	Supply Chain Logistics	4
SCM-614	Procurement and Risk Management	4
SCM-615	Supply Chain Planning	4
	Credit Hours Subtotal:	*12*
Management & Leadership Certificate (Available Online Only)		
MGMT-620	Business Communication and Presentation	4
MGMT-621	Cultural Competency in the Workplace	4
MGMT-622	Organized Labor and Management Relations	4
or MGMT-649	Ethics and Leadership	
	Credit Hours Subtotal:	*12*

[1] MGMT-693 is only available to on campus students.

TECH Master of Business Administration

Home Department: School of Management

Program Advisor/Contact:

School of Management
810-762-9630
som@kettering.edu

Program Overview

Kettering University's Technical Master of Business Administration (TECH MBA) provides graduates of STEM undergraduate degree programs with a stimulating on-campus educational experience that is at the intersection of contemporary business and cutting edge technical fields. The STEM-designated program prepares graduates who can be ambidextrous with business and technology in leading organizations both as technology experts and digital value creators while competing in an economy characterized by disruptive innovations and digital reinvention & reconfiguration.

The seated 40-credit TECH MBA programs contain seven (28 credits hours) core business courses with an additional three graduate elective courses (12 credits hours) in a specific **technical** Emphasis area among the options listed below:

- Artificial Intelligence
- Advanced Mobility
- Advanced Manufacturing
- Data Analytics and Big Data
- Materials Science and Engineering
- New Energy and Sustainability
- Systems Engineering
- Logistics & Supply Chain Management

The TECH MBA Core in combination with the chosen STEM Emphasis will expose students to the application of technology in addressing management issues and problems.

Students may select a management internship course (MGMT-693) as part of the core program and may start the program in any term. Elective course selections in technical emphasis areas must be approved by the Department Head of the department where the course is offered, the Advisor in the School of Management, and the Dean of the Graduate School.

TECH MBA PROGRAM GOALS

Students should:

1. demonstrate the personal, interpersonal, and teamwork skills required to lead and manage technology integration in organizations effectively and ethically. (Personal Effectiveness)
2. be able to identify, evaluate, and choose among alternative technical solutions to global organizational problems. (Cognitive Reasoning)
3. be able to evaluate the effects of technology on organizational development. (Technological Mindset)
4. be able to explain the importance of an entrepreneurial mindset in managing organizational talent, resources, and innovation in a complex global economy. (Value Creation in a Global Economy)
5. demonstrate knowledge, skills, and abilities in core disciplines, focusing on identifying, solving, and managing technical issues to create value. (Core Domain Knowledge)

Prerequisites

A foundational level of knowledge in critical areas is required prior to beginning the TECH Master of Business Administration program. This foundation helps to ensure that students are prepared to fully engage

and succeed in the coursework associated with graduate programs in management. Students must have an undergraduate course in each of the following areas, complete MGMT-510 Foundations of Business, or test out of individual prerequisite courses through self-directed study.

Areas of prerequisite knowledge:

Economics, Managerial Accounting, Statistics, Management, Marketing

Required Courses

Code	Title	Credit Hours
ACCT-639	Managerial Accounting	4
FINC-619	Financial Management	4
MGMT-629	Management Science	4
Choose One		4
BUSN-689	Organizational Behavior	
MGMT-639	Managing People & Organization	
MGMT-679	Leadership	
MRKT-679	Marketing Management	4
MGMT-665	Strategic Management	4
Choose One		4
BUSN-659	International Business	
MGMT-619	Project Management	
MGMT-693	Internship in Management	
Total Credit Hours		**28**

Technical Emphasis Areas

Code	Title	Credit Hours
Data Analytics & Big Data		**12**
Choose Three		
COMM-601	Communicating about Data	4
CS-601	Programming Methods for Data Science	4
CS-641	Foundations of Data Science	4
CS-651	Cloud Computing: Architecture & Applications	4
CS-661	Database Systems	4
CS-665	Information Retrieval and Data Mining	4
CS-682	Machine Learning	4
MGMT-623	Data Analytics	4
MGMT-624	Data Visualization	4
MGMT-625	Digital Strategy and Competitive Advantage	4
MATH-627	Probability and Stochastic Modeling	4
Artificial Intelligence		**12**
CS-601	Programming Methods for Data Science	4
Choose Two of the Following:		
CS-665	Information Retrieval and Data Mining	4
CS-681	Artificial Intelligence	4
CS-682	Machine Learning	4
Advanced Mobility		**12**
Choose Three		
CE-642	Mobile Robotics	4
CE-652	Artificial Intelligence for Autonomous Driving	4
CE-654	Computer Vision for Autonomous Driving	4
ECE-610	Modeling of Dynamic Systems	4
ECE-630	Digital Signal Processing Techniques for Automotive Engineering	4
ECE-632	Automotive Control Systems	4
ECE-642	Machine Drives for Electric Vehicles	4
New Energy & Sustainability		**12**
MECH-426	Fuel Cell Science and Engineering	4
MECH-427	Energy and the Environment	4
MECH-428	Bio and Renewable Energy	4
Material Science & Engineering		**12**
MECH-416	Introduction to Finite Element Analysis with Structural Applications	4
MECH-482	Mechanics and Design Simulation of Fiber-Reinforced Composite Materials	4
MECH-610	Application of Artificial Intelligence in Mechanical Engineering	4
Advanced Manufacturing		**12**
Choose Three		
IME-601	IME Principles for Mobility Systems	4
IME-603	Numerical Control Machining	4
IME-608	Industrial Robotics	4
IME-622	Simulation	4
IME-662	Ergonomics	4
IME-663	Safety & Human Factors	4
IME-665	Human-Computer Interaction and Interface Design	4
Systems Engineering		**12**
CS-601	Programming Methods for Data Science	4
ECE-610	Modeling of Dynamic Systems	4
IME-601	IME Principles for Mobility Systems	4
Logistics/Supply Chain Management		**12**
Choose Three		
IME-652	Production System Design	4
IME-653	Supply Chain Design	4
IME-654	Enterprise Resource Planning	4
IME-676	Lean Six Sigma	4
MGMT-669	Supply Chain Management	4

MS in Engineering Management

Home Department: School of Management

Program Academic Advisor/Contact:
School of Management
810-762-9630
som@kettering.edu

Program Overview

The Master of Science in Engineering Management program combines individuals' professional engineering knowledge with education in the topics necessary to effectively manage in the contemporary technology-driven business environment. Enrollment is limited to graduates of ABET-accredited engineering programs or Kettering University graduates with majors in an engineering discipline. Six certificate options are embedded in the Engineering Management degree program.

On campus MSEM students may select a management internship course (MGMT-693) as part of the core program and may start the program in any term.

MSEM PROGRAM GOALS

Students should:

1. demonstrate the personal, interpersonal, teamwork, and ethical skills required to lead and manage engineering functions in organizations effectively and ethically. (Personal Effectiveness)
2. be able to identify, evaluate, and choose among alternative solutions to global organizational problems. (Cognitive Reasoning)
3. be able to evaluate the effects of technology on engineering management issues. (Technological Mindset)
4. be able to explain the importance of an entrepreneurial mindset in managing organizational talent, resources, and innovation in a complex global economy. (Value Creation in a Global Economy)
5. demonstrate knowledge, skills, and abilities in core disciplines, focusing on identifying, solving, and managing complex engineering issues to create value. (Core Domain Knowledge)

Prerequisites

A foundational level of knowledge in critical areas is required prior to beginning the Master of Science in Engineering Management (MSEM) program. This foundation helps to ensure that students are prepared to fully engage and succeed in the coursework associated with graduate programs in management. Students must have an undergraduate course in each of the following areas, or complete MGMT-510 Foundations of Business, or test out of individual prerequisite courses through self-directed study.

Areas of prerequisite knowledge:

Code	Title	Credit Hours
Economics		
Managerial Accounting		
Statistics		
Management		
Marketing		

Program Curriculum Requirements

The curriculum for the Engineering Management program involves 10 courses totaling 40 credit hours including:

- Seven core courses for 28 credits, plus
- Three certificate courses for 12 credits.

Required Core Courses

Code	Title	Credit Hours
Required Core Courses [1,2,3]		
BUSN-659	International Business	4
FINC-619	Financial Management	4
or ACCT-639	Managerial Accounting	
IME-684	Engineering Ethics	4
Choose One		4
ISYS-669	Enterprise Information System Models	
MGMT-623	Data Analytics	
MGMT-624	Data Visualization	
Choose One		4
BUSN-689	Organizational Behavior	
MGMT-639	Managing People & Organization	
MGMT-679	Leadership	
Choose One		4
MGMT-659	Strategy (Capstone)	
or MGMT-665	Strategic Management	
MGMT-693	Internship in Management [3]	
MRKT-679	Marketing Management	4
Total Credit Hours		**28**

Certificates

Code	Title	Credit Hours
Global Leadership Certificate (Available Online Only) [4]		
BUSN-689	Organizational Behavior	4
MGMT-649	Ethics and Leadership	4
MGMT-679	Leadership	4
	Credit Hours Subtotal:	*12*
Operations Management Certificate		
MGMT-661	Operations Management	4
or IME-676	Lean Six Sigma	
MGMT-609	Technology Management	4
MGMT-619	Project Management	4
	Credit Hours Subtotal:	*12*
Supply Chain & ERP Certificate (Available On-Campus Only) **Select any three courses from the followings**		
IME-652	Production System Design	4
IME-654	Enterprise Resource Planning	4
MGMT-669	Supply Chain Management	4
or IME-653	Supply Chain Design	
	Credit Hours Subtotal:	*12*
Technology Leadership Certificate (Available On-Campus Only)		
Students select three 600 level courses from CE, CS, ECE, EE, IME, or MECH.		12
	Credit Hours Subtotal:	*12*
Lean Principles for Healthcare Certificate (Available Online Only)		
IME-656	Engineering for Healthcare Systems	4
IME-676	Lean Six Sigma	4

or MGMT-669	Supply Chain Management	
HMGT-609	Healthcare Management	4
	Credit Hours Subtotal:	*12*
Data Analytics Certificate		
CS-601	Programming Methods for Data Science	4
MGMT-623	Data Analytics	4
MGMT-624	Data Visualization	4
or MGMT-625	Digital Strategy and Competitive Advantage	
	Credit Hours Subtotal:	*12*

[1] Study Abroad credits cannot be applied to this core courses set.
[2] Students admitted to the BS-Masters program can count up to three (3) 400*/500-level courses taken as an undergraduate. *400 level courses must be part of an approved 400/600 course offering.
[3] MGMT-693 is only available to on campus students.
[4] Students affiliated with the SACM program are not allowed to enroll in this certificate.

The degree also has a study-abroad option that allows students to experience international culture and receive up to 16 credits of graduate course work.

MS in Operations Management

Home Department: School of Management

Program Advisor/Contact:
School of Management
810-762-9630
som@kettering.edu

Program Overview

The Master of Science in Operations Management (MSOM) program focuses on the management skills, knowledge, and attitudes required to lead organizations that create goods and services. Students in this program will gain expertise in general business management areas, as well as a firm understanding of methods and practices in modern operations management. Students currently in this program possess a wide variety of backgrounds and undergraduate degrees. The School of Management designed this program for people who currently are in — or desire to enter — a management position within a manufacturing or services company. This program does not require a thesis. Five certificate options are embedded in the MS in Operations Management degree program.

On campus MSOM students may select a management internship course (MGMT-693) as part of the core program and may start the program in any term.

MSOM PROGRAM GOALS

Students should:

1. demonstrate the personal, interpersonal, teamwork, and ethical skills required to lead and manage operations in organizations effectively and ethically. (Personal Effectiveness)
2. be able to identify, evaluate, and choose alternative solutions to operational problems. (Cognitive Reasoning)
3. be able to evaluate technology's effects on organizational operations management. (Technological Mindset)
4. be able to explain the importance of an entrepreneurial mindset in managing organizational talent, resources, and innovation in a complex global economy. (Value Creation in a Global Economy)
5. demonstrate knowledge, skills, and abilities in core disciplines, focusing on identifying, solving, and managing complex operational issues to create value. (Core Domain Knowledge)

Program Curriculum Requirements

The curriculum for the Operations Management program involves 10 courses totaling 40 credit hours including:

- Seven core courses for 28 credits, plus
- Three certificate courses for 12 credits.

Prerequisites

A foundational level of knowledge in critical functional and tool areas is required in the Master of Science in Operations Management (MSOM) program. This foundation helps to ensure that students are prepared to fully engage and succeed in the coursework associated with graduate programs in management. Students must have an undergraduate course in each of the following areas, or complete MGMT-510 Foundations of Business, or test out of individual prerequisite courses through self-directed study.

Areas of prerequisite knowledge:

Code	Title	Credit Hours
Economics		
Managerial Accounting		
Statistics		
Management		
Marketing		

Required Core Courses

Code	Title	Credit Hours
Required Core Courses [1]		
FINC-619	Financial Management	4
ISYS-669	Enterprise Information System Models	4
MGMT-629	Management Science	4
MGMT-639	Managing People & Organization	4
MGMT-659	Strategy	4
or MGMT-693	Internship in Management	
MGMT-661	Operations Management	4
MRKT-679	Marketing Management	4
Certificate		
Select three (3) 4-credit courses in one of the certificate areas listed. [2]		12
Total Credit Hours		**40**

Certificates

Code	Title	Credit Hours
Global Leadership Certificate (Available Online Only) [3]		
BUSN-689	Organizational Behavior	4
MGMT-649	Ethics and Leadership	4
MGMT-679	Leadership	4
	Credit Hours Subtotal:	*12*
Operations Management Certificate		
MGMT-661	Operations Management	4
or IME-676	Lean Six Sigma	
MGMT-609	Technology Management	4
MGMT-619	Project Management	4
	Credit Hours Subtotal:	*12*
Supply Chain and ERP Certificate (Available On-Campus Only)		
IME-652	Production System Design	4
IME-654	Enterprise Resource Planning	4
MGMT-669	Supply Chain Management	4
or IME-653	Supply Chain Design	
	Credit Hours Subtotal:	*12*
Lean Principles for Healthcare Certificate (Available Online Only)		
IME-656	Engineering for Healthcare Systems	4
IME-676	Lean Six Sigma	4
or MGMT-669	Supply Chain Management	
HMGT-609	Healthcare Management	4
	Credit Hours Subtotal:	*12*
Data Analytics Certificate		
CS-601	Programming Methods for Data Science	4
MGMT-623	Data Analytics	4
MGMT-624	Data Visualization	4
or MGMT-625	Digital Strategy and Competitive Advantage	
	Credit Hours Subtotal:	*12*

[1] MGMT-693 is only available to on campus students.

[2] Students admitted to the BS-Masters program can count up to three (3) 400*/500-level courses taken as an undergraduate. *400 level courses must be part of an approved 400/600 course offering.

[3] Students affiliated with the SACM program are not allowed to enroll in this certificate.

MS in Supply Chain Management

Home Department: School of Management

Program Advisor/Contact:

This program is available online.

Program Overview:

The online Master of Science in Supply Chain Management degree positions graduates for career advancement and leadership opportunities within the import and export, manufacturing and transport, and logistics management industries.

Program Curriculum Requirements

The curriculum for the Supply Chain Management program involves 10 courses totaling 40 credit hours including:

- Seven core courses for 28 credits, plus
- Three certificate courses for 12 credits

Required Courses

Code	Title	Credit Hours
FINC-619	Financial Management	4
SCM-610	Foundations Supply Chain Management	4
SCM-611	Collaboration Supply Chain Management	4
SCM-612	Customer Relationship Management	4
SCM-613	Supply Chain Logistics	4
SCM-614	Procurement and Risk Management	4
SCM-615	Supply Chain Planning	4
Total Credit Hours		**28**

Certificates

Code	Title	Credit Hours
Global Leadership Certificate (Available Online Only)		
BUSN-689	Organizational Behavior	4
MGMT-649	Ethics and Leadership	4
MGMT-679	Leadership	4
	Credit Hours Subtotal:	*12*
Lean Principles for Healthcare Certificate (Available Online Only)		
IME-656	Engineering for Healthcare Systems	4
IME-676	Lean Six Sigma	4
or MGMT-669	Supply Chain Management	
HMGT-609	Healthcare Management	4
	Credit Hours Subtotal:	*12*
Operations Management Certificate		
MGMT-661	Operations Management	4
or IME-676	Lean Six Sigma	
MGMT-609	Technology Management	4
MGMT-619	Project Management	4
	Credit Hours Subtotal:	*12*
Modern Business Practices Certificate (Available Online Only)		
MGMT-620	Business Communication and Presentation	4
MGMT-621	Cultural Competency in the Workplace	4
MGMT-622	Organized Labor and Management Relations	4
	Credit Hours Subtotal:	*12*
Data Analytics Certificate		
CS-601	Programming Methods for Data Science	4
MGMT-623	Data Analytics	4
MGMT-624	Data Visualization	4

or MGMT-625	Digital Strategy and Competitive Advantage	
	Credit Hours Subtotal:	*12*

BS/Master Pathway

BS/Master Pathway

This option is available to Kettering University undergraduate students entering any Kettering University graduate program, either residential or online.

Kettering University undergraduate students interested in graduate study may elect to apply to the BS/ Master Pathway, which provides students with an opportunity to complete a baccalaureate degree while earning credit towards a graduate degree. This program is exclusively available to Kettering University undergraduate students and leverages the University's premier academic programs. Students admitted to the BS/Master Pathway will complete the same total number of Co-op work terms as conventional undergraduate students.

- Students can apply before graduating (after completing 90 undergraduate credit hours) or within four (4) years of obtaining their baccalaureate degree.
- The student completes the baccalaureate degree, with the traditional undergraduate thesis (BS), and receives the degree at the conventional time.
- Up to sixteen (16) credits or four courses, of *400 or 600 level credit, completed as an undergraduate, and for which a grade of B or better was earned, are also applied to the graduate degree. (Undergraduate capstone courses are not eligible.) (*400 level courses must be part of an approved 400/600-course offering.)
- Twenty-four (24) graduate credits remain to meet the graduation requirement of 40 graduate credits for a degree (Master of Engineering students will need to complete six additional graduate courses to complete the graduation requirement).

Grade Requirements for Admission to BS/Master Pathway

A minimum GPA of 3.0 is required. Students with a GPA below 3.0 may be considered on an individual basis. The degree granting department will determine acceptance.

Other Requirements

- Both part-time and full-time students may qualify for this program.
- This program is only available to students who will receive (or have received) a Kettering University bachelor's degree.

For more information, please contact the Graduate School at gsr@kettering.edu.

Second Master's Degree

Pursuing a Second Master's Degree

Graduates of Kettering University's MS and MBA programs are encouraged to pursue a second master's degree subject to the following policies.

- Students pursue a single master's degree at a time. Students desiring a second master's degree must complete the application.
- To earn a second master's degree, students must complete all degree requirements for the degree. In so doing, students must complete additional credit hours equal to a minimum of 40% of the second degree's requirements:
  - For MBA (or MS) graduates pursuing a 10 course MS degree – minimum of four additional courses (16 credits).
  - For MS graduates pursuing a 10 course MBA degree – minimum of four additional courses (16 credits).
  - For students interested in pursing an MS in Mobility Systems or Mechanical Engineering as the 2nd degree see below:
    - Both MS Mobility Systems & Mechanical Engineering require students to meet ALL requirements for the program. The minimum amount of additional graduate work to meet these requirements is 24 credit hours (for those students who choose the graduate thesis option - four courses plus eight hours of graduate thesis). Students who do not elect the graduate thesis option will need to complete an additional 28 credit hours.
    - For the Mobility Systems graduate program **only,** ECE-610 (4 credits) is required. However, students only need to complete it once. For example, if ECE-610 was completed during the first Masters degree program, students are not required to take it again as part of the second graduate degree program.
    - For the Mechanical Engineering graduate program **only,** MECH-600 (4 credits) is required. However, students only need to complete it once. For example, if MECH-600 was completed during the first Masters degree program, students are not required to take it again as part of the second graduate degree program.
    - Two graduate level courses (8 credits) from the first Masters degree can be applied to the second Masters degree program assuming the courses are eligible core or elective graduate program courses. A third graduate level course from the first graduate degree program may also be applied provided that A) the student elects to pursue a Masters thesis option in the second Masters degree program and B) the third course is also an appropriate core or elective course in the second Masters degree program.
- In order to gain maximum advantage from prior course work, graduates must apply for their second master's degree within three years of graduating from their first-degree program. The admission committee will review applications beyond the three-year time limit to establish the relevancy of their course work. Students in this case may be required to complete more than 40% of the second degree's requirements.
- Students may request to transfer in a maximum of eight credits to Kettering University for use in their graduate studies. Pursuit of a second master's degree does not raise this limit. Transfer credit is only considered for courses with a grade of B or better.
- Students must successfully complete all prescribed courses within the six (6) year limit. A student who anticipates not meeting the time

limit must notify the Graduate Office at least six (6) months prior to the expiration of the six (6) year limit.

Learning Outcomes

Graduate Learning Outcomes

- **Communication** – demonstrate effective communication to a diverse range of professional audiences
- **Research and analytical skills** – demonstrate the ability to collect and synthesize information in ways consistent with the highest professional standards
- **Ethics** – develop a framework that recognizes and chooses ethical courses of action
- **Leadership and teamwork** – exhibit professional integrity, ethical leadership, and effective collaboration skills
- **Global perspective** – contribute to a sustainable world as informed by a global perspective
- **Entrepreneurial Mindset** – possess the skills necessary for creative and innovative problem-solving, awareness of customer needs, and opportunity recognition

Certificate Programs

Kettering University has designed a set of graduate certificate programs for students who want to update their knowledge, skills and abilities on par with the development of cutting edge trends that will lead to opening new doors, career advancement and increased salary. For students who do not have a graduate degree in hand, a graduate certificate can be the beginning of work toward earning a master's degree. For students who already hold a master's degree, a certificate program can provide graduate level proficiency in an additional area of knowledge.

Certificate Programs

- **Core Technologies of Data Sciences and Data Analytics**
  - Curriculum (p. 25)
- **Data Analytics**
  - Curriculum (p. 25)
- **Foundations of Data Science**
  - Curriculum (p. 25)
- **Global Leadership**
  - Curriculum (p. 25)
- **Lean Principles for Healthcare**
  - Curriculum (p. 26)
- **Management and Leadership**
  - Curriculum (p. 26)
- **Operations Management**
  - Curriculum (p. 26)
- **Supply Chain and ERP**
  - Curriculum (p. 26)
- **Supply Chain Management Level I**
  - Curriculum (p. 26)
- **Supply Chain Management Level II**
  - Curriculum (p. 26)
- **Technology Leadership**
  - Curriculum (p. 27)

Students must meet admission requirements for a graduate program to be accepted into the graduate certificate.

Prerequisite requirements must be met for the courses in a certificate program or must be waived by the offering department. If prerequisites are waived for the certificate program and the student decides to pursue a complete graduate degree, there may be prerequisites required for a complete program admission.

Graduate tuition will be paid for graduate certificate programs. Students may take classes online or on-campus as available.

Students must meet graduate Graduation Requirements for each stand alone certificate.

Core Technologies of Data Sciences and Data Analytics

The Core Technologies of Data Sciences and Data Analytics certificate program dives deeper into the key machine learning-related algorithms that comprise Data Science. The certificate begins with developing an understanding of how to retrieve and mine data from various sources. The machine learning course provides a strong foundation into both supervised and unsupervised learning algorithms. The Data Analytics course then explores how to formulate business problems in the language of data science and how to derive deep understandings of the utilization of machine learning for solving these problems.

Code	Title	Credit Hours
CS-665	Information Retrieval and Data Mining	4
CS-682	Machine Learning	4
MGMT-623	Data Analytics	4

Data Analytics

The Data Analytics certificate program allows development of data-science skills that are needed by business managers. The students start with developing proficiency in using Python, a general purpose programming language that is the dominant programming language used by data scientists. Then they build upon this knowledge by taking courses covering analytics, visualization, and machine learning. The certificate provides the option to examine the strategic use of analytics technologies in the Digital Strategy and Competitive Advantage course.

Code	Title	Credit Hours
CS-601	Programming Methods for Data Science	4
MGMT-623	Data Analytics	4
Select one of the following		4
MGMT-624	Data Visualization	
MGMT-625	Digital Strategy and Competitive Advantage	

Foundations of Data Science

The Foundations of Data Science certificate program provides students with a solid math, programming and algorithmic foundation in Data Science. Students will understand the key statistical theory that underlies data science, as well as become proficient in using both R and Python, two key programming languages used by data scientists. For students with a strong programming background they will study how to communicate critical ideas through data. The Foundations in Data Science course then ties these key skills with the fundamental algorithms related to machine learning in data science. This certificate can be a strong standalone certificate or can provide the foundational knowledge upon which to earn either the Data Analytics or the Core Technologies of Data Sciences and Data Analytics certificates.

Code	Title	Credit Hours
Select one of the following		4
COMM-601	Communicating about Data	
or CS-601	Programming Methods for Data Science	
CS-641	Foundations of Data Science	4
MATH-630	Statistical Methods for Data Science	4

Global Leadership

School of Management
Admissions basis: MBA/MSOM/MSEM/MSLM

Organizations, their customers and their supply chains are globally interconnected. The Global Leadership certificate helps business professionals understand the interpersonal challenges presented when operating within this complexity. The certificate courses entail a comprehensive examination of organizational behavior theories, including analysis at individual, group and organizational levels, leadership theories and models along with leadership development and application of these constructs, and an overview of the evolution of ethical theories and the role of the leader within the business context.

Code	Title	Credit Hours
BUSN-689	Organizational Behavior	
MGMT-649	Ethics and Leadership	
MGMT-679	Leadership	

Lean Principles for Healthcare

School of Management
Admissions basis: MBA/MSOM/MSEM/MSLM

This Certificate is available online only.

Total Required Credits: 12

Code	Title	Credit Hours
HMGT-609	Healthcare Management	4
IME-656	Engineering for Healthcare Systems	4
Choose One of the Following:		
IME-676	Lean Six Sigma	4
MGMT-669	Supply Chain Management	4
SCM-610	Foundations Supply Chain Management	4

Management and Leadership

School of Management

This Certificate is available online only.

Code	Title	Credit Hours
Choose Three		12
MGMT-620	Business Communication and Presentation	
MGMT-621	Cultural Competency in the Workplace	
MGMT-622	Organized Labor and Management Relations	
or MGMT-649	Ethics and Leadership	

Operations Management

School of Management

Admissions basis: MBA /MSOM/MSEM/MSLM

The Operations Management Certificate provides necessary knowledge and skills in designing and controlling of production processes and redesigning business operations in the production of goods and services with the objective to create the highest level of efficiency in generating values.

Code	Title	Credit Hours
MGMT-661	Operations Management [1]	4
MGMT-609	Technology Management	4
MGMT-619	Project Management	4

[1] MS-Operations Management students take IME-676 (Lean Six Sigma), MGMT-609 (Technology Management) and MGMT-619 (Project Management) to complete the Operations Management Certificate.

Supply Chain and ERP

School of Management
Admissions basis: MBA/MSOM/MSEM

Supply Chain Management (SCM) is the discipline of managing operations that deliver products and services from suppliers to customers. The Supply Chain & ERP certificate, which is only available to on-campus graduate students, spans a significant breadth of topics that will enable students to understand, design, manage, and add value to supply chains. The courses included in the certificate use several in-class exercises and simulations to practice the methods and systems of SCM, including Enterprise Resource Planning (ERP) systems.

Code	Title	Credit Hours
Choose Three		12
IME-652	Production System Design	
IME-653	Supply Chain Design	
IME-654	Enterprise Resource Planning	
MGMT-669	Supply Chain Management	

Supply Chain Management Level I

School of Management

This Certificate is available online only.

Code	Title	Credit Hours
SCM-610	Foundations Supply Chain Management	4
SCM-611	Collaboration Supply Chain Management	4
SCM-612	Customer Relationship Management	4
	Credit Hours Subtotal:	*12*

Supply Chain Management Level II

School of Management

This Certificate is available online only.

Code	Title	Credit Hours
SCM-613	Supply Chain Logistics	4
SCM-614	Procurement and Risk Management	4

SCM-615	Supply Chain Planning	4
	Credit Hours Subtotal:	*12*

Technology Leadership

The Technology Leadership Certificate is intended to provide additional technical focus for students in the Master of Science in Engineering Management program. This program is limited to on-campus students and to graduates of Kettering University enrolled in the BS-Masters program. This certificate is not available for online students. In order to complete this certificate, students select three 500 or 600 level courses from Computer Engineering (CE), Computer Science (CS), Electrical and Computer Engineering (ECE), Electrical Engineering (EE), Industrial and Manufacturing Engineering (IME), or Mechanical Engineering (MECH).

Code	Title	Credit Hours
500 or 600 level technical elective		4
500 or 600 level technical elective		4
500 or 600 level technical elective		4
	Credit Hours Subtotal:	*12*

Graduate Admissions

To be admitted into Kettering University as a graduate student, a prospective student must select a graduate degree or certificate program, fulfill all specific admission requirements as laid out for each program, complete an online application, arrange for transcripts for all undergraduate work to be sent from all universities/colleges previously attended (official transcripts are required prior to matriculation), and arrange for test scores and/or additional documentation to be sent directly to Kettering University as necessary. All materials should be submitted electronically (preferably) or by mail (if necessary).

Admission into a graduate program is only offered after all parts of an application have been received, and have been appropriately evaluated. Incomplete applications will not be reviewed. Once evaluated, applicants will be notified of the admission decision. If granted program admission, the student may then proceed to subsequent steps necessary for visa processing (if necessary), class registration, and matriculation. In addition to meeting published requirements of University degree and certificate programs, students with limited undergraduate backgrounds may be required to correct such deficiencies by completing courses which serve as prerequisites to graduate work. Students will be notified of these prerequisites at the time of admission. Kettering does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation including gender identity or expression, disability, religion, height, weight, genetic information, or veteran status.

The Kettering University Graduate School has multiple start dates each year and applications may be submitted at any time. Program start dates will be determined based on date of acceptance, program availability, and student preference. Start dates for all academic programs may not be available every term. Admitted applicants may defer enrollment for up to one year after the initial offer of admission.

Admission Requirements

Application

Complete Kettering University's application for On-Campus Graduate Students.

Grade Point Average

A bachelor's degree from a regionally accredited U.S. university/college, or its international equivalent, is required for acceptance into a graduate program. Admission generally requires an individual to possess a minimum undergraduate overall grade point average that meets or exceeds a 3.0 on a 4.0 grading scale, or international equivalent. Applicants with a lower grade point average may be admitted based on other outstanding credentials (work history, for example). International applicants with a three-year undergraduate degree will be considered on a case-by-case basis.

Transcripts

All students applying for admission must submit undergraduate transcripts for all previous academic work directly to Kettering University from accredited U.S. colleges/universities or international equivalents. Applicants may submit unofficial transcripts for initial review. However, official and final transcripts, including proof of a bachelor's degree, are required prior to matriculation. International students may also be asked to submit English-language translations and/or a professional credential evaluation. Kettering University undergraduate students must submit transcripts from any other university attended.

Letters of Recommendation

Two letters of recommendation are required for all on-campus degree program applications. Letters of recommendation should be current and pertinent to performance in an academic or professional setting. Certificate programs do not require letters of recommendation.

Resume/CV

A resume/CV is a mandatory part of an on-campus degree program application and should be submitted within the online application. Certificate programs do not require a resume/CV.

Statement of Intention/Personal Statement

A Statement of Intention/Personal Statement is a mandatory part of an on-campus degree program application, and should be submitted within the online application. Certificate programs do not require a Statement of Intention/Personal Statement.

Enrollment Deposit

An enrollment deposit of $300 is required to confirm enrollment at Kettering University and will be applied toward tuition.

On-Campus Graduate Programs

The following master's degree programs are available on-campus at Kettering University:

- Master of Business Administration (MBA) - with Certificates
- Tech MBA - with Certificates
- Master of Science in Applied Data Science and Data Analytics
- Master of Science in Engineering (MSE) — Computer Engineering
- Master of Science in Engineering (MSE) - Electrical Engineering
- Master of Science in Engineering (MSE) - Mechanical Engineering
- Master of Science in Engineering (MSE) - Mobility Systems
- Master of Science in Engineering Management (MSEM) - with Certificates
- Master of Science in Operations Management (MSOM) - with Certificates
- Standalone Graduate Certificate (Three-course) programs are available on the Kettering campus in Flint, MI and Metro Detroit
- Applicants wishing to pursue any of the Master of Engineering (MENG) programs offered in Troy, Michigan should refer to the Master of Engineering catalog and MENG application. The MENG degree programs are not currently available to students planning on studying on an F-1 visa.

Additional application requirements by program

MBA, Tech MBA, MSEM and MSOM Applicants

Students entering Kettering University School of Management (SoM) degree programs must have specific prerequisite undergraduate courses completed, with a passing grade of "C" or better. Applicants without this background may complete required prerequisite foundational course(s) at Kettering University. Contact the School of Management with questions about prerequisite requirements and foundational courses at som@kettering.edu.

MS in Engineering Management (MSEM) Applicants

MSEM applicants must have a Bachelor of Science degree in Engineering from an approved ABET-accredited engineering or computing program,

or international equivalent. All Kettering University graduates are eligible except those with degrees in management or business.

Master of Science in Engineering (MSE) Applicants (Computer Engineering, Electrical Engineering, Mechanical Engineering, Mobility Systems)

Applicants for the MS in Engineering (MSE) programs in the College of Engineering (CoE) must submit transcripts of their bachelor's degree in an engineering discipline from an ABET-accredited program, or international equivalent.

Generally, GRE (General Exam) scores are required of applicants to the MSE programs at Kettering University. However, the GRE requirement may be waived for students with an undergraduate degree from Kettering University, or for applicants with particularly strong academic backgrounds and/or work histories. The Graduate Admissions Committee reserves the right to either request or waive GRE scores on a case-by-case basis. Test scores should be sent directly to the Kettering University Admissions Office using Kettering University's institution code: 1246. If asked to choose a department code, please choose the one that best fits your intended program. GRE scores more than two years old are not valid.

Standalone Graduate Certificate (Three-course) Applicants

Applicants for a standalone (not attached to a degree program) Graduate Certificate must complete an application and submit a final transcript documenting completion of an appropriate undergraduate degree. Applicants to a standalone Graduate Certificate program are not required to submit resume/CV, statement of intention/personal statement, letters of recommendation, or GRE test scores.

International Student Applicants

Students who reside outside of the United States and non-U.S. Citizens living in the United States are welcome to apply for admission to Kettering University.

While unofficial transcripts with English translations are acceptable for initial evaluation, official transcripts must be provided prior to matriculation. Official transcripts/educational certificates and records with English translations must be sent directly from the applicant's undergraduate and graduate school(s) to Kettering University. A course-by-course professional credential evaluation of undergraduate transcripts may be requested from students who obtained their bachelor's degree outside the United States. Kettering accepts evaluations from companies recognized by the National Association of Credential Evaluating Services (NACES). Kettering University will only evaluate transcripts in English. All fees for credential evaluation and/or English-language translation are the responsibility of the applicant. Additionally, a university grading scale may be requested to facilitate grade point average conversion and application review.

English Language Proficiency

Students from non-English language speaking countries may be conditionally admitted based on academic merit with the understanding that English proficiency standards must be met before full matriculation into a degree-seeking program. To demonstrate English-language proficiency, students should submit at least one of the following test results: Test of English as a Foreign Language (TOEFL iBT or TOEFL Essentials), International English Language Testing System (IELTS), or Duolingo, including a required English Interview by Kettering's TESOL instructor. International students may have testing waived if they have earned a Bachelor's degree from an accredited U.S. institution or have attended an accredited U.S. college or university for one calendar year or two academic semesters (24 credit hours minimum) with a minimum 3.0 grade point average. Students may also demonstrate competency by completing an ESL program offered by an approved ELS center. Evidence of English-language proficiency may be deemed invalid two years after the last relevant test date or date of enrollment.

Professionals in industry with significant work experience in a primarily English-speaking country, who are university graduates outside of the United States or without proof of English-language proficiency (above) are strongly encouraged to submit scores from an English-language proficiency exam.

Applicants may be required to participate in an additional spoken interview to assess English-language proficiency. Kettering University reserves this right to interview applicants regardless of any/all evidence of English-language proficiency submitted

Immigration Information

Applicants requiring an F-1 visa must also provide proof of financial support for on-campus programs. Before Kettering University can issue a Certificate of Visa Eligibility (Form I-20), applicants must document their ability to meet all educational expenses* for the first year of study:

- Completed Kettering University Affidavit of Financial Support form.
- Documentation including statement(s) from legitimate financial institution(s) reflecting the minimum dollar amount detailed in the Affidavit of Financial Support.
- Copy of valid passport.

*Medical insurance, including repatriation and evacuation coverage, is required for all international students and must be purchased through Kettering University.

Admitted international students meeting the above requirements will receive an I-20 form, which must be presented when applying for an F-1 Student Visa and again at their port of entry into the United States. Applicants enrolled at another U.S. institution with an F-1 Student Visa must complete Kettering's Transfer-In form and be released from the Student & Exchange Visitor Program (SEVIS) by their current institution before Kettering University can issue a new I-20 form.

Financial Support- Graduate Assistantships and Graduate Scholarships

Upon admission into an on-campus graduate degree program, the Office of the Dean of Graduate School and Sponsored Research may offer financial support in the form of a Graduate Assistantship and/or Graduate Scholarship. In these cases, the financial support award will be included in the offer of admission. Graduate Assistantships and/or Graduate Scholarship are awarded based on the academic merit of each application, at the time of application review. No additional applications are required.

Graduate Assistantship for On Campus Programs

The Kettering University Graduate Assistantship (GA) program was established to meet the following goals:

- Develop strong bonds between graduate students and faculty.
- Support the research enterprise and instructional mission.
- Prepare graduate students for productive careers.
- Provide financial support for graduate students.

Each Graduate Assistant is assigned to work with an individual faculty member performing duties such as grading, assisting in a faculty member's teaching/research lab, or supporting a student technical team. In addition, all GAs are required to participate in and complete training modules offered by the Graduate School as part of the appointment.

To be eligible for the GA program, students must be currently admitted and in good academic standing or have accepted admission to an on-campus graduate program. GA appointments are competitively awarded subject to the availability of program funding. Students enrolling in a Standalone Graduate Certificate (Three-course) program are not eligible for a GA appointment.

Interested students should contact the Graduate School at gsr@kettering.edu for more information.

Health, Counseling, Accessibility Services & Health Insurance Information

Prior to enrollment, all students must complete a Health Inquiry Form. All medical information is treated confidentially and cannot be released without the student's knowledge or written consent. The Kettering University Wellness Center uses this information to create a continuous record of student wellness care. All students must answer the TB screening questions and submit documentation if needed within the inquiry. Information on what to do about physical and/or mental health concerns, including disability accommodations, can be addressed directly with the Wellness Center staff via email at wellness@kettering.edu.

Kettering University requires all enrolled students to carry health insurance. International students are automatically enrolled in the Kettering Student Health Insurance Plan upon arrival on campus. Domestic students must annually provide proof of insurance online to waive out of Kettering's Student Health Insurance Plan. Contact the Wellness Center for updates on annual deadlines to submit health insurance information. Students who do not complete a waiver will be automatically enrolled. Students who fail to provide proof of health insurance through the verification process will remain enrolled in the Kettering Student Health Insurance Plan and be responsible for associated costs. The University will make no exceptions.

Kettering University does not require a medical examination before enrollment. However, some Graduate Internship employers may require such an exam as a condition of employment or particular working conditions.

Tuition and Fees

Expenses

The current tuition and business related fees are listed below. The Student Accounts Office will send an email notification to your Kettering email when your tuition bill is ready to view via KU.ePay in Banner Self Service.

KU.ePay is the university's online billing and payment service, which provides our students the ability to view and pay their student account bill online, 24 hours/day, seven days a week. Students may authorize others to access their KU.ePay account and make payments on their behalf.

With KU.ePay, students and authorized users are able to:

- Review their student account activity.
- View and print billing statements.
- Make payment on their student account, including a single payment or sign up for a payment plan.
- View and print form 1098-T.

Payments may be made via an ACH transaction from a bank account or credit card. International payments may be made through KU.ePay, and will be processed as a bank wire. Please visit KU.ePay for more information. Payment in the form of a check, money order, or cashier's check may be sent directly to the Student Accounts Office.

Any account not paid in full by the first day of class is subject to a $40 late fee and a financial hold.

Tuition for the 2025-26 Academic Year

On Campus Graduate Tuition (per credit hour)	$1,090

Business Related Fees

NSF ACH/Check Processing Fee	$25
Graduate Late Payment Fee	$40
Graduate Transfer or Credit Posting Fee (per credit hour)	$5
Graduate Graduation Fee	$160
Graduate Enrollment Deposit	$300

When registered for courses, students acknowledge enrollment in the course(s) and authorizes Kettering University to bill for any related tuition and fees. Payment is due by the first day of class. A financial hold and late fee will be assessed on the account for those students who have not paid their tuition or submitted an employee tuition assistance voucher from their employer--this 'hold' prohibits future course registrations and may cause course cancellations and will result in grades and transcripts being withheld.

Employer Assistance

Many employers provide financial assistance for graduate study. Programs differ, so interested students should contact the appropriate office at their place of employment. Depending on company policy, Kettering University may be able to bill the employer directly for tuition. Students whose tuition is to be billed to their employers must submit complete and proper authorization from the employer to Kettering University Student Accounts Office via fax 810-762-9603 or email studentaccounts@kettering.edu. Students should apply for their employer tuition assistance as soon as possible – since costs and course offerings are known in advance. **Any portion of tuition that will not be paid by the employer must be paid by the student**. Kettering University will hold the student responsible for payments not received from the employer.

Tuition Refund Policy for On Campus Programs

Course withdrawals and associated refunds are initiated by completing a Graduate Program Course Withdrawal Form and submitting it the Office of the Registrar for processing. The date the form is received in the Office of the Registrar determines the refund amount. Students are personally responsible for submitting the forms and verifying their receipt by the University. Refunds are made to the payer of the tuition. Click here for a calendar of specific refund dates for each term.

When a student withdraws from a course, refunds are made on the following schedule:

Week 1	100%
Week 2	75%
Week 3	50%
Week 4	25%
Week 5	0%

NOTE: Graduate Online has a different Refund Schedule.

Refund rates are calculated through Sunday of each week.

Any questions related to the tuition and fees should be directed to the Student Accounts Office at 800-955-4464 ext. 9552 or studentaccounts@kettering.edu.

VA Education Benefits

Kettering University will permit any covered individual to attend or participate in the course of education during the period beginning on the date on which the individual provides to the educational institution a certificate of eligibility for entitlement to educational assistance under chapter 31 or 33 (a "certificate of eligibility" can also include a "Statement of Benefits" obtained from the Department of Veterans Affairs' (VA) website – eBenefits, or a VAF 28-1905 form for chapter 31 authorization purposes) and ending on the earlier of the following dates:

1. The date on which payment from VA is made to the institution.

2. 90 days after the date the institution certified tuition and fees following the receipt of the certificate of eligibility.

Kettering University will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a student borrow additional funds because of the student's inability to meet their financial obligations to the institution due to the delayed disbursement of a payment to be provided under chapter 31 or 33.

Academic Policies and Regulations

All faculty and students are urged to review and understand the University's Academic Policies and Regulations. This section is intended as a convenient reference for faculty, staff and students. It also serves as a description of the student's academic rights and responsibilities and as a guarantee of equitable treatment for all students. Some sections may reference other sections of the catalog, when necessary. Each section also concludes with the name of the official or office to contact with questions.

Academic Advising/Standing/Status

Academic Advising

Academic advising represents a shared relationship between the student and his/her academic advisor and a process of continuous improvement, clarification and evaluation with the aim of assisting the student in achieving his/her goals. Each academic department has established its own system for facilitating advising processes as well as a representative academic program. In addition to following the representative program, students are encouraged to communicate regularly with an academic advisor to discuss academic matters, to determine progress toward degree completion, and to ensure that prerequisites have been satisfied and other departmental requirements have been met.

Questions: Contact the degree/program department

Academic Standing

Conditional Continuance

Conditional continuance is a temporary status, which allows students to demonstrate their readiness for graduate work. A graduate student who has been granted conditional continuance is granted full admission, however, they will not be eligible for a Graduate Assistantship until after they have completed their first two courses with a 3.0 or better. Failure to complete the first two courses with a grade point of 3.0 or better may result in dismissal from the program.

The criteria for conditional continuance is uniquely determined by the Graduate Admission Committee, and in some cases collateral work may be required from the applicant to confirm their readiness for a specific program.

Probation

A graduate student whose cumulative grade point average falls below a 3.0 is automatically placed on academic probation. Probationary status is removed only when a graduate student's cumulative GPA equals or exceeds the minimum of 3.0 required to earn a Master's degree.

A graduate student who remains on probation after completing 12 credit hours since being placed on probation may be dismissed from the program. A probationary student whose cumulative GPA falls below 2.5 will automatically be dismissed from the graduate program. Such dismissals may be appealed to the Graduate Council. Advisement regarding the appeal process to return after academic dismissal is provided through the Graduate School.

Appeal Process to Return after Academic Dismissal

After the academic dismissal process, students may appeal to the Graduate Academic Review Committee for readmission by submitting a letter of appeal to the Graduate Council via the Graduate School one term prior to the term in which they are seeking re-admittance.

This letter of appeal for re-admittance must state the cause(s) of the student's academic problems, changes in the student's situation that may rectify those problems and a proposed plan of action to ensure success in the Graduate School. Students are readmitted on a probationary status for one term.

Decisions of the Graduate Council are final.

Questions: Contact the Graduate School at gsr@kettering.edu

Accessibility Services

Kettering University provides accessibility services in compliance with the Americans with Disabilities Act (1990) and its amendments, along with state and local regulations regarding students, employees, and applicants with disabilities. Under these laws, no qualified individual with a disability shall be denied access to participation in services, programs, and/or activities at Kettering University. In carrying out Kettering's policy regarding disabled students, employees and applicants, we recognize mobility, sensory, medical, psychological, and learning disabilities. We attempt to provide reasonable accommodations for these disabilities for all students who meet the criteria described in the Americans with Disabilities Act.

Any Kettering student who has been diagnosed with a physical, medical, psychological, or learning disability, or suspects that he/she may have one, must contact the Wellness Center. The staff will evaluate the required documentation in support of the claim of disability and make an assessment of a student's needs on a case-by-case basis. The Wellness Center will then determine the appropriate services and accommodations necessary to meet the legal requirements as required by law. The Center will inform faculty and staff who may be responsible for providing the services and/or accommodations. Each term, students must meet with each professor to arrange individual accommodations.

Prospective students in the admissions process should contact the Wellness Center as soon as possible to discuss appropriate documentation needed to verify a disability and to identify the type of services, accommodations, and adaptive equipment that may be necessary.

Testing Assistance

The Academic Success Center provides an alternative testing space for students requiring ADA accommodations. These accommodations may include extended test time, individual testing space, readers/scribes, or other accommodations as needed. Any student seeking accommodations for testing must first meet with the Wellness Center to determine and approve all necessary accommodations. This must be done at the beginning of every academic term.

Active Status

Students are expected to enroll in their first class within a year of their acceptance term. Students who do not enroll within that year will have their enrollment status changed to Inactive. As a consequence, the student may need to reapply to the degree program.

Students may also have their status changed to Inactive if there is a lapse in course enrollment for more than two years. If inactivated, the student will need to contact the registrar's office to apply for readmission to the degree program.

Readmission to Kettering University

Students who were academically eligible to continue when they became inactive or withdrew may request readmission by contacting the Office of the Registrar.

Questions: Contact the Office of the Registrar

Attendance

Last Known Date of Attendance Reporting:

Kettering University does not require faculty to take attendance. The U.S. Department of Education requires the Financial Aid Office to differentiate students who fail a class because they quit attending from those who fail a class based on merit. Because a student could be a financial aid applicant at any point during the academic year, this information must be collected on all students, so that financial aid eligibility can be accurately determined.

The Last Known Date of Attendance Reporting Policy is necessary to appropriately assess the financial liability for students, ensure good stewardship of financial aid funds, and limit the financial liability for the university and academic consequences for the student. The amount of funds earned by a student is based on the amount of time spent in attendance by the student for that term. In addition, this information is often useful in arbitrating cases when students believe they completed the process to drop or withdraw from a course.

After the drop/add period each term, a 'last date of attendance' notification, or 'never attended' notification by a faculty member will result in the automatic assignment of either a WN (withdrawal for non-attendance) grade or an FN (failure for non-attendance) grade by the Registrar's Office. This initiates re-evaluation of a student's financial aid and it will be adjusted for those classes.

Student Responsibility

Students are expected to attend all the sessions of the classes in which they are enrolled. Students who stop attending classes should immediately withdraw from those course(s) prior to the course withdrawal deadline specified on the academic calendar. Students who do not officially withdraw from a course they are not attending may be reported by their instructor as having a last date of attendance. When this happens, the student will remain responsible for any financial liability, less applicable refunds they have incurred associated with the last date of attendance reported, and for any academic consequences associated with the last date of attendance reported and the assignment of the WN or FN grade.

School Responsibility

After the drop/add period each term, a last date of attendance reporting by a faculty member will result in that automatic assignment of either a grade of WN (withdrawal for non-attendance) or FN (failure for non-attendance) by the Registrar's Office as follows:

- A grade of WN (withdrawal for non-attendance) is issued if the last known date of attendance is within the course withdrawal period specified on the academic calendar. A WN grade is treated the same as a W (withdrawal) grade in that it will not affect a student's term or overall GPA.
- A grade of FN (failure for non-attendance) is issued if the last known date of attendance is after the course withdrawal period specified on the academic calendar. An FN grade is treated the same as a failing grade in that it will be included in a student's term and overall GPA.
- Once a faculty member has reported a last date of attendance, the student will no longer be able to attend or participate in the class.

Class Attendance Policy Related to Required Military Duty or Veteran Status

Questions on whether an activity is a required military service activity for purposes of this policy should be directed to the Associate Provost. If anticipated absences for a term appear to be extraordinarily numerous or difficult to accommodate, a faculty member may appeal the need for the full accommodation to the Associate Provost.

Absences due to military duty or veteran status must be excused. This includes, but is not limited to, the following:

- Mandatory monthly drill instruction, such as duty completed by national guard members and military reservists (typically this involves a one-day absence in order to extend weekend training).
- Service-related medical appointments where failure to appear might result in a loss of benefits.

Students must give written notice to the faculty member at least one week in advance of the absence unless last-minute schedule changes make this notice impossible. Students are strongly encouraged to inform each faculty member of their known and anticipated absences as far in advance as possible, preferably at the start of the term.

The faculty shall afford students the opportunity to independently make up coursework or work of equal value, for the day(s) the event was scheduled and to take a scheduled exam at an alternate time. The faculty member shall determine alternate exam times and due dates for missed course work. These assigned dates may be prior to the date of the absence.

Students are still responsible for demonstrating achievement of course learning goals, even when absences due to military duty are necessary and reasonable. In situations with many absences or extended periods of military duty (e.g. being called to active duty), it may be most appropriate for the student to withdraw and retake the course in a future term.

Conduct Expectations

Student Conduct

Ethics in the University

The mission of Kettering University rests on the premise of intellectual honesty in the classroom, the laboratory, the office, and at the examination desk. The very search for knowledge is impaired without a prevailing ethic of honor and integrity in all scholarly, professional, and personal activities. The principles of honor and integrity make it possible for society to place trust in the degrees we confer, the research we produce, the scholarship we present and disseminate, and the critical assessments we make of the performance of students. In order to achieve our goals of preserving, disseminating, and advancing knowledge, Kettering University expects all members of the community to be open to new ideas, to be governed by truthfulness, and to be considerate of the rights of others. We strive to foster these values in all our endeavors and will employ all possible means to discourage dishonest behavior in any form. We hold students accountable for their choices and actions through the Code of Student Conduct, administered by the Associate Dean of Student Engagement and Success.

Kettering Code of Student Conduct

The Kettering University Code of Student Conduct represents a body of behavioral standards for all students. These standards are strictly and vigorously enforced by Kettering University to ensure members of this educational community a productive, safe, and equitable environment for growth and development. Kettering University students are expected to conduct themselves as responsible, mature individuals while on campus, at home, and in their work-section communities.

Students are expected to comply with all University regulations governing student conduct and the use of University property and facilities. Kettering University has the right to take action and investigate any offense that involves our students, either as victims reporting or students accused of violating the Code of Student Conduct and any federal, state, and/or local laws/ordinances. The Code of Student Conduct extends to students at their places of cooperative employment. We expect students to honor their co-op employer's standards for workplace demeanor and may impose our Student Conduct procedures upon any student charged by an employer with workplace misconduct.

Conduct for which students may be subject to disciplinary action falls into, but is not limited to, the following categories:

- Endangering people or their property.
- Obstructing the normal functions of Kettering University or a co-op employer.
- Theft or damage to property, including intellectual property, of Kettering University, a co-op employer, or any individual.
- Any willful damage to the reputation or psychological well-being of others.
- Threatening, intimidating, harassing, coercing, or verbally abusing another.
- Any physical violence directed at any member of the Kettering University community or a co-op employer.
- Unauthorized entry to, use of, or occupancy of Kettering University facilities or a co-op employer's.
- Any dishonesty, cheating, forgery, plagiarism, alteration of, or misuse of Kettering University documents, records, or identification, or a co-op employer's.

- Computer misuse while on academic or work term, at the University, or at co-op employment, including but not limited to:
  - Theft or other abuse of computer operations.
  - Unauthorized entry into a file to use, read, or change the contents or for any other purpose.
  - Unauthorized transfer of a file or files.
  - Unauthorized use of another individual's identification and/or password[s].
  - Use of computing facilities to interfere with the work of another student, faculty member, or university official.
  - Use of computing facilities to send obscene or abusive messages.
  - Use of computing facilities to interfere with the normal operation of the University's or a co-op employer's computer system.
- Violation of applicable public laws while on Kettering University-owned property, University or student-sponsored or supervised functions, a co-op employer's owned or controlled property, or at a co-op employer-sponsored or supervised function.
- Possession or use on campus or at a place of co-op employment of firearms, explosives, explosive fuels, dangerous chemicals, or other dangerous weapons, except as specifically authorized by Kettering University or a co-op employer.
- Use, possession, or distribution of narcotics or controlled substances except as expressly permitted by law.
- Possession or use of alcohol or marijuana on Kettering's campus; any underage possession or use of such.
- Failure to comply with directions of Kettering University or co-op employer officials acting in the performance of their duties.
- Conduct which adversely affects the student's suitability as a member of the Kettering University and/or co-op employment communities.

Academic Integrity

We believe fairness, openness, and intellectual honesty to be the keystones of our educational mission. We foster these qualities in all our endeavors and use all possible means to discourage dishonesty in any form. All members of the Kettering community should report academic dishonesty to the appropriate faculty person, as well as to the Associate Dean of Student Engagement and Success. Academic dishonesty prohibited at Kettering includes, but is not limited to, the following forms:

- **Cheating**
  Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- **Fabrication**
  Intentional and/or unauthorized falsification or invention of any information or citation in an academic exercise.
- **Facilitating Academic Dishonesty**
  Intentionally or knowingly helping or attempting to help another to engage in academic dishonesty in any form.
- **Plagiarism**
  Intentionally or knowingly representing the words, ideas, or images of another as one's own in any academic exercise.

Students found to have carried out any form of academic dishonesty are subject to the faculty member's scrutiny and sanctions, as well as Student Conduct policies and procedures.

Student Conduct at Kettering University

Student conduct serves and protects Kettering students by encouraging responsible behavior and civic competence. We expect students to develop their character by exercising self-discipline and taking responsibility for their actions. We also expect students to make themselves aware of the regulations governing them as members of the Kettering community. Student Conduct supports the academic mission of the university by promoting student development, fostering a harmonious and stimulating environment, and protecting the well-being of all students.

Student Conduct Policies and Procedures

Members of the Kettering community should contact the Associate Dean of Student Engagement and Success whenever a violation or suspected violation of Kettering's Code of Student Conduct takes place. The University will take appropriate measures to investigate each incident and decide how best to proceed: to dismiss the charges or to refer the charge[s] to a designated Conduct Officer. If the charges are referred for further action, the Conduct Officer will hold a pre-hearing with the accused student[s]. The pre-hearing serves the following purposes:

- To explain Kettering University's conduct process
- To inform the accused of his/her rights accorded through the University's conduct process
- To inform the accused, in writing, of all charges
- To request that the accused write an official response to all charges
- To inform the accused of all available resolution options appropriate to the specific charges.

Student Rights and Responsibilities Provided by Kettering's Student Conduct Procedures

Any student accused of any violation of Kettering University's Code of Student Conduct will be extended the following rights and responsibilities:

- Formal, written notification of all charges to be heard at either an Administrative Hearing or a University Board of Student Conduct.
- Right to a timely hearing. The University has the right to establish deadlines for hearing a case, as well as hear a case in a student's absence should s/he fail to appear at the established time and place.
- Opportunity to review the conduct file, which will be presented at an Administrative Hearing or University Board of Student Conduct.
- Time to prepare a defense. Students will receive at least 48 hours' notice of the time and place of an Administrative Hearing or University Board of Student Conduct.
- Right to be present at an Administrative Hearing or University Board of Student Conduct.
- Right to have an adviser present at an Administrative Hearing or University Board of Student Conduct. The adviser must be a member of the Kettering University community and may advise the accused student but may not conduct the student's defense.
- Right to ask questions of any witnesses who appear at an Administrative Hearing or University Board of Student Conduct.
- The Associate Dean of Student Engagement and Success may determine that other Kettering University officials ought to be aware of the results and will inform them.
- Crime victims will be notified of hearing results in accordance with existing federal, state, and local laws.

Kettering University has the right to request a student return to campus during a work-term or off-term in order to expedite a case perceived

as serious and pressing in nature. Students are entitled to the rights afforded by the Family Educational Rights and Privacy Act (FERPA). This act ensures that most communication between a student and the University is considered confidential and that such information about a student's experience can be shared with the parents of an individual student only under very specific circumstances as defined by federal law. All rights accorded to a student under the law take effect at the time of enrollment in a post-secondary educational program, regardless of the student's age.

Public Criminal Justice System Versus Kettering University's Student Conduct Process

Kettering's Student Conduct process differs in both purpose and function from the public criminal justice system. The University's process is designed to be educational and to afford students opportunities for personal growth and development. The criminal process is designed primarily to be punitive. Protections afforded to the accused are less comprehensive in Kettering's Student Conduct process than those extended in the criminal system. The University is not required to follow federal, state, and/or local rules of evidence. Instead, charges against a student need only be proven by "preponderance of evidence," i.e., such evidence as a reasonable person might accept as adequate to support a conclusion that the offense more likely than not took place. Criminal investigations and/or charges do not hinder or delay the University's responsibility to investigate and adjudicate allegations of student misconduct in a timely fashion.

Resolution Options

Administrative Hearing

In cases where charges do not appear to merit suspension or expulsion, or in cases in which the accused does not contest the charges, the Associate Dean of Student Engagement and Success may designate a Conduct Officer (CO). The CO will investigate the case and conduct a hearing with the accused. Administrative hearings accommodate all the rights and procedures accorded to students by the University's policies. Following the hearing, the University will provide the student with written notification of the results of the hearing, as well as information about the appeal process.

University Board of Student Conduct

The Associate Dean of Student Engagement and Success designate a conduct board or University Board of Student Conduct (UBSC) whenever charges may result in suspension or expulsion, including all cases involving academic misconduct. In these cases, a designated Conduct Officer of the University chairs the UBSC, which is comprised of a minimum of three members of the Kettering community and includes representatives from faculty, staff, and students. The Conduct Officer investigates the charges and prepares the case for presentation to the UBSC. All presentations include resolution options. The UBSC makes recommendations to the Associate Dean of Student Engagement and Success, who may endorse, alter, or dismiss them.

Other Resolution Options

The Associate Dean of Student Engagement and Success may, after consultation with the involved parties, provide other avenues of resolution, including mediation and/or conciliation.

Administrative and University Board of Student Conduct Hearings Decisions

All decisions will be based only on documents, testimony, and evidence presented at administrative and University Board of Student Conduct hearings.

Sanctions

The University has the right to enforce a variety of sanctions upon students who are found to have violated the Code of Student Conduct. They include, but are not limited to, the following:

- **Creation of a Misconduct File**
  The University applies this sanction whenever the Conduct Officer or other hearing officer[s] uphold charges against a student for violating the Kettering Code of Student Conduct, yet it appears that interviews and counseling associated with the pre-hearing and hearing are sufficient to deter further violation. The Conduct Officer creates an official file detailing the student's offense.
- **Misconduct Warning**
  A Misconduct Warning consists of a formal, written notice that the student has violated the Code of Student Conduct and that any future violation will result in more serious consequences.
- **Restitution and/or Fines**
  When a violation of the Code of Student Conduct results in costs to other students, Kettering University, or others, a student may be required to make restitution and/or pay a fine. The University applies fines to community endeavors.
- **Community Service**
  This sanction requires students to contribute a fixed number of hours, without compensation, to benefit the University or the local community. The University retains the right to require that students complete community service with particular organizations it specifies.
- **Misconduct Probation**
  Misconduct probation implies a medial status between good standing at Kettering, and suspension or expulsion. A student on Misconduct Probation will be permitted to remain enrolled at Kettering University under certain stated situational conditions, depending on the nature of the violation and the potential learning value that may be derived from such conditions. Usually, Misconduct Probation extends over a stated period, during which it is clearly understood that the student is subject to further disciplinary action, including suspension or expulsion if the student violates the terms of probation or in any way fails to conduct him/herself as a responsible member of the Kettering University community. Misconduct Probation serves as a final warning to the student to re-evaluate and modify his/her unacceptable behavior. Students on Misconduct Probation will not be allowed to represent the University in any formal manner and may not serve in a student leadership position during the period of probation. Knowledge of a student's Misconduct Probation status may be made known to others at the University on a need-to-know basis.
- **Interim Suspension and/or Altered Privileges**
  Kettering imposes Interim Suspension when it appears the accused poses a threat to him/herself or others at the University. It may also be imposed following allegations of sexual or physical assault, drug use and/or distribution, threats of violence, etc.
  The Associate Dean of Student Engagement and Success or designate may alter or suspend the privileges/rights of a student to be present on campus and/or to attend classes for an interim

period prior to the resolution of a conduct proceeding. Decisions of this sort will be based upon whether the allegation of misconduct appears reliable and whether the student's continued presence reasonably poses a threat to the physical or emotional condition and/or well-being of any individual, including the accused student. Interim suspension may also be imposed when the accused student's continued presence appears to disrupt the University's regular or special functions or threaten the safety or welfare of university property.
Interim Suspension and/or altered privileges remain in effect until a final decision is made on a pending incident. The Associate Dean of Student Engagement and Success or designate may repeal interim suspension or altered privileges at his/her discretion.

- **Suspension**
  Suspension—an involuntary separation of a student from Kettering University—implies and states a time for return to the University. Suspension may extend for a school and/or work term, for a specified period, until a specified date, or until a stated condition is met. A University Board of Student Conduct may recommend suspension, but only the Associate Dean of Student Engagement and Success may impose it. Suspensions are noted on student's official transcripts as "temporary involuntary separation" until all required conditions are met.
- **Expulsion**
  Expulsion—a permanent involuntary separation of a student from Kettering University—may be recommended by a University Board of Student Conduct, but only the Associate Dean of Student Engagement and Success may impose it.
- **Student Conduct Appeals**

  Any student who has been sanctioned through Kettering University Code of Student Conduct processes has the right to appeal to the Vice President and Chief Student Experience Officer. All appeals must be made in writing within five [5] business days of notification of the results of a hearing and must state the grounds upon which the appeal is based. Grounds for appeal might include claims of procedural errors, new information, denial of rights, or inappropriately severe punishment. Should the Vice President and Chief Student Experience Officer choose to grant an appeal, the case will be reviewed, and a written decision will be conveyed to the individual indicating whether the sanction[s] shall stand, be modified, or reversed.

- **Notification of Sanction to Co-Op Employers**
  The University has the right and responsibility to notify a student's co-op employer whenever the student is found to have violated the Kettering Code of Student Conduct.

Students' Use of Technology

The use of any personal computational or communication devices in the classroom, not otherwise governed by the University or course policies, is subject to the approval of the instructor. This includes but is not limited to, the use of calculators, computers, personal digital assistants, and cell phones. Any use of such devices without the instructor's approval is prohibited. The use of such devices without the permission of the instructor may be considered disruptive behavior. Students who persist in such activity may be subject to the University's "Dismissal Due to Disruptive Behavior" policy.

The use of electronic devices to facilitate an act of academic misconduct, such as cheating or plagiarism, will be considered a violation of the Code of Student Conduct and adjudicated following standard Student Conduct policies and procedures.

Students are expected to familiarize themselves with Kettering University's Acceptable Use Policy, posted in the "Policies and Standards" section of the Information Technology website.

Student Computer Requirement

Students are required to have their own laptops and not use a computer at their place of employment due to frequent limitations related to firewalls.

E-mail: Notification/Obligation to Read

All students have the privilege of having a Kettering University Google Apps e-mail account. The Kettering e-mail account is the official way Kettering University faculty and staff communicate with students. Students are responsible for required actions conveyed to them through this communication vehicle, **whether or not they read the message**.

Kettering provides each student with unlimited e-mail server storage. Therefore, we strongly recommend that students do not auto-forward to another e-mail service provider, which may have less storage capacity and fewer features and may hinder you from replying directly to the original email source.

Due to the proliferation of spam and phishing emails, be advised that you may receive emails requesting personal information such as usernames and passwords. Although it may look authentic, pretending to originate from a legitimate source, such as Kettering, does not respond. Immediately delete it, recognizing that a legitimate source such as the Kettering IT department would never ask you to provide information such as passwords. The IT department has included an Alert message attached to incoming emails if an attachment is received from an outside non-Kettering address. Be cautious regarding any unsolicited email as it may contain elements that would prove to be detrimental to your computer.

Dismissal from Class Due to Disruptive Behavior

Whenever an enrolled student's presence or behavior in class disrupts the learning environment and, in the faculty member's opinion, undermines the best interests of the class and/or the student, the faculty member may request in writing (with a copy to the appropriate Department Head) that the student be issued an administrative dismissal. The faculty member should discuss the student's behavior with the Associate Dean of Student Engagement and Success (ADSES) and/or his designate, who will meet with the faculty member to discuss the alleged incident. The ADSES will also meet with the student to determine possible judicial action after determining whether or not the student's behavior violates the Kettering Code of Student Conduct. The ADSES will either adjudicate the matter or refer it for action by a designated conduct officer and/or the University Board of Student Conduct. If the dismissal occurs by Friday of the seventh week, the student will receive a grade of W (withdrawn). If the dismissal occurs after Friday of the seventh week, the student will receive an F grade.

Questions: Contact Information Technology

Productive Learning Environment

Kettering University expects all students, faculty, and staff to contribute to a productive learning environment by demonstrating behavior that neither interferes with another individual's performance nor creates an intimidating, offensive, or hostile environment. The University will not

tolerate harassment or discrimination in any form, regardless of intent and/or the victim's reaction.

Harassment

The University prohibits all sexual harassment and/or offensive conduct on campus and in students' work section communities. Such conduct includes but is not limited to sexual flirtation, touching, verbal or physical advances or propositions, verbal abuse of a sexual nature, graphic or suggestive comments about an individual's dress or body, sexually degrading words to describe an individual, and/or the display of sexually suggestive objects or pictures, including nude photographs. Behavior constitutes sexual harassment when it is unwelcome, and it interferes with the ability of another person to carry out his/her responsibilities, creates a hostile learning or work environment, or its expression implies that acceptance of the behavior is a condition of course registration, course completion, course evaluation, or employment.

If you believe the words or actions of a University employee or student on campus constitutes unwelcome harassment, take the following steps:

- Inform him or her that his/her actions are unwelcome and the harassing behavior must cease.
- Keep a written record of the details, including time, date, what was said, or what occurred.
- Report the discrimination to the Associate Dean of Student Engagement and Success, the Director of Human Resources, other University officials, or via our Non-Academic Grievance Form, available in the Student Experience Office, Academic Services, the Wellness Center, Thompson Hall, and online at the Student Experience website.

If harassment occurs at your work site, you should report it to your supervisor or the appropriate person as directed by your employee handbook, as well as to your Cooperative Education Manager/Educator. Enlist the counsel of a trusted adviser, if necessary, to report sexual harassment wherever and whenever it occurs. The University pledges to investigate promptly all complaints of harassment and to pursue a timely resolution, which the appropriate University officials will communicate to the parties involved. Confidentiality will be maintained to the extent reasonably possible.

Discrimination

Kettering University is committed to a policy of non-discrimination and equal opportunity for all persons regardless of race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, marital status, height, weight, marital, military or disability status or any other basis protected by federal or state law. Discrimination includes, but is not limited to, the following:

- Preventing any person from using University facilities or services because of that person's race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, height, weight, and/or marital, military, or disability status.
- Making determinations regarding a person's salary based on race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, height, weight, and/or marital, military, or disability status.
- Denying a person access to an educational program based on that person's race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, height, weight, and/or marital, military, or disability status.
- Instigating or allowing an environment that is unwelcoming or hostile based on a person's race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, height, weight, and/or marital, military, or disability status.
- Denying raises, benefits, promotions, leadership opportunities, or performance evaluations on the basis of a person's race/ethnicity, color, ancestry, national origin, religion, sex, sexual orientation, age, height, weight, and/or marital, military, or disability status.

If discrimination takes place at your work site, you should report it to your supervisor or the appropriate person as directed by your employee handbook, as well as to your Cooperative Education Manager/Educator. Enlist the counsel of a trusted adviser, if necessary, to report discrimination wherever and whenever it occurs. The University pledges to investigate promptly all complaints of discrimination and to pursue a timely resolution, which the appropriate University officials will communicate to the parties involved. We will maintain confidentiality to the extent reasonably possible.

If you believe the words or actions of a University employee or student constitutes discrimination, take the following steps:

- Inform him or her that his/her actions are unwelcome and the discriminating behavior must cease.
- Keep a written record of the details, including time, date, what was said, or what occurred.
- Report the discrimination to the Associate Dean of Student Engagement and Success, the Director of Human Resources, other University officials, or via our Non-Academic Grievance Form, available in the Student Experience Office, Academic Services, the Wellness Center, and Thompson Hall.

Student Complaints & Resolution Processes

Kettering University maintains processes for the good faith review and resolution of student academic and non-academic complaints. The University's student complaint process will encourage informal resolution of alleged violations at the lowest unit level, allow for a formal resolution mechanism if not resolved informally, and provide for appeal to a final decision maker.

Students may bring complaints regarding the University's provision of education, academic services, and non-academic services affecting their role as students, and must be based upon a claimed violation of a University policy, regulation, or established practice.

Student complaints do not include those regarding University employment, disciplinary action under the Code of Student Conduct, grades, or University admission decisions.

Resolution under this policy may include student reinstatement or other corrective action for the benefit of the student, including refunds, but may not award monetary damages or direct disciplinary action against any employee of the University.

This policy does not limit the University's right to change policies, regulations, or practices related to the provision of academic or non-academic services and education.

Institutional Records of Student Complaints

To comply with federal regulations, Kettering University will maintain records of formal, written academic, and non-academic student complaints filed with the Office of the Provost or the Office of Student Experience Student Engagement and Success. The records will include

information about the disposition of the complaints, including those referred to external agencies for final resolution. These records will be available to the Higher Learning Commission (HLC) comprehensive evaluation teams for review.

II. DEFINITIONS

Student Academic Complaint: Complaints brought by students regarding the University's provision of education and academic services affecting their role as students. Academic complaints do not include grade disputes and appeals, which are managed under the Grade Appeal Policy.

Non-academic Complaint: Complaints brought by students regarding the University's provision of non-academic services affecting their role as members of the Kettering community. Non-academic complaints may include but are not limited to, student or employee behavior regarding harassment or discrimination, billing disputes, disability accommodation challenges, medical and counseling services, athletics, etc. They do not include parking violation disputes, which are managed under Campus Safety's Parking Appeals Policy.

III. DETAILS/PROCEDURES

Informal Resolution for Student Complaints

The first step of any resolution should be at the lowest unit level, between the parties involved or the parties and an appropriate third party (e.g., other faculty, department head, director of graduate studies, administrator). If no informal resolution is reached at the lowest unit level, a student may seek an informal resolution at the next level with the other party and higher-level administrators. If the issue is not resolved informally, the student may seek a formal resolution.

Formal Resolution for Student Complaints

If still unresolved after following the appropriate informal complaint process, a student may choose to officially document the complaint to seek formal resolution. Students may file complaints regarding academic matters, excluding grade appeals, with the Office of the Provost. Non-academic complaints, excluding parking citations, should be filed with the Associate Dean of Student Engagement and Success. Students should consult with the pertinent office to prepare a formal complaint; both offices follow these general procedures:

- Students must submit, in writing, an explanation of the concern or appeal, including a full description of the matter, a description of the efforts that have been made to resolve the issue informally, and a statement of requested remedy. Submissions must include accurate contact information. Copies of pertinent materials should be attached.

- A student must begin the informal resolution process during the term in which the concern arises and must register, if applicable, an officially documented complaint no later than thirty days after the first day of classes of the term immediately following the term during which the concern arose.

- If the grievance contains confidential medical information, the University will maintain the confidentiality of that information and will not release it without the student's consent, except as allowed by law.

- Academic complaints should be submitted to the Office of the Provost. Non-academic complaints should be submitted to the Associate Dean of Student Engagement and Success. Upon receipt, the institutional officer will review the complaint for timeliness and appropriateness under this complaint procedure, notify the student if the complaint is accepted for further investigation, and provide a copy of the complaint to the individual against whom it has been made.

- The institutional officer will complete or designate someone to complete an investigation of the matter. The investigator may interview, consult with, and/or request a written response to the issue[s] raised in the complaint from any individual the investigator believes to have relevant information, including faculty, staff, and students. All parties will have the opportunity to provide the investigator with information or evidence that s/he believes is relevant to the complaint. The investigator will respect the privacy of all parties to the extent possible.

- The University will inform the student and the party against whom the student has filed a complaint that the institution will not tolerate real or implied retaliation, will take steps to prevent retaliation, and will take appropriate responsive action[s], up to and including termination of employment, if an employee is found to have retaliated. Students will be held accountable for retaliation through the Code of Student Conduct and related disciplinary procedures. Individuals should immediately notify the appropriate institutional officer should retaliation occur.

- If a non-academic complaint involves a faculty member, the Associate Dean of Student Engagement and Success will inform the Provost of the complaint, the determination by the investigator, and any appeal. Academic and non-academic complaints that involve a faculty and/or staff member will be reported to the Director of Human Resources.

- All investigations will be completed within thirty [30] working days of the filing of the written complaint. The deadline may be extended by the Provost or Associate Dean of Student Engagement and Success for good cause. At the request of the complainant, the institutional officer may determine if the formal process can and should be expedited.

- The institutional officer will prepare a written report, including findings and a final resolution of the matter. The officer will submit the report within 30 calendar days of receipt of the formal complaint unless there are compelling reasons for delay. The institutional officer will send the report to all interested parties. If the complaint challenges an action personally engaged in by the institutional officer, the Provost will appoint another administrator to fulfill the officer's role under this procedure.

- Decisions made by institutional officers are final and may not be appealed.

Other Complaints

Currently, enrolled students who have a complaint or issue should first try to work out the problem informally by discussing it in an honest and constructive manner with those persons most involved with the issue. Many complaints can be resolved when a student makes an effort to honestly communicate his/her frustrations or concerns. If a student has a complaint related to a specific course he or she is enrolled in, he/she should first consult with the instructor of the course. If necessary, the student or instructor may consult with the academic department

head responsible for the course for guidance on how to best resolve the student's concern.

For any complaints that the student cannot resolve informally with the parties involved, the student should contact either the Associate Dean of Student Engagement and Success (for non-academic-related issues) or the Provost (for academic-related issues).

Questions: Contact the Student Experience Office for non-academic issues or the Office of the Provost for academic-related issues

Enrollment

Academic Terms

The Kettering University on-campus schedule operates on four 11-week terms per year. Graduate students are expected to complete two academic terms, an internship (or an optional academic term) and take one non-study term per academic year. Several example schedules are shown below.

Example Plan of Study without Thesis:

First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	0-4 credits coursework

Example Plan of Study with Thesis (MSEN-Mobility Systems or MSEN-Mechanical Engineering students):

First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits coursework
	Winter	4 credits coursework + Thesis 1
	Spring	Thesis 2

Example Plan of Study with required Thesis (MSEN-Computer or Electrical Engineering students):

First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits Directed Research
	Winter	8 credits Directed Research
	Spring	0-4 credits coursework and Thesis Defense

Example Plan of Study without Thesis, taking summer classes:

First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	8 credits coursework

	Summer	8 credits coursework
Second Year	Fall	8 credits coursework

Auditing a Course

Occasionally, a student may wish to attend a course without earning credit (for example, to refresh course knowledge). This arrangement is called 'auditing' a course. Audited courses are listed on a transcript with the grade AU (audit) and no credits earned. Audited courses incur regular tuition fees; however, audits are not considered part of a course load for academic or financial aid purposes, which means that students cannot count audited credits toward a full-time student status, or receive financial aid for an audited class.

A student needs the course instructor's permission to audit a course. Students who want to audit a course must complete a Request to Audit Course Form, have it signed by the course instructor, and submit it to the Office of the Registrar during the drop/add period specified on the academic calendar. Audits cannot be charged to a regular enrollment after the drop/add period noted on the academic calendar.

Students who choose an audit option are expected to attend the audited class and complete all course requirements (with the exclusion of the tests). If the students do not meet attendance requirements for the course, they earn the grade of WN (withdrawn for non-attendance). Once a WN grade is issued, the student may no longer attend or participate in the class. AU and WN grades do not affect the term and cumulative grade point averages.

Enrollment Status/Verifications

Enrollment Status

- For 30-credit graduate programs:

  6 credits = Full time (for working professionals taught online or at off campus sites.)

- For 40-credit graduate programs:

  8 or more credits, or THS1, THS2, or Internship Course (ENGR-693 or MGMT-693) = Full Time (for graduate students taught on campus.)
  4-7 credits = Half Time
  1-3 credits = Less Than Half Time

Enrollment Verifications may be obtained through the Office of the Registrar. Enrollment verifications confirm a student's enrollment status (full-time, half-time, less than half-time) and expected graduation date.

Questions: Contact the Office of the Registrar

Graduate Program Extension Policy

Overly long times-to-degree are costly to both students and the University, for a variety of reasons. Indeed, timely progress is a sign of intellectual vigor, competence and commitment. Therefore, students have up to six years to complete all requirements for the Master's degree at Kettering University. If a student cannot complete the degree within the six-year time limit, they must request an extension. To be considered eligible for a time extension, the student must 1) demonstrate satisfactory progress towards the completion of the degree and 2) receive endorsement or approval from the Graduate Program Advisor and/or the Department Head.

Items that must be addressed on the **Time Extension Request** include:

1. The reason(s) for the request.
2. An explanation of how the student's circumstances have changed to enable them to now complete the degree.
3. An agreed upon plan and timeline for completion of the degree.

If approved, the student must complete the program requirements as outlined on the approved Program Time Extension form. During the extension, the student must meet with the Program Director periodically to ensure that adequate progress towards degree completion is being maintained.

Appeal Process

If the Graduate Program Advisor and/or Department Head will not approve a request for extension, the student may appeal to the Graduate School. In such cases, the Graduate Dean will confer with the Graduate Council to examine the extension request. If the Graduate School is not able to approve the request, the student may make a final appeal to the Provost.

Questions: Contact the Graduate School at gsr@kettering.edu

Independent/Directed Study

In order to increase the scope and flexibility of course offerings, many departments offer courses under the designation of Independent or Directed Study. A student who desires a course not normally offered or not available during a given term should approach the instructor in whose discipline the course would normally fall to discuss the possibility of an Independent or Directed Study. If the instructor agrees, a written proposal may be required from the student, specifying the reading and/or research to be undertaken, reports or rests to be used for grading purposes, number of meetings per week, number of credits to be awarded, etc.

Independent Study

An independent study is a unique topic in a specific area of study not offered in an existing course. Requirements and meeting times are arranged by the instructor and student. A student must request and receive approval for an independent study through the instructional department. This is done by completing an Independent Study Form stating the independent study name and description, and obtaining all required signatures. The completed form must be submitted to the Office of the Registrar no later than the last day of the drop/add period specified on the published academic calendar.

Directed Study

A directed study is a course listed in the undergraduate catalog but not scheduled during a given term. It is done on a one-on-one basis with an instructor for that course. A student must request and receive approval for a directed study through the instructional department. If approved, the department will notify the Registrar's Office to create the course no later than the last day of the drop/add period specified on the published academic calendar.

Questions: Contact the department offering the course

Registration

Registration is the process by which a student enrolls in a specific course(s) during a specific term. Registration for courses occurs after the application/admission process is complete and the student has been granted admission. Students cannot receive credit for a course for which

they have not registered. Students must register for courses every term they wish to take classes.

Students must register online via Banner Web. Registration instructions can be found on the Office of the Registrar website.

Students registered for courses will receive an e-mail notification to their Kettering e-mail account with instructions on how to log into Banner Web to retrieve their official invoice. This invoice will confirm enrollment and denote the required tuition. Detailed payment information will be in the email and on the invoice. Payments can be made online or by mail.

Course Selection

Selection of courses is the responsibility of each student. The student is personally responsible for being aware of prerequisite coursework and choosing program courses accordingly. To assist with your planning, program curricula is available online or in this catalog for each Kettering graduate program. The responsibility for deciding how many courses to take in a term is solely the student's, however, a normal course load is one or two courses. Kettering University advises against heavier loads except for resident students who are not employed.

Curriculum Restrictions

A student may take no more than four (4) courses numbered below 600-level to count toward their Master's degree.

Questions: Contact the Program Advisor

Repeating a Course

A graduate student who receives a failing grade in a required course should retake the course as soon as possible. If the student is unable to take the next course offering, or should the course not be available when the student registers, the student may take other classes keeping in mind the Graduate School GPA requirements. Should the student fail the same course twice, they must appeal in writing to the Graduate Appeal Committee to retake the course for a third and final time. The decision of the Graduate Appeal Committee will be final.

The option to retake a failed required course can only be utilized for one course requirement in a degree program. Students who fail a course and then subsequently fail another but different course will be dismissed from the program.

Graduate students may also retake one course in which they have not met the scholastic standards of Kettering University's Graduate School (earned a grade lower than a B-) to improve their cumulative GPA.

Students electing to repeat a course will be subject to the following conditions:

- Students planning to repeat a course in which they received a grade above "F " should consult with the Graduate School as the repeated course may not be eligible for scholarship or tuition support.
- Courses taken for undergraduate credit at Kettering University may not be repeated at the graduate level. Furthermore, Kettering undergraduate courses cannot be counted as graduate credit except as approved per the BS/Master policy guidelines.
- Courses taken after degree conferral cannot be used for a GPA adjustment.
- Once a repeated course has been passed satisfactorily the *most recent passing* grade for that course will be used to calculate the student's cumulative GPA.
- Course withdrawals (W grade), incomplete courses (I grade), and courses completed as Credit/No Credit (CR/NC grades) are not eligible for the GPA adjustment.
- A student's grade in the original course may not be a result of academic misconduct as documented through the Office of Student Life.
- All occurrences of the course along with associated grades will remain on the student's academic record as well as on the official transcript

Transfer Credit

The maximum number of graduate credits for which a person may receive transfer credit is eight (8) credit hours. Credit is only considered for courses with a grade of B or better. All requests for transfer credit should be for graduate-level courses (taken for graduate credit) significantly similar to a specific course within the student's program.

To apply for transfer credit, the student must complete the Application for Transfer Credit Form and submit an official transcript from an accredited institution, plus a course description and syllabus. There is a processing fee of $5.00 (U.S.) per credit hour, or $20.00, for each 4-credit course. This fee is based on the number of credits for replacing the Kettering course, not the credits of the course being transferred in (i.e. a 3-credit course from another institution, is a 4-credit KU course equivalent).

Questions: Contact the Graduate School at gsr@kettering.edu for more information.

Undergraduates Taking Graduate Courses

Students taking graduate level courses are not automatically admissible to the graduate program. They still have to meet all published admissions requirements. **Note:** Courses taken for undergraduate credit at Kettering University may not be repeated at the graduate level and count towards the graduate program. Furthermore, graduate level courses taken at Kettering University for undergraduate credit may not count as graduate credit except as approved per the Accelerated Master's policy guidelines.

Undergraduates Taking Graduate Courses for Undergraduate Credit

Students enrolled in an undergraduate degree program at Kettering University may request registration in a Kettering graduate level course for undergraduate credit. To do this, students must:

- Complete and receive instructional department and degree department approvals on the Undergraduate Request to take Graduate Course Form and submit form to Registrar's Office for proper registration.

Undergraduates Taking Graduate Courses for Graduate Credit

Students enrolled in an undergraduate program at Kettering University may request registration in a Kettering graduate level course for graduate credit. Undergraduate students may take up to three graduate courses for graduate credit while an undergraduate student (no more than two per term). BS/MS students are not limited in terms of the number of graduate courses for graduate credit that can be completed. BS/MS students are also able to take graduate courses for graduate credit during coop terms.

Students are eligible if they meet all of the following criteria:

- They are enrolled in an undergraduate program at Kettering University
- They are in good academic standing
- They have a minimum of 120 earned credits
- They are enrolled in no more than 20 credits, unless qualified to take 24 credits.

In order to receive graduate level credit, students must do the following:

- Check with financial aid to ensure there are no financial aid limitations when taking a graduate course for graduate credit only.
- Complete and receive instructional department and degree department approvals on the Undergraduate Request to take Graduate Course Form and submit the form to Registrar's Office for proper registration.
- Earn a grade of B or better in the course taken.

Questions: Contact the Office of the Registrar

Withdrawals

Course Withdrawals

When circumstances occur whereby a student feels that completion of a course is not possible or in the student's best interest, the student may request a non-punitive grade of W (Withdrawn) be issued by the Registrar's Office. Such requests will be accepted and honored during the course withdrawal period specified on the published academic calendar. After the course withdrawal period, the student may not withdraw from the course and is committed to receiving a Kettering University letter grade. A student who wishes to withdraw from a course must submit a written request using the Graduate Program Course Withdrawal Form. Refunds or reduction of tuition are made according to the published schedule in the graduate catalog.

Medical/Compassionate Withdrawal (After 8th Week)

In extraordinary cases, a medical or compassionate withdrawal request may be made after the eighth week of the academic term when the final drop date has passed. These cases are severe illness or injury (medical) or a significant personal situation (compassionate) preventing a student from continuing their classes, and where incompletes or other arrangements with the instructors are not possible.

The withdrawal request is typically a complete term withdrawal, but each case will be reviewed individually. All applications for withdrawal require credible documentation submitted to the Wellness Center at wellness@kettering.edu as well as a personal statement outlining the reasoning for the request, which course(s) the student is requesting to withdraw from, and why only a partial withdrawal is needed when applicable. Withdrawal requests are reviewed by the Student Emergency Response Committee, which will collectively review all documentation and determine the most appropriate decision based on individual circumstances. Please note that not all requests are approved.

No refunds apply to the approved medical or compassionate withdrawals. Requests for this type of withdrawal must occur during the term in which the hardship occurs. Withdrawal requests are due before final grades have been posted for that term. Please check the academic calendar to determine the applicable date.

For more detailed information regarding the process to submit a withdrawal request, please refer to the Wellness Center's webpage on Medical/Compassionate Withdrawals.

University Withdrawal

Withdrawing from the University requires a written request to the Office of the Registrar at registrar@kettering.edu.

Withdrawal due to Active Duty

Students may withdraw from the University and receive a 100% tuition refund upon presenting to the Registrar, the original Armed Forces orders. Non-punitive grades of W will be issued. Should the call come during eighth week or later, in the judgment of the instructor and the student, a grade of Incomplete (I) may be given with no reimbursement of tuition. Course work then would be completed per arrangements agreed upon by the instructor and student.

Questions: Contact the Office of the Registrar

Leave of Absence

The Graduate Student Leave of Absence (LOA) Policy assists and encourages students to return and complete their degree after up to two consecutive terms of absence from Kettering University. Eligible students are encouraged to take advantage of the benefits provided by an LOA, e.g., no need to apply for readmission and ability to participate in their regularly scheduled registration/enrollment period upon return to the University. Refer to the Leave of Absence Request Form for more information and instructions.

Questions: Contact the Office of the Registrar

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (commonly referred to as “FERPA” or the “Buckley Amendment”), helps protect the privacy of student records. The Act provides for the right to inspect and review education records, the right to seek to amend those records and to limit disclosure of information from the records. The Act applies to all institutions that are the recipients of federal funding.

In accordance with FERPA, Kettering University has policies and procedures in place to protect the privacy of education records. Students will be notified of their FERPA rights annually by publication in the Undergraduate and Graduate Catalogs and by an annual email message to students at the beginning of the academic year.

Disclosure of Education Records

Kettering University will disclose information from a student's education record only with the written consent of the student, except:

1. To school officials who have a legitimate educational interest in the records.
   A school official is:
   - A person employed by the university in an administrative, supervisory, academic, research, or support staff position (including Campus Safety and Wellness Center staff);
   - A person elected to the Board of Trustees;
   - A student serving on an official committee, such as disciplinary or grievance committee, or assisting another school official in performing his or her task;
   - A volunteer or person employed by or under contract to the university to perform a special task, such as legal counsel or an auditor;
   - Agencies conducting business on behalf of Kettering University (i.e. National Student Clearinghouse, officials of the U.S. Department of Education and state and local educational authorities, accrediting organizations and banks).

   Educational Need to Know:
   A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for Kettering University.
2. To officials of another school, upon request, in which a student seeks or intends to enroll.
3. In connection with a student's request for or receipt of financial aid, as necessary to determine the eligibility, amount, or conditions of the financial aid, or to enforce the terms and conditions of the aid.
4. To organizations conducting certain studies for or on behalf of the university.
5. To comply with a judicial order or a lawfully issued subpoena.
6. To appropriate parties in a health or safety emergency.
7. When the request is for directory information (see below).

Directory Information

Institutions may disclose information on a student without violating FERPA through what is known as "directory information." Kettering University designates the following categories of student information as public or "Directory Information." Such information may be disclosed by the institution at its discretion.

- Corporate affiliation
- Degrees awarded, including dates (actual and expected)
- Dates of attendance
- Degree program (major field of study, concentrations and minors)
- Degrees and honors awarded (including Dean’s List)
- Enrollment Status (including full or part-time)
- Honor Societies
- Photo
- Previous institutions attended
- Class standing (freshman, sophomore, junior, senior, graduate student)
- Name, address and phone number
- E-mail address

Solomon Amendment

Federal law requires that all institutions of higher learning provide directory information to the military upon request, including student name, address, telephone number, age or year of birth, academic major and level of education (e.g. freshman, sophomore, etc. or degree awarded). Where there is a conflict between the Family Educational Rights and Privacy Act of 1974 (FERPA), the Solomon Amendment would supersede FERPA.

Annual Notification to Students of Rights Under FERPA

FERPA affords students certain rights with respect to their education records. They include:

1. **Inspect and Review of Records**
   The right to inspect and review the student’s education records within 45 days after the day the University receives a request for access. A student should submit to the registrar, dean, head of the academic department, or other appropriate official, a written request that identifies the record(s) the student wishes to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. **Amendment of Records**
   The right to request the amendment of the student's education records that the student believes are inaccurate, misleading, or otherwise violate the student's privacy rights under FERPA. Students should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it should be changed. If the University decides not to amend the record as requested, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
3. **Consent to Disclosure**
   The right to provide written consent before the university discloses personally identifiable information from the student’s education records, except to the extent that FERPA authorizes disclosure without consent.
   The school discloses education records without a student’s prior written consent under the FERPA exception for disclosure to school

officials with legitimate educational interests. A school official is a person employed by Kettering University in an administrative, supervisory, academic, research, or support staff position (including Campus Safety and Wellness Center staff); a person serving on the board of trustees; a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her task; a volunteer or person employed by or under contract to the university to perform a special task, such as legal counsel or an auditor; agencies conducting business on behalf of Kettering University (i.e. National Student Clearinghouse, accrediting organizations and banks).
A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for Kettering University.

4. **FERPA Complaints**
The right to file a complaint with the U.S. Department of Education concerning alleged failures by Kettering University to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:
Family Policy Compliance Office
U.S. Department of Education
400 Maryland Avenue, SW.
Washington, DC, 20202

For more information on the Family Educational Rights and Privacy Act, visit the Office of the Registrar Website, under FERPA.

Grades

Grades

Course grades are available after each term via Banner Web. Federal law prohibits communication of grades by telephone. Students may access their grade report and/or print a grade report to provide to their company by logging on to Banner Web.

Grade	Description	Points
A	Outstanding	4.0
A-	Outstanding	3.7
B+	Satisfactory	3.3
B	Satisfactory	3.0
B-	Satisfactory	2.7
C+	Less than satisfactory	2.3
C	Less than satisfactory	2.0
C-	Less than satisfactory	1.7
F	Fail	0.0
AU	Audit	0.0
CR	Credit	0.0
FN	Failure for non-attendance	0.0
I	Incomplete	0.0
W	Withdrawal	0.0
WN	Withdrawn for non-attendance	0.0

Course Hours and Points Definitions

Quality Points = Grade x Credit Hours
GPA = Quality Points ÷ GPA Hours

Attempted hours (AHRS) – are the sum of the course credit hours for which a student has registered. Attempted hours per term is the basis for determining tuition charges and a measure of the student load.

Earned hours (EHRS) – represent work equivalent to that defined for a University credit hour that the student has successfully completed at Kettering University, at another university or by examination. Not all earned hours necessarily apply to the specific degree program being pursued by the student.

Grade Point Average (GPA) – is computed for each term individually and cumulatively. In either case, the weighted GPA is computed by dividing the total quality points earned by the total quality hours accumulated.

GPA hours (GPA-HRS) – are equal to the credit hour value of the course and are awarded only for course work taken at Kettering University. Only course work resulting in GPA hours is used in computing a student's grade point average (GPA).

Quality Points (QPTS) – are a computational value used to compute a student's grade point average (GPA). The quality points earned for a given course are equal to the credit hour value of the course multiplied by the numerical equivalent of the letter grade.

Questions: Contact the Office of the Registrar

Credit Hour Policy

Kettering University defines a credit hour as one 60-minute class period per week. The University assigns four [4] credits to all courses in all undergraduate and graduate degree programs. Undergraduates and on

campus graduate students are expected to spend at least two hours outside of class preparing for each hour in class. A 4-credit course requires these students to devote 120 hours of effort per term, or approximately three [3] hours of effort per week, for 10 weeks, for each registered credit hour.

These credit hour requirements fulfill federal definitions and regulations regarding the assignment of credit hours as follows under Section 600.2 and 600.24(f) of the Higher Education Opportunity Act:

Credit hour. Except as provided in 34 CFR 668.8(k) and (l), a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than ---

1. One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or

2. At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

Grade Appeal Process

The course instructor has the authority and obligation to assign appropriate grades in any course. Questions concerning an assigned final grade are to be handled through the grade appeal process. Final course grades may be appealed only if the student can demonstrate that the grading policy applied to his/her grade does not conform to the stated grading policy of the course instructor. The absence of a grading policy will be considered reasonable grounds for appeal. Appeals should be initiated as soon as possible but no later than ***12 weeks*** after the grade has been posted. The student's failure to access grades does not provide an exemption from the time limitation.

Grade Appeal Process

1. **Student** - The student completes a Grade Appeal Form attaching any pertinent documentation to support his/her claim.
2. **Instructor** - Within two (2) weeks of the student's request for a grade appeal, the course instructor accepts or denies the appeal in writing.
3. **Department Head** - Students who are not satisfied with the decision of the course instructor may appeal to the course instructor's department head within 30 days of the course instructor's response. Students appealing to the department head assume the burden of proof. The appeal must include: a statement of the reason the student is appealing the grade, evidence to support the appeal, the steps taken to resolve the disagreement over the assigned course grade and the resolution sought. The department head will serve as a mediator between the student and the course instructor but cannot change a grade. The department head must respond in writing to the student, course instructor, and the dean of the college within 30 days of receipt of the appeal with the result of mediated discussion between the student and course instructor.
4. **Dean** - Students who are not satisfied with the result of the discussions between the student and course instructor, mediated by the department head (step 3 above), may submit an appeal to the college dean (or graduate dean in the case of a graduate student). The student must forward all documents submitted in steps 1-3 above to the college dean (or graduate dean in the case of a graduate student). If the dean concludes that the facts alleged by the student do not constitute grounds for appeal, the dean may dismiss the review. The student will not be allowed any further appeal. If the dean determines that the facts alleged by the student are true, the dean shall refer the appeal to the Final Appeal Board.
5. **Final Appeal Board** – The Provost (or designee) will convene an appeal board comprised of the following members: one tenured faculty member from the course instructor's department, chosen by the course instructor; one tenured faculty member from the course instructor's department, chosen by the Department Head; one tenured faculty member from outside the course instructor's department, chosen by the Chair of the Promotion, Tenure and Ethics (PTE) Committee; and the Provost (or designee), who does not vote, but chairs the board and handles all administrative matters.
6. **Provost** - The Final Appeal Board makes a recommendation to the Provost to change the grade to a "P" for passing or keep the course instructor's original grade. The Provost will provide a written overview of the Appeal Board's decision to all involved parties. The decision of the Provost represents a final University decision.

Questions: Contact the Office of the Registrar

Grade Changes

Grades (except incompletes) reported by an course instructor are considered permanent and final. However, requests for a change of grade after a course instructor reports a final grade will be honored to correct an error in calculating or assigning that grade. To facilitate this process, the course instructor will submit to the Registrar an email, with the Department Head copied, noting the rationale for the change and what retroactive correction is to be made. Grade changes must be processed within one calendar year (12 months) from the last date of the term in which the course was taken. This includes incomplete grades that have been changed to a grade or have converted to a failing grade. Grade changes are not permitted after a degree has been awarded.

Questions: Contact the Office of the Registrar

Incomplete Grades

The grade of "I" (Incomplete) is a temporary grade assigned by the instructor in cases where a student is unable to complete course requirements within the term. The grade of "I" may be issued by a course instructor for any course in which the following conditions are met:

1. On-campus Graduate students request "I" grade from the Instructor: no later than 10th week Friday
2. The student has satisfactorily completed a substantial portion (typically about 75%) of the total coursework and has convinced the instructor of his or her ability to complete the remaining work without re-registering for the course. It is not to be given if a student is failing the course.
3. The student is unable to complete the course requirements within the regular time frame due to significant, extenuating circumstances which can be documented.
4. The student and course instructor must complete an Incomplete Grade Agreement Form that clearly states the requirements to be completed and the due date for the completion of each requirement. The form must be signed by the Department Head and filed in the Office of the Registrar as official documentation of the agreement.

Deadline for completion of the coursework:

On-campus Graduate students: not to exceed 5 weeks from the last day of the term in which the incomplete was assigned.

If a final grade is not submitted within the specified deadline for completion, the incomplete grade converts to an "F" (Fail) on the student's record and will be reflected in the students' GPA. The grade of "F" will be considered a permanent grade on the student's record.

Students should note that an incomplete grade does not yet reflect credit in the course. This means if a course with an incomplete grade is a prerequisite for another course, they may not register for that course until the incomplete grade has been changed to reflect a passing grade.

Questions: Contact the Office of the Registrar

Graduate School Academic Fresh Start Policy

Fresh Start Program

This program is intended for Kettering University graduate students, who previously had a poor academic performance at Kettering University, such that they would be unable to achieve academic good standing in their desired program, even if, upon returning, they earned grades of B or higher over several academic terms. Such students may be eligible for admission into a new graduate program or for readmission into the student's previous graduate program under the Graduate Academic Fresh Start Program.

Note, students dismissed for academic misconduct are not eligible for the Graduate Academic Fresh Start Program.

I. Eligibility for Graduate Fresh Start Program

A Kettering University student is eligible for admission or readmission under the Graduate Academic Fresh Start Program if the individual has not been enrolled at Kettering University for at least six academic years.

A student may only be granted one (1) Graduate Academic Fresh Start.

II. Application or Petition for Readmission

Students applying for readmission under Graduate Academic Fresh Start must follow all normal processes for readmission to the Graduate School under the Graduate Admissions Policy. A former Kettering student can petition to enter/reenter a previous graduate program or to take new coursework for a new graduate degree program. The Petition will be reviewed and approved by the Registrar and the Dean of the Graduate School.

III. Unconditional Admission with Provisions.

If an individual is readmitted under the Graduate Academic Fresh Start program, the individual receives an unconditional admission with provision(s) that may include:

1. The student must earn a grade of "B" or better in each graduate course for the first 12 credit hours (or three courses taken). Failure to obtain a 3.0 GPA may lead to immediate rescission of readmission without appeal.
2. The Graduate School may impose additional conditions for readmission.

IV. Transcripts

The student's transcript will reflect all courses taken and grades received; however, previous graduate coursework will be excluded from the GPA calculations and earned hours calculations. The transcript will include one of the following designations: "Admitted under Graduate Academic Fresh Start" or "Readmitted under Graduate Academic Fresh Start," as appropriate. Once the transcript is so changed, this change cannot be reversed.

V. Financial Support

Eligibility for Graduate Tuition Scholarships and Graduate Assistantships:

1. A student admitted or readmitted under Graduate Academic Fresh Start Program are not eligible for Graduate Tuition Scholarships.
2. A student admitted or readmitted under Graduate Academic Fresh Start Program may be considered eligible for graduate assistantships if they meet the eligibility requirements.

Graduation

Graduation Requirements

Application

Students must apply to graduate to begin the graduation process. The time-frame to submit this application is when registering for the last term of courses.

In order for a graduate degree to be awarded and verified by the Office of the Registrar, the following requirements must be satisfied:

- Successfully complete all prescribed courses within the six (6) year limit. A student who anticipates not meeting the time limit must notify the Graduate Office at least six (6) months prior to the expiration of the six (6) year limit.
- Achieve a final cumulative grade-point average (GPA) of 3.0 or higher.
- Students must complete 40 credit hours of resident graduate credit for a masters degree.
  - For working professionals in the Master of Engineering program, 30 credit hours of resident graduate credit are required.
  - For a stand alone certificate,12 credit hours of resident graduate credit are required.

Commencement

Commencement is the formal ceremony which recognizes and celebrates graduates and graduation candidates. At Kettering University, commencement is held annually at the conclusion of the spring term. Refer to the published academic calendar for the date of commencement. Detailed information including eligibility requirements is available on the Office of the Registrar website.

Questions: Contact the Office of the Registrar

Degree Completion for Inactive Students with Coursework Remaining

Inactive students who wish to return to Kettering University must contact the Registrar's Office for assistance. After ensuring there are no outstanding financial obligations to the university, the Registrar will refer such students to the appropriate Academic Department Head to develop a plan of study. The final plan will be annotated as a NOTE in the student's Degree Works audit. These students will be subject to meeting the requirements for degrees in effect at the time of readmission.

Diplomas

Diplomas are personally presented to students by the President of Kettering University at commencement. Students who are unable to attend commencement will receive their diplomas via the USPS to their permanent US address **after the event**. Diplomas are mailed to US addresses only. For International Shipping, please refer to the Shipping Instructions for International Packages.

Diplomas are not considered official proof of graduation. For proof of graduation, students must request an official transcript.

Final Degree Verification Letter

Students may request a final letter when all requirements for graduation are met. Final letters will not be issued until all grades for the graduating term are submitted and posted to the student's record. Final letters will not be issued once a degree has been awarded, students must request an official transcript.

Financial Obligations

Diplomas are withheld until the student has satisfied all financial obligations with the University. Students cannot participate in commencement if they have not satisfied all financial obligations with the University.

International Students

Plan of Study for International students

International students are able to utilize a term for internship, better aligning the graduate program with the University's mission. The on-campus programs operate on a calendar similar to a conventional quarter system: Fall, Winter, and Spring terms are "regular" academic terms during which students normally enroll full-time (coursework, internship or thesis), and the Summer term is generally an off-term.

Many variations of this plan are possible, both with or without a thesis. In particular, students may begin the program in Fall, Winter or Spring terms. However, international students on an F-1 visa are required to complete two academic terms to be eligible for either a non-study or an internship term. This structure works perfectly for students that start in Fall or Winter. If an international student on an F-1 visa starts in Spring term, they will not be able to take an internship until after their first summer term. In this case, they may forego the non-study or internship term or apply to have their non-study term changed to a regular academic term.

The non-study and the internship term offers the opportunity for the student to work in an internship at a related industry, work on-campus, travel, or optionally register in further coursework. For some degree program, such as the MS in Applied Data Science and Data Analytics, there is the possibility of two internship terms that can be applied towards the degree requirements for graduation.

Please refer to specific program information as you develop your plan of study. Note that the CE and EE concentrations, in the MS Engineering program, require a masters thesis which is non-credit bearing. However, in the other MS Engineering concentrations the masters thesis is optional and carries eight (8) credit hours.

Note that eight (8) credit hours, in most cases, constitutes full time for financial support, and visa requirements. Students may elect to carry a higher course load. While some students prefer to take one class at a time, this may create issues with financial support or visa status.

Students enrolling in the on-campus MBA, MS in Engineering Management, MS in Applied Data Science and Data Analytics or MS in Operations Management, may have prerequisite courses that will lengthen the plan of study.

Example Plan of Study without Thesis:

Classification	Code	Earned Hours
First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	0-4 credits coursework

Example Plan of Study with Thesis (MSEN-Mobility Systems or MSEN-Mechanical Engineering students):

Classification	Code	Earned Hours
First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits coursework
	Winter	4 credits coursework + Thesis 1
	Spring	Thesis 2

Example Plan of Study with required Thesis (MSEN-Computer or Electrical Engineering students):

First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	Internship or 8 credits coursework
	Summer	Non-Study or Internship term
Second Year	Fall	8 credits Directed Research
	Winter	8 credits Directed Research
	Spring	0-4 credits coursework and Thesis Defense

Example Plan of Study without Thesis, taking summer classes:

Classification	Code	Earned Hours
First Year	Fall	8 credits coursework
	Winter	8 credits coursework
	Spring	8 credits coursework
	Summer	8 credits coursework
Second Year	Fall	8 credits coursework

Student Records

The Office of the Registrar maintains the students' permanent academic record, including course registrations, enrollment status and the official transcript. The Registrar's Office is the point of contact for any required enrollment and degree certifications. As such, it is important that students keep the office current with their permanent mailing address so these services can be provided.

Note: The Registrar's Office will not discuss the student record with any third party without a written consent from the student.

Address, Phone, and Name Changes

Changes in phone numbers should be made by the student through Banner Self Service. Permanent address changes can be made by contacting the Registrar's Office.

In order to process a name change, a copy of a government-issued photo ID, such as a driver's license, and either a marriage license, a Social Security card, or a court order that reflects the new name is necessary. Name changes must be processed through the Registrar's Office.

Permanent Academic Records

All information, applications, correspondence, etc., involved in admitting and processing the active progress of an admitted student are maintained for five years after the student has last been an active degree-seeking student. After five years, only the student's attendance dates, academic performance, corporate affiliate, and degree awarded are kept as a permanent record.

Transcripts

A student's official academic record is maintained by the Registrar's Office at Kettering University and is normally reflected through a transcript. All requests for transcripts must be submitted through the National Student Clearinghouse. Transcripts are $2.90 for domestic mailing or pickup and $3.90 for electronic delivery. Unofficial transcripts are available to active students on Banner Self Service.

Official transcripts from other institutions are not reissued or copied for distribution. If needed, they must be obtained directly from the issuing institution.

Thesis

Thesis Option – MS in Engineering

A thesis option is available for designated graduate programs.

Masters Thesis

The degree department will specify which course(s) may be replaced by the thesis. Criteria for topic selection are up to the degree department, as are thesis-option prerequisites, if appropriate. Information about the administrative requirements for a Masters Thesis may be obtained from the Graduate School.

A thesis committee of at least three (3) faculty members is required. Students must obtain the written consent of the individuals who will serve on the committee, starting with the professor who will be the major advisor and chair of the committee. If a student is unable to find a professor to be the major advisor, then the student will not be able to elect the thesis option. Students are urged to form the advisory committee and gain approval of a written research proposal by the end of their second term in residence. Students should plan to begin work on the thesis project by the end of their third term in residence. Registration for thesis credits requires the approval of the chair of the thesis committee. This approval is contingent upon prior approval of the research proposal by the thesis committee.

Master's theses are theory-based and goal-oriented. The criteria for success are achievement of the research goal and production of a written thesis of publishable quality.

Questions: Contact the program advisor

Information Technology

Information Technology (IT) is located in the Academic Building (AB), Room 2-340. All students have the privilege of using Kettering technology resources as long as they abide by the Acceptable Use of Information Technology Resources Policy, the Information Resources Policies, Etiquette & Rules, and any other IT policies as documented. Some of the major technical services provided to students are:

Help Desk

The Help Desk provides technical support for computing resources. Sending an e-mail to helpdesk@kettering.edu at any time will get the necessary resources. The staff will respond to support requests during normal business hours.

E-mail

All students have the privilege of having a Kettering University Google e-mail account. The Kettering e-mail account is the official way Kettering University faculty and staff communicate with students. Students are responsible for required actions conveyed to them through this communication vehicle, **whether or not they read the message**. Kettering provides each student with unlimited e-mail server storage. University policy is to communicate by Kettering email, to ensure FERPA compliance. Therefore, do not auto-forward to another e-mail service provider which may have less storage capacity, fewer features, and may hinder the ability to reply directly to the original email source.

Due to the proliferation of spam and phishing emails, students may receive emails requesting personal information such as usernames and passwords. Although it may look authentic, pretending to originate from a legitimate source such as Kettering, do not respond. Immediately delete it recognizing that a legitimate source such as the Kettering IT department would never ask for information such as passwords. Be cautious regarding any unsolicited email as it may contain elements that would prove to be detrimental to a personal computer.

Virus Protection

It is strongly recommended that all students install virus protection software and maintain it to protect their personal PCs. Any up-to-date properly licensed or free virus protection software would be acceptable.

It is mandatory to have virus protection installed, current, and running when connected to the Kettering network.

Internet Access

Internet access is available through the Kettering University network for business and academic purposes. Faculty, staff, and students will also have access to the Internet, as well as most network resources, using their wireless devices. Students are required to use the KUW Profile for encrypted high-speed access.

Web-Based Student Services

All students have access to a variety of online services through their web browser. They can view academic information such as grades, class schedules, and transcripts, as well as information about their financial account. They can also have access to view and update addresses, telephone numbers, and email addresses to facilitate communication with Kettering University faculty and staff.

Blackboard

Blackboard Learning Management System is leveraged for course syllabi, homework assignments, and tests. Access to Blackboard is available from anywhere a student has an internet connection. To help protect your privacy, security, and confidential information, you must sign on to Blackboard to access these services.

Virtualization

The Virtual Computer Lab (KUcloud) provides students virtual access to lab and classroom software typically only available while on campus. Virtualization provides access to classroom software anytime from anywhere.

Information and Help Sheets

Help for accessing the various systems, including the Internet, is available through the Help Desk and on the IT website. The IT web pages contain valuable information to help maximize the use of Kettering University computing resources.

Library Services

Kettering University Library

The Kettering University Library features digital collections and friendly personal services to support teaching, learning, and the university's research programs.

Features include digital collections, friendly service, and great space for collaborative and individual study from the Library's new home in the Kettering University Learning Commons. Access is available in person during regular hours and 24/7 for all students, both on campus and off, through the Library website. The Library supports student research by subscribing to more than 150 databases that contain academic information resources. The collection includes books, journals, technical papers, standards, streaming films, and documentaries on a variety of topics, including science, engineering, mathematics, computer science, and the humanities. The electronic reserve book collection offers copies of many textbooks to students at no cost. As students explore the Learning Commons, they will find it is also a great place to do research and collaborate.

While most of the collection is available virtually through the Library website, print books are available through a secure, touchless locker system. Resources not owned by the Library are often available through Materials on Demand, formerly known as Inter-Library Loan. LinkedIn Learning courses are available to catch up on specific skills and Mango Languages courses are ready for those interested in language learning.

Some helpful library telephone numbers include:

Phone Number	Contact
810-762-7814	Circulation
810-762-9841	Materials on Demand (MoD), formerly Inter-Library Loan
810-762-9598	Research/Instruction
810-255-9009	Text a Librarian
800-955-4464, ext. 7814	Kettering University Toll-free Number

Kettering University Archives and Special Collections

The University Archives is located in the Durant-Dort Factory One building at 303 W. Water Street near downtown Flint. It's just a twenty-minute walk along the Flint River Trail. The Archives document America's industrial and business heritage with a particular focus on the American automobile industry, the city of Flint, and the history of Kettering University.

The Charles F. Kettering Collection is one of the largest collections in the Archives and has been used by scholars worldwide. The digital photo collection now exceeds 100,000 images. A partial online catalog, along with digitized photos, can be found on the archives website. Kettering University's Curator of Special Collections may be reached at (810) 762-9690.

The Humanities Art Center Collection includes artworks that were donated to Kettering University and contains modern abstract and representational art from the 20th century. Joan Miró, Victor Vasarely, and Annie Albers are among the artists represented in the over 400 items in the permanent collection. Exhibitions are held regularly in the gallery at the Kettering University Learning Commons. The collection is open to research and loan to other institutions. For more information about the Humanities Art Center Collection, please contact Kettering University's Curator of Special Collections at (810) 762-9690 or the Library's Administrative Specialist at (810) 762-9840.

Alumni Engagement

The Office of Alumni Engagement connects and engages Kettering University alumni, providing networking, volunteering and mentoring opportunities.

Each year, programming includes regional alumni receptions, an alumni award celebration ceremony, Alumni Connections Week, engagement via social media channels including Instagram, LinkedIn and Facebook, as well as volunteer opportunities, like returning to campus as an SAC speaker, making a difference in the lives of current students.

Alumni Connections Week began in 2018 in partnership with the Kettering/GMI Alumni Association. Every September, this one week event is devoted to alumni celebrating their alma mater and fellow graduates. Events are hosted by alums throughout the United States to bring alumni of all ages together, reuniting old classmates, as well as connecting alumni who have never met one another.

The Kettering/GMI Alumni Association unites and furthers the interests of alumni by fostering and assisting in the realization of the ideals of the university in order to stimulate and encourage loyalty towards the institution, provide financial assistance for educational programs, serve as a sounding board for University leadership and supporting appropriate university-sponsored alumni activities.

The KGMIAA Board is comprised of seven committees:

1. Alumni Awards
2. Alumni Involvement and Events
3. Discounts and Benefits
4. Fundraising
5. Social Media and Communications
6. Student Recruitment

Each year The Kettering/GMI Alumni Association and Kettering University recognizes outstanding and notable alumni for their professional and personal achievements with the following awards:

1. Distinguished Alumnus/Alumna
2. Extraordinary Leadership
3. Engineering Achievement
4. Entrepreneurial Achievement
5. Management Achievement
6. Civic Achievement
7. Alumni Service
8. Young Alumni

The Student Alumni Council (SAC) is jointly supported by The Alumni Engagement Office and the Kettering/GMI Alumni Association. This student organization provides its members with public speaking opportunities, as well as teamwork and leadership experiences. First formed in 1976, SAC continues to serve as a link between students and alumni. In addition to supporting student and alumni activities, SAC invites Kettering alumni to speak with current students about their time at Kettering, professional development and career path.

Administration and Faculty

Senior Administration

Dr. Robert K. McMahan, Jr., President
Dr. James Z. Zhang, Senior Vice President, Academic Affairs and Provost
Ms. Marsha Bewersdorf, Vice President, Administration and Finance
Mr. Geoffrey Marsh, Vice President, Instructional, Administrative, and Informational Technology
Ms. Suzanne Petrusch, Interim Vice President, Enrollment and Co-operative Services
Mr. Dale Pilger, Vice President, University Advancement and External Relations
Ms. Enza Sleva, Vice President and Chief Student Experience Officer
Dr. Kathryn Svinarich, University Chief of Staff
Ms. Jennifer Umberger, Vice President, University Marketing and Communications

Deans and Head of School

Dr. Scott Grasman, Dean, College of Engineering and Computer Science, Professor of Industrial Engineering
Dr. Terence J. Pitre, Dean, School of Management, Professor of Accounting
Dr. Scott W. Reeve, Dean, Graduate School and Sponsored Research, Professor of Chemistry
Dr. Ronald Tackett, Head of School, School of Foundational Studies, Associate Professor of Physics

Academic Department Heads

Dr. Javad Baqersad (Interim), Department of Mechanical Engineering
Dr. Susan Farhat, Department of Chemical Engineering and Materials Science
Dr. Lisa Gandy (Interim), Department of Computer Science
Dr. **Farnaz Ghazi Nezami (Interim)**, Department of Industrial and Manufacturing Engineering
Dr. Mark Thompson, Department of Electrical & Computer Engineering

Faculty

The Kettering University faculty listed below are able to teach the graduate courses for our programs. The majority hold doctorates and nearly all of them have consulting experience in industry and business.

Bashar AbdulNour, Professor of Practice
B.S. 1979, University of Baghdad, Iraq; M.S. in Mechanical Engineering 1982, M.S. in Applied Mathematics 1987, Ph.D. 1990, Michigan State University

Jamal Alhiyafi, Assistant Professor of Computer Science
B.S. 2000, University of Michigan-Dearborn; M.S. 2002, University of Michigan-Dearborn; Ph.D. 2010, Wayne State University

Reem Alzahabi, Assistant Professor of Psychology
B.S. 2009, Michigan State University; M.A. 2012 Michigan State University; Ph.D. 2015, Michigan State University

Patrick J. Atkinson, Professor of Mechanical Engineering
B.S. 1991, Kettering University; M.S. 1994, Ph.D. 1998, Michigan State University

Theresa Atkinson, Professor of Mechanical Engineering
B.S.M.E. 1990, Michigan State University; M.S. 1994 Michigan State University; Ph.D. 1998, Michigan State University

Javad Baqersad, Interim Department Head, Associate Professor of Mechanical Engineering
B.S. 2005, Yazd University, Iran; M.S. 2008, Iran University of Science and Technology; M.S.E. 2014, University of Massachusetts; Ph.D. 2015, University of Massachusetts

Jennifer Bastiaan, Associate Professor of Mechanical Engineering
B.S. 1997, GMI Engineering & Management Institute; Ph.D. 2015, University of Waterloo, Ontario

Michael D. Callahan, Professor of Social Science
B.S. 1986, Central Michigan University; M.A. 1988, Ph.D. 1995, Michigan State University

Pamela Carralero, Assistant Professor of Environmental Humanities
B.A. 2012, University of London; M.Sc. 2013, University of Edinburgh, Scotland; Ph.D. 2019, Purdue University

Ada Cheng, Associate Professor of Applied Mathematics
B.S. 1993, Memorial University of Newfoundland, Canada; M.S. 1995, Ph.D. 2000, University of Waterloo, Ontario, Canada

Susanta K. Das, Professor of Mechanical Engineering
B.S. 1991, University of Dhaka; M.S. 1993, University of Dhaka, Bangladesh; Ph.D. 1999, Tokyo Institute of Technology, Japan

Gregory W. Davis, Professor of Mechanical Engineering
B.S. 1982, University of Michigan; M.S. 1986, Oakland University; Ph.D. 1991, University of Michigan

Yaomin Dong, Professor of Mechanical Engineering
B.S. 1983, M.S. 1986, Northeast University; M.S. 1995, Ph.D. 1998, University of Kentucky

Chen Duan, Assistant Professor of Electrical Engineering
B.S. 2011, University of Science and Technology Beijing, China; M.S. 2013, Kettering University; Ph.D. 2020, Wayne State University

William Edwards, Professor of the Practice
B.S. 1990, M.S. 2003, Ph.D. 2016, Oakland University

Susan Farhat, Department Head, Associate Professor of Chemical Engineering
B.S. 2003, Ph.D. 2010, Michigan State University

David L. Foster, Associate Professor of the Practice
B.S. 1999, Kettering University; M.S. 2003, University of Michigan; Ph.D. 2008, Oakland University

Leszek Gawarecki, Professor of Applied Mathematics
M.A. 1984, Warsaw University, Poland; Ph.D. 1994, Michigan State University

Ezekiel Gebissa, Professor of Social Science
B.A. 1984, Addis Ababa University; M.A. 1991, Michigan State University; Ph.D. 1997, Michigan State University

Farnaz Ghazi Nezami, Interim Department Head, Associate Professor of Industrial Engineering
B.S. 2005, Alazahara University, M.S., 2008, Azad University, Tehran, Iran; Ph.D. 2013, Wichita State University

Scott E. Grasman, Dean, College of Engineering and Computer Science, Professor of Industrial Engineering
B.S.E. 1994, M.S.E. 1995, Ph.D. 2000, University of Michigan

John Grether, Professor of the Practice
B.B.A. 1993, Northwood University; M.A. 1994, Central Michigan University; J.D. 2005, Michigan State University

Jeffrey B. Hargrove, Associate Professor of Mechanical Engineering
B.S. 1987, M.S. 1992, GMI Engineering & Management Institute; Ph.D. 1997, Michigan State University

Ruben Hayrapetyan, Professor of Applied Mathematics
Ph.D. 1981, Yerevan Armenia State University

Lisandro Hernández de la Peña, Associate Professor of Chemistry & Biochemistry
B.S. 1995, M.S. 1997, Institute for Nuclear Sciences & Technology, Cuba; Ph.D. 2004, Dalhousie University

Huseyin R. Hiziroglu, Professor of Electrical Engineering
B.S. 1975, Gazi University, Ankara, Turkey; M.S. 1979, Middle East Technical University, Turkey; Ph.D. 1982, Wayne State University

James K. Huggins, Associate Professor of Computer Science
B.S. 1989, M.S. 1991, Ph.D. 1995, University of Michigan

Petros Ioannatos, Professor of Economics
B.A. 1980, The Athens Graduate School of Economics and Business Science, Greece; M.A. 1983, University of Windsor, Canada; Ph.D. 1988, Wayne State University

Saroja Kanchi, Professor of Computer Science
B.S. 1983, M.S. 1985, Indian Institute of Technology, Delhi, India; M.S. 1987, M.S. 1989, University of Toledo; Ph.D. 1993, Texas A & M University

Ronald E. Kumon, Associate Professor of Physics
B.S. 1992, Michigan State University; Ph.D. 1999, The University of Texas at Austin

Christine Levecq, Professor of Humanities
B.A. 1983, State University of Liège, Belgium; M.A. 1986, University of Illinois at Urbana-Champaign; Ph.D. 1991, University of Illinois at Urbana-Champaign.

Daniel Ludwigsen, Associate Professor of Physics and Acoustics
B.A. 1992, Beloit College; Ph.D. 2001, Brigham Young University

Torsten Maier, Assistant Professor of Industrial Engineering
B.S. 2017, University of Evansville; M.S. 2019, Ph.D. 2021, The Pennsylvania State University

Omar Malik, Associate Professor of Management in the School of Management
B.A. 1989, University of the Punjab; MBA 1992 Lahore University of Management Sciences, Pakistan; Ph.D. 2006 Temple University

Wajira Asanga Ratnayake Manamperi, Assistant Professor of Chemical Engineering
B.S. 2003, M.S. 2006, University of Moratuwa, Sri Lanka; Ph.D. 2010 North Dakota State University

Arnaldo Mazzei, Professor of Mechanical Engineering
B.S.M.E. 1987, M.S.M.E. 1991, University of Sao Paulo; Ph.D. 1998, University of Michigan

Robert K. McMahan, Professor of Physics and President
B.S., A.B. 1982, Duke University; Ph.D. 1986, Dartmouth College

Seyed Jamaleddin Mostafavi Yazdi, Assistant Professor of Mechanical Engineering
B.Sc. 2005, Yazd University, Iran; M.Sc. 2009, K.Sn. Toosi University of Technology, Iran; Ph.D. 2019, Kyungpook National University, South Korea

Lawrence Navarre, Lecturer of Business Administration
B.B.A. 1984, Kent State University; M.S.M. 1990, Purdue University

Matthew O'Toole, Associate Professor of Applied Mathematics
B.S. 2002, Hillsdale College; M.S. 2006, Ph.D. 2010, Michigan State University

Jungme Park, Associate Professor of Computer Engineering
B.S. 1989, Korea University; M.S. 1996, University of Alabama; Ph.D. 2001, University of Alabama

Benjamin Pauli, Associate Professor of Social Science
B.A. 2005, University of Washington, Tacoma; M.A. 2009, Rutgers University; Ph.D. 2014, Rutgers University

Diane L. Peters, Professor of Mechanical Engineering
B.S.M.E. 1993, University of Notre Dame; M.S. 2000, University of Illinois at Chicago; Ph.D. 2010, University of Michigan

Ahmad Pourmovahed, Professor of Mechanical Engineering
B.S. 1977, Arya-Mehr University of Technology, Iran; M.S.M.E. 1979, Ph.D., 1985, University of Wisconsin-Madison

Andrzej Przyjazny, Professor of Chemistry
M.Sc. 1971, Technical University of Gdansk; Ph.D. 1977, Southern Illinois University; 1986, Technical University of Gdansk

Montserrat Rabago-Smith, Associate Professor of Chemistry
B.A. 1998, Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, Mexico; Ph.D. 2002, Michigan State University

Corneliu I. Rablau, Professor of Physics
B.S. 1989, University of Bucharest, Romania; M.S. 1998, West Virginia University; Ph.D. 1999, West Virginia University

Uma Ramabadran, Professor of Physics
Ph.D. 1990, University of Cincinnati

Bassem Ramadan, Professor of Mechanical Engineering
B.E. 1984, Beirut; M.S. 1986, Ph.D. 1992, Michigan State University

Badrinath Rao, Associate Professor of Sociology and Asian Studies
B.A. 1984, M.A. 1986, Bangalore University, India; M.A. 1992, Queen's University, Canada; Ph.D. 1999, University of Alberta, Canada; J.D. 2013, Wayne State University

Scott W. Reeve, Founding Dean, Graduate School and Sponsored Research, Professor of Chemistry
B.A. 1987, Augsburg College; Ph.D. 1992, University of Minnesota

Foroogh Rouhollahi, Assistant Professor of Chemical Engineering
B.Sc. 2008, University of Isfahan, Iran; M.Sc. 2013, Isfahan University of Technology, Iran; Ph.D. 2022, Wayne State University

Joseph J. Salacuse, Professor of Applied Mathematics
B.S. 1970, Bradley University; Ph.D. 1978, State University of New York at StonyBrook

Adam Salminen, Professor of Applied Mathematics
B.S. 1999, Michigan State University; M.S. 2003, Ph.D. 2005, Ohio State University

Timothy Stiles, Associate Professor of Physics
B.A. 1998, Grinnel College; Ph.D. 2005, University of Wisconsin-Madison

Denise Stodola, Associate Professor of Communication
B.A. 1990, M.A. 1993, University of Texas at San Antonio; Ph.D. 2003, University of Missouri – Columbia

Laura L. Sullivan, Professor of Mechanical Engineering
B.S. 1984, Arizona State; M.S.E. 1988, Ph.D. 1992, University of Texas at Arlington

Kathryn Svinarich, University Chief of Staff, Associate Professor of Physics
B.S. 1983, University of Michigan; Ph.D. 1991, Wayne State University

Nozar Tabrizi, Associate Professor of Computer Engineering
B.S.E.E. 1980, M.S.E.C.E. 1988, Sharif University of Technology, Iran; Ph.D. 1997, University of Adelaide, Australia

Ronald Tackett, Founding Head of School, Associate Professor of Physics

B.S. 2003, Eastern Michigan University, M.S. 2007, Wayne State University, Ph.D. 2008, Wayne State University

Chinwe Tait, Assistant Professor of Electrical Engineering
B.S. 2004 Massachusetts Institute of Technology; M.S. 2007, Ph.D. 2017, Michigan State University

Hafez Tari, Assistant Professor of Mechanical Engineering
B.S. 2005, M.S. 2008, University of Mazandaran, Iran; M.S. 2011, University of Maryland, Baltimore County; Ph.D. 2014, The Ohio State University

Massoud S. Tavakoli, Professor of Mechanical Engineering
B.S.M.E. 1981, Louisiana State University; M.S.M.E. 1983, Ph.D. 1987, Ohio State University; P.E., Georgia

Allan Taylor, Associate Professor of Electrical Engineering
B.S.E.E. 2009, M.S.Eng. 2011, Kettering University; Ph.D. 2019, Michigan State University

Kevin TeBeest, Associate Professor of Applied Mathematics
B.S. 1981, South Dakota State University; M.S. 1986, Ph.D. 1992, University of Nebraska-Lincoln

Girma S. Tewolde, Professor of Computer Engineering
B.S. 1992, Addis Ababa University, Addis Ababa, Ethiopia; M.S. 1995, University of New South Wales, Sydney, Australia; Ph.D. 2008, Oakland University

Mark G. Thompson, Department Head, Electrical and Computer Engineering, Professor of Electrical Engineering
B.S. 1976, M.S. 1977, Ph.D. 1980, Michigan State University

Mohammad Torfeh, Professor of Electrical Engineering
B.S. 1977, University of Isfahan; M.S. 1979, Ph.D. 1982, Wayne State University

Giuseppe Turini, Professor of Computer Science
M.S. 2004, Ph.D. 2011, University of Pisa, Italy

Demet Usanmaz, Assistant Professor of Physics
B.S. 2003, Ondokuz Mayis University, Turkey; M.Sc. 2005, Gazi University, Turkey; Ph.D. 2009, Gazi University, Turkey

Lihua Wang, Professor of Chemistry
B.S. 1984, Fudan University, China; Ph.D. 1991, Purdue University

Kenneth Williams, Teaching Associate Professor of Business Administration
B.B.A. 1981, University of Michigan; M.B.A. 1986, Wayne State University; Ph.D. 2016 Northcentral University

Benaiah Yongo-Bure, Associate Professor of Social Science
B.A. 1976, Makerere University, Uganda; M.A. 1979, Ph.D. 1984, Dalhousie University, Canada

Mehrdad H. Zadeh, Professor of Computer Engineering
B.Sc.C.E. 1992, Shiraz University, Fars, Iran; M.A.Sc.E.E. 2004, Concordia University, Montreal, Canada; Ph.D. 2009, University of Waterloo, Ontario, Canada

Ali R. Zand, Professor of Chemistry
B.S. 1989, Saginaw Valley State University; M.S. 1992, Central Michigan University; Ph.D. 1996, Michigan State University

James Z. Zhang, Senior Vice President for Academic Affairs and Provost, Professor of Electrical Engineering
B.S.E.E. 1986, Hunan University, PRC; M.A. 1993, Indiana University; M.S.E. 1993, Purdue University; Ph.D. 2002, Purdue University

Contact Information

The information below provides contact information that you may need during your studies in the Kettering University graduate program. We invite you to contact the respective person(s) as required to address your questions or concerns.

Main Graduate Contact Information	(866) KU-GRADS / gsr@kettering.edu
Admission/Application Status	admissions@kettering.edu
Blackboard/Banner Web Questions	Helpdesk: (810) 237-8324 / helpdesk@kettering.edu
Course Withdrawal	Registrar's Office: registrar@kettering.edu
School of Management- Graduate Course Advising	som@kettering.edu
Enrollment Verification	Registrar's Office: registrar@kettering.edu
Financial Aid Office	(810) 762-7859 / finaid@kettering.edu
Financial Standing/Tuition payments/Receipts/Tax Info	Student Accounts Office: (810) 762-9552/studentaccounts@kettering.edu
Grades	Registrar's Office: registrar@kettering.edu
Graduate Assistantship	gsr@kettering.edu
Graduation Information	Registrar's Office: registrar@kettering.edu
Incomplete Grades/Status	The course professor / see course syllabus
Registration Information	Registrar's Office: registrar@kettering.edu
Student Change of Name, Address, Info	Registrar's Office: registrar@kettering.edu
Technical Support	Helpdesk: (810) 237-8324 / helpdesk@kettering.edu
Testing out of pre-requisite course	Contact course department
Transcript Request	https://www.kettering.edu/academics-research/academic-services/registrars-office/transcripts
Transfer Credits	gsr@kettering.edu
VA Benefits	Registrar's Office: registrar@kettering.edu

Non-Discrimination

Non-Discrimination Policy Statement

Kettering University, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action.

Kettering University is deeply committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation including gender identity or expression, disability, religion, height, weight, genetic information, or veteran status in employment, educational programs and activities, and admissions except where religion, sex, or age are bona fide job related employment requirements.

Discrimination on the basis of race/ethnicity, color, ancestry, religion, national origin, sex, including marital status, age, disability, or status as a Vietnam-era veteran, special disabled veteran, recently separated veteran or other protected veteran is prohibited by federal and state statutes as amended, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Pregnancy Discrimination Act of 1978, the Age Discrimination in Employment Act of 1978, the Vietnam Era Veteran's Readjustment Assistance Act of 1974, the Americans with Disabilities Act of 1990, and the Civil Rights Act of 1991.

Inquiries or grievances may be addressed to the Director of Human Resources, Office of Human Resources, 1700 University Avenue, Flint, MI 48504, 810-762-9500.

Title IX Statement

It is the policy of Kettering University to comply with Title IX of the Education Amendments of 1972, which prohibits discrimination (including sexual harassment and sexual violence) based on sex in the University's educational programs and activities. Title IX also prohibits retaliation for asserting or otherwise participating in claims of sex discrimination. The Title IX coordinator and the deputy coordinator have been designated to oversee Kettering's compliance with Title IX and to respond to reports of violations. For more information about Title IX, go to Kettering's Title IX website. A person may also file a complaint with the Department of Education's Office for Civil Rights regarding an alleged violation of Title IX by visiting the U.S. Department of Education's website or calling 800-421-3481.

Course Descriptions & Numbering

The catalog menu item **Courses A-Z** has all Kettering's courses listed with their descriptions for all university courses; the descriptions appear in alphabetical order according to their course letter designations. These descriptions include any prerequisites (requirements student must satisfy before registering for the course), corequisites (requirements students must satisfy while taking the course), the number of credit hours applied for each course, and, where relevant, the hours devoted to lecture, recitation, and laboratory (see applicable department sections for the total credits required for each major or program).

The course numbers **591 and 691** shall be used to describe special topics courses. Special topics courses are one-time offerings whose content is determined by current faculty interest. These courses may be repeated for credit when the course is run with different content.

The course numbers **597 and 697** shall be used to admit credit for transfer or guest courses that are not equivalent to existing Kettering courses within a discipline. These course numbers are not used for study abroad transfer credit.

The course numbers **598 and 698** shall be used to describe transfer courses taken as part of a Kettering University International Studies Program.

The course numbers **599 and 699** shall be used to describe an independent study course. Independent study is student-directed exploration with faculty guidance at an advanced level. This course may be repeated for credit when the course is run with different content.

ACCOUNTING (ACCT)

ACCT-518 Accounting/Financial Concepts 4 Credits
Prerequisites: None
Students will gain an understanding of how accounting data is developed and used by managers in making decisions. The course is divided into three sections. First, the Financial Accounting section discusses how basic financial events are recorded and presented in the accounting statements. Second, the Cost Accounting section discusses the nature and recording of manufacturing costs, development of overhead rates, job and process costing, budgeting, and control of manufacturing cost. Third, the Managerial Accounting section discusses profit volume analysis, relevant cost analysis, time value of money concepts, and capital budgeting.
Lecture: 3, Lab 0, Other 1

ACCT-639 Managerial Accounting 4 Credits
Prerequisites: ACCT-518 or MGMT-510
The use of managerial accounting information for planning and control is presented. Design, implementation and the use of planning and control systems to achieve the firm's strategies are emphasized, with a focus on managerial decision-making.
Lecture: 3, Lab 0, Other 1

ACCT-691 Special Topics in Mgr Accting 4 Credits
Prerequisites: None
Lecture: 4, Lab 0, Other 0

BUSINESS (BUSN)

BUSN-522 Business Statistics 4 Credits
Prerequisites: None
Solving complicated business programs in today's increasingly competitive global marketplace demands new thinking and new skills. This course is designed to provide insight for learners about how to collect, analyze and interpret data in order to make sound business decisions. Probability analysis, sampling, hypothesis testing, descriptive and inferential statistics along with additional tools and techniques used by business professionals in market research, business forecasting and risk mitigation are employed.
Lecture: 4, Lab 0, Other 0

BUSN-621 Lean Operations Management 4 Credits
Prerequisites: None
This course provides students with the principles and applications of Lean Enterprise and other leading models of operational excellence for office, service, distribution, and production operations. Lean Transformation methods are introduced to quantify the potential of Lean operations and provide a roadmap to transformation of the enterprise. Lean Work Flow methods are practiced to experience Lean operational work and materials management. Lean Work Design techniques are applied to structure work processes for output to meet customer demand, as well as rebalancing given changes in the demand rate. Integrating Experiences that schedule and manage operational activities of Lean Systems are applied throughout the course culminating in a comprehensive application exercise. Students may not receive credit for both BUSN-421 and BUSN-621.
Lecture: 4, Lab 0, Other 0

BUSN-629 Entrepreneurial Finance 4 Credits
Prerequisites: FINC-619
This is a course on financing startups and other small businesses. The objective is to provide students with an understanding of how financing from venture capital and private equity funds, as well as angel investors, finds its way to entrepreneurial ventures. The course follows a basic framework for study and analysis via the life cycle of an entrepreneurial venture consisting of (a) opportunity recognition, (b) valuation and terms of financing, (c) growing the entrepreneurial venture, and (d) harvesting the venture to create profits through Initial Public Offerings (IPOs) or a sale of the business. Students will examine the financial concepts, tools, and techniques for a successful entrepreneurial venture, with an emphasis on the financial management practices needed to secure financing and using business valuation models. Students may not receive credit for both BUSN-429 and BUSN-629.
Lecture: 4, Lab 0, Other 0

BUSN-659 International Business 4 Credits
Prerequisites: None
This course provides an overview of business practices in an interdependent, integrated, global economic system. A focus will be placed on understanding the opportunities and challenges that businesses must address in the face of globalization with emphasis on best practices in international business. Students may not receive credit for both BUSN-459 and BUSN-659.
Lecture: 4, Lab 0, Other 0

BUSN-689 Organizational Behavior 4 Credits
Prerequisites: MGMT-639 or MGMT-510
Students engage in a comprehensive examination of organizational behavior theories including analysis at individual, group and organizational levels. Individual levels include perception, personality, and motivation. Group levels include decision-making, group dynamics, and team building. Organizational levels include effective communication, empowerment, leadership, diversity, cross-cultural issues, and conflict resolution. Experiential activities provide opportunity for theoretical application and real-world understanding.
Lecture: 4, Lab 0, Other 0

BUSN-779 MBA Capstone: Innovation & New Ventures 4 Credits
Prerequisites: MGMT-659 or MGMT-510
This capstone course is focused on the formation of a new company or organization based on an innovation in product, service, process or delivery. Students develop a comprehensive business plan showcasing their understanding of business management concepts. This course requires an integrative approach to produce a business plan applicable to a variety of industries.
Lecture: 4, Lab 0, Other 0

COMMUNICATIONS (COMM)

COMM-601 Communicating about Data 4 Credits
Prerequisites: None
Visualizations are powerful. Theories of visual rhetoric and design teach us that good visualization is not only clear and accurate but appealing as well. When executed well, visualizations enhance oral or written communication, by supporting arguments and claims, b providing insight into complex issues, and by supporting recall and decision-making in audiences. This relationship goes both ways, however, even well-crafted visualizations must be supported by effective oral and written communication. In this course, students explore both sides of this relationship, becoming familiar with common genres of visualization and with techniques both for designing them effectively and ethically, and for presenting visualizations orally and in prose.
Lecture: 4, Lab 0, Other 0

COMPUTER ENGINEERING (CE)

CE-612 Digital Systems Design 4 Credits
Prerequisites: None
The principles and practices used in the design of modern complex combinational and sequential digital systems are covered in this course. Digital logic design, analysis, simulation, and implementation techniques are covered. Fundamental algorithms underlying computer-aided design (CAD) tools are studied. Schematic diagrams, hardware description languages (HDL), and system-on-programmable chip (SoPC) design tools are used to specify designs targeted for implementation in technologies ranging from discrete ICs to programmable logic devices, ASICs and SoPCs. Topics in testing of logic circuits and hardware-software co-design will be covered. The course is accompanied by laboratory component that allows students to exercise the principles and practices learned.
Lecture: 3, Lab 2, Other 0

CE-620 Microcomputer Systems 4 Credits
Prerequisites: None
The architectural features, design principles, development tools and techniques of advanced embedded microcomputers are covered in this advanced level course. The topics include architectures of contemporary 16-bit and 32-bit RISC microcontrollers (considering Microchip PIC24 and PIC32 as example cases for the practical development experiences), instruction set, addressing modes, software development & debugging, parallel and serial interfacing, interrupts, timer module, ADC module, etc.; The course has a strong laboratory component, which will be carried out on a microcomputer development kit with the latest family of 16-bit and 32-bit microcontrollers. Students will also complete independent projects or research assigned by the instructor on topics such as low-power micro architectures and power-aware computing.
Lecture: 3, Lab 2, Other 0

CE-622 Computer Architecture and Organization 4 Credits
Prerequisites: None
Fundamental concepts in computer architecture and organization are presented. Laboratory assignments using VHDL simulation are a major portion of the course. Topics include fixed point and floating point computer arithmetic; assessing and understanding performance; control unit design; microprogramming; memory organization; cache design; a 32-bit instruction-set architecture; single-cycle, multicycle and pipelined CPU architectures; RISC architecture; examples of commercial computer architectures. An independent study or project will be completed.
Lecture: 3, Lab 2, Other 0

CE-624 VLSI Design 4 Credits
Prerequisites: None
Design techniques and basic theory of integrated circuit design are discussed. Topics include review of the semiconductor physics associated with NMOS and PMOS transistors; fabrication process; CMOS combinational circuits; memory cells; stick diagrams; layout techniques using CAD tools; circuit extraction and analysis. An advanced project is completed.
Lecture: 3, Lab 2, Other 0

CE-626 Real-Time Embedded Systems 4 Credits
Prerequisites: None
Implementation and applications of real-time embedded computers are studied. Topics include the case study of an embedded real-time operating system, typical applications of embedded computers, real-time hardware and software interfacing, and real-time scheduling algorithms. This course includes a lab component with several short design projects and research-oriented final project.
Lecture: 3, Lab 2, Other 0

CE-642 Mobile Robotics 4 Credits
Prerequisites: None
Fundamentals of robotics with an emphasis on mobile robots, which are intelligent integrated mechanical, electrical and computational systems functioning in the physical world will be covered. Topics include state-of-the-art technologies in mobile robotics, such as locomotion, sensing, control, communication, localization, mapping, navigation, etc. Advanced topics such as coordination of multiple mobile robots will also be explored. The course aims to provide both theoretical and practical experience to students through lectures and simulation software. Students will also complete independent projects or research on current topics covering mobile robotics technologies and related fields.
Lecture: 3, Lab 2, Other 0

CE-6423 Mobile Robotics 3 Credits
Prerequisites: None
Fundamentals of robotics with an emphasis on mobile robots, which are intelligent integrated mechanical, electrical and computational systems functioning in the physical world will be covered. Topics include state-of-the-art technologies in mobile robotics, such as locomotion, sensing, control, communication, localization, mapping, navigation, etc. Advanced topics such as coordination of multiple mobile robots will also be explored. The course aims to provide both theoretical and practical experience to students through lectures and simulation software. Students will also complete independent projects or research on current topics covering mobile robotics technologies and related fields. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

CE-650 App Devel for Mobile Devices 4 Credits
Prerequisites: None
Terms Offered: Winter of even years; Spring of odd years
This course discusses an overview of how to get started developing mobile apps for Android and iOS platforms. These two app development platforms share similar challenges but have different approaches to addressing them. Both platforms will be taught to encourage students to see how the two different approaches can be used to solve similar issues. Students will choose one platform for their final design project. Topics include user interface design, network, communication, and sensor interfacing. This course includes lab components with design projects and final directed design project.
Lecture: 3, Lab 2, Other 0

CE-651 Introduction to Autonomous Driving 4 Credits
Prerequisites: None
This course provides an overview of theoretical and practical background regarding the design and development of autonomous vehicles. Topics include an overview of autonomous vehicle systems, autonomous vehicle localization technologies, perception in autonomous driving, decision and planning, and control for autonomous driving. This course aims to cover the basics of autonomous driving through lectures, lab assignments, a term project, and readings on current related topics. CE-651 students will be required to complete additional projects or independent review of research topics with approval of the instructor. Students may not receive credit for both CE-451 and CE-651.
Lecture: 3, Lab 2, Other 0

CE-6513 Introduction to Autonomous Driving 3 Credits
Prerequisites: None
This course provides an overview of theoretical and practical background regarding the design and development of autonomous vehicles. Topics include an overview of autonomous vehicle systems, autonomous vehicle localization technologies, perception in autonomous driving, decision and planning, and control for autonomous driving. This course aims to cover the basics of autonomous driving through lectures, assignments, a term project, and readings on current related topics. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

CE-652 Artificial Intelligence for Autonomous Driving 4 Credits
Prerequisites: None
This course will provide introductory theories and technologies in artificial intelligence focusing on machine learning, covering a wide range of machine learning methods, concepts and applications. Machine learning studies algorithms that learn from large quantities of date, identify patterns and make predictions on new data. The major list of machine learning fields are computer vision, robotics, autonomous driving, voice/gesture recognition, and automated planning & scheduling, etc. Students will study the concepts that underlie intelligent systems and investigate advanced topics in intelligent systems through a course project.
Lecture: 3, Lab 2, Other 0

CE-6523 Artificial Intelligence for Autonomous Driving 3 Credits
Prerequisites: None
This course will provide introductory theories and technologies in artificial intelligence focusing on machine learning, covering a wide range of machine learning methods, concepts and applications. Machine learning studies algorithms that learn from large quantities of date, identify patterns and make predictions on new data. The major list of machine learning fields are computer vision, robotics, autonomous driving, voice/gesture recognition, and automated planning & scheduling, etc. Students will study the concepts that underlie intelligent systems and investigate advanced topics in intelligent systems through a course project. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

CE-654 Computer Vision for Autonomous Driving 4 Credits
Prerequisites: None
This course will cover introductory theories and modern technologies in computer vision systems for autonomous driving. Data from visual sensors play crucial roles in many fields such as autonomous driving, surveillance camera, and robotics. The computer vision system seeks to automate tasks that the human visual system can do. The goal of this course is to learn technologies that enable a computer automatically to understand the content of visual sensors for autonomous driving. The first half of this course will focus on fundamental models and algorithms in computer vision and in the second half of the course students can learn about computer vision applications and programming skills to accomplish computer vision tasks. Graduate students taking this course are also required to complete independent review or survey of cutting edge research topics in computer vision systems, such as object-detection methods for autonomous driving, Deep Neural Network for environmental perception, and innovative applications, etc., selected by the students with approval of the instructor. The survey or research report must be presented in a conference paper format that is ready for submission to a conference.
Lecture: 3, Lab 1, Other 0

CE-672 Virtual Reality Systems: M&C 4 Credits
Prerequisites: None
This course provides the required theoretical and practical background to design and development of multimodal virtual reality (VR) systems. Particularly, the main focus is onVR-based human-in-the-loop systems that enable users to interact and/or manipulate virtual objects in simulated environments. This course aims to cover basics of these systems through lectures, homework, lab assignments, a term project, and readings on current related topics. Through lab assignments, students acquire hands-on skills to create a multimodal virtual environment. Topics include multimodal virtual reality, current VR technology and devices, human-centered simulation: human perception and psychophysics, basic control and stability analysis of VR systems, and human factors in the design of VR displays. CE-672 students will be required to complete additional projects or independent review of research topics with approval of the instructor.
Lecture: 3, Lab 2, Other 0

CE-680 Computer Networks 4 Credits
Prerequisites: None
Organization, analysis, and design of interconnected systems of computers are studied. Topics include the Open System Interconnection model and the Internet TCP/IP reference architecture. Standard protocols and technologies at each network layer will be covered, such as HTTP and a socket programming API at the application layer, TCP and UDP at the transport layer, and IPv4 and IPv6 along with fundamentals of routing at the network layer. Ethernet and Wi-Fi with their related physical mediums are discussed. The course will also introduce error detection and correction methods, basic network security principles and mobile technologies.Students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both CE-480 and CE-680.
Lecture: 3, Lab 2, Other 0

CE-684 Internet of Things (IoT) 4 Credits
Prerequisites: None
The most important topics of the Internet of Things and its applications will be addressed. Topics include an introduction to network stacks and embedded operating systems, IoT architecture models, smart devices, connections and access technologies, the IoT network layer, application layer protocols relevant to IoT, and IoT security practices. Various IoT application areas will be discussed, such as industrial, home automation, manufacturing, energy, utilities, vehicles, smart cities, agriculture and health care. Students complete a term project to develop a complete IoT application. Students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both CE-484 and CE-684.
Lecture: 3, Lab 2, Other 0

CE-691 Computer Engineering Special Topics 4 Credits
Prerequisites: None
Graduate level Special Topics in Computer Engineering.
Lecture: 4, Lab 2, Other 0

CE-695 Graduate Research in Computer Engineering 8 Credits
Prerequisites: None
This course is directed research towards a master's thesis. Students must take this course under the direction of a faculty advisor, and it is graded Satisfactory/Unsatisfactory. This course may be repeated for credit.
Lecture: 0, Lab 0, Other 0

CE-699 Computer Engineering Independent Study 8 Credits
Prerequisites: None
Terms Offered: As needed
Graduate level Independent Study in Computer Engineering
Lecture: 8, Lab 0, Other 0

COMPUTER SCIENCE (CS)

CS-601 Programming Methods for Data Science 4 Credits
Prerequisites: None
Introduction to computer science concepts and basic programming skills that are specifically geared toward data science, and forms a part of the introductory coursework for a Data Science & Data Analytics degree. Course emphasizes writing programs that are capable of retrieving and manipulating large amount of data. The first half of the course focuses on Python as a first programming language, while the second half of the course covers selected advanced topics such as data visualization, web scraping, database access and others.
Lecture: 4, Lab 0, Other 0

CS-625 Parallel Programming and Algorithms 4 Credits
Prerequisites: None
Parallel computing has long played a vital role in addressing the performance demands of high-end engineering and scientific applications. Over the last decade, parallel computing has become important to a much broader audience as nearly all computer systems are being built using chips with multiple processor cores. The goal of CS-625 is to introduce students to the foundations of parallel computing including the principles of parallel algorithm design, analytical modeling of parallel programs, programming models for shared- and distributed-memory systems, parallel computer architectures, along with numerical and non-numerical algorithms for parallel systems. The course will include material on emerging multicore hardware, shared-memory programming models, message passing programming models used for cluster computing, data-parallel programming models for GPUs, and problem-solving on large-scale clusters using MapReduce. A key aim of the course is for students to gain a hands-on knowledge of the fundamentals of parallel programming by writing efficient parallel programs using some of the programming models learned in class. There will be different projects in CS-425 and CS-625. Students may not receive credit for both CS-425 and CS-625.
Lecture: 4, Lab 0, Other 0

CS-641 Foundations of Data Science 4 Credits
Prerequisites: CS-601
The concepts, principles, issues and techniques for big data and cloud computing are introduced in this course. This course will provide a foundation in data science based on data curation and statistical analysis. The primary goal of this course is to introduce data analysis concepts and techniques that facilitate making decisions from a rich data set. Students will investigate big data concepts, metadata creation, interpretation, and basics of information visualization. Students may not receive credit for both CS-441 and CS-641.
Lecture: 4, Lab 0, Other 0

CS-651 Cloud Computing: Architecture & Applications 4 Credits
Prerequisites: CS-601
A comprehensive overview of cloud computing and its application to big data and data science. Current technologies that comprise the concept of cloud computing are discussed. Exploration of major Cloud frameworks that support large data storage and applications that support data analytics.
Lecture: 4, Lab 0, Other 0

CS-661 Database Systems 4 Credits
Prerequisites: CS-601
Database design and implementation, entity-relationship model, relational model, relational query languages, physical data organization, XML, distributed database concepts, Big Data technologies, enhanced data models.
Lecture: 4, Lab 0, Other 0

CS-665 Information Retrieval and Data Mining 4 Credits
Prerequisites: CS-601
Information retrieval and data mining topics, including information storage and retrieval, file structures, precision and recall, probabilistic retrieval, search strategies, automatic classification, automatic text analysis, decision trees, genetic algorithms, nearest neighbor method, and rule induction.
Lecture: 4, Lab 0, Other 0

CS-681 Artificial Intelligence 4 Credits
Prerequisites: CS-601
Topics covered include: Types of intelligence, knowledge representation, cognitive models, Heuristic and algorithmic techniques in problem solving, knowledge representation, reasoning under uncertainty, and learning. Selected topics from natural language processing, vision processing, game playing, pattern recognition, speech recognition, robots, and other current topics in artificial intelligence. There will be different projects in CS-481 and CS-681. Students may not receive credit for both CS-481 and CS-681.
Lecture: 4, Lab 0, Other 0

CS-682 Machine Learning 4 Credits
Prerequisites: CS-601
This course provides an introduction to machine learning. Topics include: supervised learning including generative, discriminative learning, parametric and non-parametric learning, neural networks, support vector machines; unsupervised learning including clustering, dimensionality reduction, kernel methods; learning theory bias/variance trade-offs; VC theory; large margins; reinforcement learning. The course will also include applications of machine learning to big data.
Lecture: 4, Lab 0, Other 0

CS-683 Algorithms for Deep Learning 4 Credits
Prerequisites: CS-601
This course provides students with the knowledge to implement the key algorithms related to deep learning. Deep learning is a branch of machine learning concerned with the development and application of modern neural networks. Deep learning is behind many recent advances in AI, including Siri's speech recognition, Facebook's tag suggestions, etc. Students will cover a range of topics including the foundational algorithms and data structures of neural networks, belief networks, generative learning models, convolutional and recurrent network structures, as well as overcoming issues with training and security. Graduate students will go into greater depth on certain topics and have additional readings and homework assignments, and a more complex project. Students may not receive credit for both CS-483 and CS-683.
Lecture: 4, Lab 0, Other 0

CS-690 Data Science Capstone Project 4 Credits
Prerequisites: None
Lecture: 4, Lab 0, Other 0

CS-691 Data Science Special Topics 4 Credits
Prerequisites: None
Current topics in Data Science are discussed and analyzed.
Lecture: 4, Lab 0, Other 0

CS-693 Internship in Data Science 4 Credits
Prerequisites: None
Guided professional practicum experience for on-campus graduate students serving as an extension of the curriculum that facilitates the development of knowledge and skills in the application of theory to real-world problems in a non-classroom setting. This experiential learning engagement builds upon, applies, and assesses the concepts that are developed through the curriculum and advances the student's professional growth through a meaning full real-world job experience. Requires prior approval of the organization in which the internship will be done and by the Department Head of Computer Science. Four-credit hour enrollments in this course will be considered as full-time status. The course can be repeated a second time for a total of eight credit hours. Internships are graded on a Credit/No Credit basis, to be entered by the Department Head upon the student's completion of all internship requirements.
Lecture: 0, Lab 0, Other 4

CS-695 Thesis in Data Science 4 Credits
Prerequisites: None
Lecture: 0, Lab 0, Other 0

CS-699 Computer Science Independent Study 4 Credits
Prerequisites: None
Graduate level Independent Study.
Lecture: 4, Lab 0, Other 0

ELECT. & COMPUTER ENGRG (ECE)

ECE-601 ECE Principles for Mobility 4 Credits
Prerequisites: None
This graduate level course is designed to introduce the fundamental principles of electrical and computer engineering that are required for application in mobility systems for students with non-ECE degrees. Topics include: passive circuit components, basic laws and analysis techniques; active electronic elements and circuits, digital logic circuits, digital and analog sensors and actuators, electrical machines; power electronics and batterings; digital systems; signal processing; microcomputers and interfacing; and basic mobility system networking and CAN concepts. Approximately one week is devoted to each topic illustrated in the context of specific applications in mobility systems. Case studies with specific applications of ECE in mobility systems will be assigned.
Lecture: 4, Lab 0, Other 0

ECE-610 Modeling of Dynamic Systems 4 Credits
Prerequisites: None
This course covers modeling, simulation, and analysis of multivariable dynamic systems. Approaches to modeling a variety of dynamic physical systems are discussed using examples of dynamic systems taken from a variety of fields. The course places emphasis on modeling and analysis of electric vehicle systems and components. Transient and steady state behavior of power electronic circuits using state space models is included in this course. These systems are simulated using MATLAB simulation tools. Most of the course is devoted to the analysis of linear systems using now classical techniques based on linear algebra, state-space representations and the state transition matrix.
Lecture: 4, Lab 0, Other 0

ECE-6103 Modeling of Dynamic Systems 3 Credits
Prerequisites: None
This course covers modeling, simulation, and analysis of multivariable dynamic systems. Approaches to modeling a variety of dynamic physical systems are discussed using examples of dynamic systems taken from a variety of fields. The course places emphasis on modeling and analysis of electric vehicle systems and components. Transient and steady state behavior of power electronic circuits using state space models is included in this course. These systems are simulated using MATLAB simulation tools. Most of the course is devoted to the analysis of linear systems using now classical techniques based on linear algebra, state-space representations and the state transition matrix. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

ECE-630 Digital Signal Processing Techniques for Automotive Engineering 4 Credits
Prerequisites: None
This graduate level course is designed to introduce critical digital signal/ image processing principles/theories and techniques applied to a variety of automotive engineering applications. Special focus is given to autonomous driving and NVH analysis. Examples include, but are not limited to, edge detection methods in traffic sign recognition and identification, Kalman filtering for vehicle state estimation, Modal analysis (frequency domain) and expansion to time-frequency domain analysis of dynamic response using techniques such as wavelets and Empirical Mode Decomposition (EMD). MATLAB will be heavily used for analysis and simulations.
Lecture: 4, Lab 0, Other 0

ECE-6303 Digital Signal Processing Techniques for Automotive Engineering 3 Credits
Prerequisites: None
This graduate level course is designed to introduce critical digital signal/ image processing principles/theories and techniques applied to a variety of automotive engineering applications. Special focus is given to autonomous driving and NVH analysis. Examples include, but are not limited to, edge detection methods in traffic sign recognition and identification, Kalman filtering for vehicle state estimation, Modal analysis (frequency domain) and expansion to time-frequency domain analysis of dynamic response using techniques such as wavelets and Empirical Mode Decomposition (EMD). MATLAB will be heavily used for analysis and simulations. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

ECE-632 Automotive Control Systems 4 Credits
Prerequisites: None
This class will focus on applying students' knowledge of fundamental principles of control systems to a variety of systems within automobiles. Specific topics will include the control of the air-fuel ratio, spark timing, idle speed, transmissions, cruise and headway, lane-keeping, and active suspensions. Other topics that may be included are antilock brakes, traction control and vehicle stability control. Simulations will be used and students will be using MATLAB/Simulink for many of the assignments.
Lecture: 4, Lab 0, Other 0

ECE-6323 Automotive Control Systems 3 Credits
Prerequisites: None
This class will focus on applying students' knowledge of fundamental principles of control systems to a variety of systems within automobiles. Specific topics will include the control of the air-fuel ratio, spark timing, idle speed, transmissions, cruise and headway, lane-keeping, and active suspensions. Other topics that may be included are antilock brakes, traction control and vehicle stability control. Simulations will be used and students will be using MATLAB/Simulink for many of the assignments. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

ECE-642 Machine Drives for Electric Vehicles 4 Credits
Prerequisites: None
Methods of controlling electric machines and their applications in electric vehicles are discussed. Topics include solid-state devices; various switching schemes; types of drives; characteristics of motors; controlling motors including vector control; braking of motors; and dynamics of electric drives and applications.
Lecture: 4, Lab 0, Other 0

ECE-6423 Machine Drives for Electric Vehicles 3 Credits
Prerequisites: None
Methods of controlling electric machines and their applications in electric vehicles are discussed. Topics include solid-state devices; various switching schemes; types of drives; characteristics of motors; controlling motors including vector control; braking of motors; and dynamics of electric drives and applications. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

ECE-648 Electromagnetic Compatibility 4 Credits
Prerequisites: None
In-depth classical and currents topics in the field of electromagnetic compatibility (EMC) are studied in this course. This includes signal integrity, high-speed digital design matching techniques, passive filter design, single and multilayer shielding, electrostatic discharge, high-frequency measurements, circuit board layout, and grounding methodology. Basic course work in electromagnetic compatibility is a prerequisite for this course.
Lecture: 4, Lab 0, Other 0

ECE-6593 Integrative Capstone Project 3 Credits
Prerequisites: None
This course is designed for students to create an MSE ECE focused project applicable to current ECE applications especially related to electrification or advanced mobility. Throughout the course, students develop their proposal regarding an organization-based electrification or advanced mobility challenge; including identifying and incorporating all feedback from stakeholders. Students establish a team contract, identify deliverables, and collect and analyze data. At the end of the course, students develop and deliver a presentation with solutions to their organization's challenge(s). This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

ELECTRICAL ENGINEERING (EE)

EE-610 eMobility System Analysis & Control 4 Credits
Prerequisites: None
This course will provide system analysis and design methods for electrified road vehicles. Firstly, the components and subsystems of electrified powertrain will be reviewed with real application design, including battery, electric motor and inverter etc. Modeling and simulation methods with MATLAB/Simulink will be covered for students to adopt multi-physical level model skills. With the knowledge of the systems, powertrain design basics will be reviewed, including hybrid/electric powertrain configurations, E/E architecture and energy management strategies. Finally, functional safety topics will be covered, including subjects and work products of road vehicle functional safety standard ISO-26262. System and function analysis methods, such as fault tree analysis (FTA), will be covered as well. Graduate students are required to complete a research project, to be determined and assigned with the approval of the instructor. Students may not receive credit for both EE-410 and EE-610.
Lecture: 4, Lab 0, Other 0

EE-621 Energy Storage Systems with EV Applications 4 Credits
Prerequisites: None
This course introduces the basics of energy storage systems. Several competing energy storage concepts and management systems will be considered with emphasis on rechargeable Li-ion batteries for EV applications. The course will focus on the fundamentals of Li-ion batteries with respect to the physical principles of operation, design, modeling and state estimation, as well as battery management systems. Graduate students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both EE-421 and EE-621.
Lecture: 4, Lab 0, Other 0

EE-624 Power Electronics & Applications 4 Credits
Prerequisites: None
Electrical energy conversion principles, along with several powerelectronic devices and converter topologies are studied. Topics include: characteristics of diodes, thyristors, BJTs, IGBTs, and MOSFETs; transistor gate-drive circuits; operating principles of AC/DC, DC/DC and DC/AC converter circuits; isolation and isolated DC/DC converter circuits; power loss and efficiency calculations; high-frequency magnetic component design, and computer-aided analysis of the dynamic response of the converter circuits. Applications involving the dynamic representation and speed control of electric motors, together with power electronics, are also studied. Graduate students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both EE-424 and EE-624.
Lecture: 3, Lab 2, Other 0

EE-626 Power Electronics for Vehicle Electrification 4 Credits
Prerequisites: None
This is an advanced class in power electronics. Advanced converter topologies, control methods, and analyses used in electric-vehicle and power-system domains will be discussed. topics include state-variable modeling of DC-DC converters for closed-loop control system design, isolated DC-DC converter topologies (half, full, and dual bridges) and resonant DC-DC converter topologies (series, parallel and series-parallel) for wireless power transfer and battery charging, soft-switching concepts and control methods for isolated DC-DC converters, single-phase and three-phase inverter design, inverter control methods including six-step, Sine PWM, Space Vector PWM, and Discontinuous PWM and the design and control of multilevel and modular multilevel inverters.
Lecture: 0, Lab 0, Other 0

EE-6263 Power Electronics for Vehicle Electrification 3 Credits
Prerequisites: None
This is an advanced class in power electronics. Advanced converter topologies, control methods, and analyses used in electric-vehicle and power-system domains will be discussed. topics include state-variable modeling of DC-DC converters for closed-loop control system design, isolated DC-DC converter topologies (half, full, and dual bridges) and resonant DC-DC converter topologies (series, parallel and series-parallel) for wireless power transfer and battery charging, soft-switching concepts and control methods for isolated DC-DC converters, single-phase and three-phase inverter design, inverter control methods including six-step, Sine PWM, Space Vector PWM, and Discontinuous PWM and the design and control of multilevel and modular multilevel inverters. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

EE-633 Digital Control Systems 4 Credits
Prerequisites: None
Control of continuous-time processes using computer-based controllers is studied. Topics include design of control algorithms for implementation, modeling of discrete time systems, application of z-transforms, stability analysis, root locus analysis, controller design via conventional techniques, state-space analysis and modeling, and design and implementation of digital controller. Implementation of real-time digital controllers is performed in the laboratory. Graduate students will be assigned an area or topic for a final class project which will be involved in researching an actual digitally controlled application, identifying all sub-systems, study of digital controller, analysis of system performance using topics covered in the class, developing Simulink model for the control system and finally proposing alternative solution for the controller for system response improvement. Students may not receive credit for both EE-433 and EE-633.
Lecture: 3, Lab 2, Other 0

EE-634 Digital Signal Processing 4 Credits
Prerequisites: None
Basic principles, design, and applications of digital signal processing systems are presented. Topics include: review of discrete-time signals and systems, the z-transform, discrete-time Fourier analysis, the Discrete Fourier Transform, the Fast Fourier Transform, digital filter structures, FIR filters, and IIR filters, statistical signal processing. The course includes extensive use of MATLAB and experimental design projects using real-time digital signal processors. Graduate students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both EE-434 and EE-634.
Lecture: 3, Lab 2, Other 0

EE-643 Fundamentals of Power Systems 4 Credits
Prerequisites: None
Basic structure of electrical power systems and characteristics of power transmission lines, transformers and generators are studied. Topics include: conventional and renewable energy resources for power generation, representation of power systems; symmetrical three-phase fault analysis; symmetrical components; unsymmetrical fault computations; and simulation tools and network analyzers. Graduate students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both EE-443 and EE643.
Lecture: 3, Lab 2, Other 0

EE-646 Vector Control of AC Electric Machines 4 Credits
Prerequisites: None
Methods of controlling electric machines and their applications in electric vehicles are discussed. Topics include the theory of permanent-magnet and induction machines; coordinate-frame transformations; analysis and tuning of torque and speed control systems; modeling and dynamics of electric drives and vehicles, power-electronic devices, power-electronic circuits and switching schemes; rotor-flux oriented vector control; regenerative braking; and rotor-flux position-sensing methods. Machine and vehicle models will be developed using MATLAB Simulink. A low-voltage permanent-magnet machine and power-electronic inverter will be analyzed and tested. Students are also required to complete a research project, to be determined and assigned with approval of the instructor. Students may not receive credit for both EE-446 and EE-646.
Lecture: 3, Lab 2, Other 0

EE-682 Robot Dynamics and Control 4 Credits
Prerequisites: None
Review of mathematical principle for robotics including matrix operations and their concepts. Principles of robot analysis, design, and operation are presented. Topics include review of historical robotics evolutions and applications, robot coordinate system placement rules, kinematic model development, kinematic solutions and analysis, trajectory planning and movement optimization, collision avoidance and path planning, feedback control system for robotics, feedforward, study of sensors for robotics applications, vision system types and application for robotics and mobile robots. Graduate students will complete an advanced robotic application project to integrate and highlight the application of course materials. Examples of application area include surgery, space exploration, radioactive material handling, agriculture automation. Students may not receive credit for both EE-482 and EE-682.
Lecture: 4, Lab 0, Other 0

EE-691 Graduate Special Topics in EE 4 Credits
Prerequisites: None
Graduate Level Special Topics in Electrical Engineering.
Lecture: 4, Lab 0, Other 0

EE-695 Graduate Research in Electrical Engineering 8 Credits
Prerequisites: None
This course is directed research towards a master's thesis. Students take the course under the direction of a faculty advisor. This course may be repeated for credit.
Lecture: 0, Lab 0, Other 0

EE-699 Graduate Level Independent Study in Electrical Engineering 4 Credits
Prerequisites: None
Graduate level Independent Study in Electrical Engineering.
Lecture: 0, Lab 0, Other 0

ENGINEERING (ENGR)

ENGR-693 Internship in Engineering 4 Credits
Prerequisites: None
Guided professional practicum experience for on-campus graduate students serving as an extension of the curriculum that facilitates the development of knowledge and skills in the application of theory to real-world problems in a non-classroom setting. This experiential learning engagement builds upon, applies, and assesses the concepts that are developed through the curriculum and advances the student's professional growth through a meaningful real-world job experience. The internship should be substantial and practical, including analysis, evaluation, and application of engineering concepts. At least 240 clock hours of on-site work over the term are required for four credit hours. Requires prior approval of the organization in which the internship will be done by the Dean of the College of Engineering and appropriate review and approval of the specific experience gained. Four-credit hour enrollments in this course will be considered as full-time status. The course can be repeated a second time, however, it will not count toward degree completion once four credit hours are earned. Internships are graded on a Credit/No Credit basis, to be entered by the Dean upon the student's completion of all internship requirements.
Lecture: 0, Lab 0, Other 0

FINANCIAL (FINC)

FINC-619 Financial Management 4 Credits
Prerequisites: ACCT-518 or MGMT-510
The purpose of this course is to provide students with an overview of financial management within organizations. The focus of this course is on the theoretical valuation of stocks and bonds and the capital markets in which they are traded. There is also emphasis on both the use of financial leverage by the firm and working capital management. The purpose is to enable managers to participate fully in financial decision-making.
Lecture: 4, Lab 0, Other 0

HEALTHCARE MANAGEMENT

HMGT-609 Healthcare Management 4 Credits
Prerequisites: None
In this course students gain a broad understanding of the organization, financing and issues in health care delivery systems in the US. Students will apply core business skills and knowledge of health care unique functional areas in analyzing health care case studies. Students will critically evaluate health care issues and polices and their effect on health care system performance.
Lecture: 4, Lab 0, Other 0

INDUST/MANUFCTRNG ENGRG (IME)

IME-601 IME Principles for Mobility Systems 4 Credits
Prerequisites: None
This graduate level course is designed to introduce the fundamental principles of industrial and manufacturing engineering that are required for application in mobility systems for students with non-IME degrees. Topics include: product and process design, work design, production systems, quality/six sigma, and management/leadership. Approximately two weeks are devoted to each topic illustrated in the context of specific applications in mobility systems. Case studies with specific applications of IME in mobility systems will be assigned.
Lecture: 4, Lab 0, Other 0

IME-603 Numerical Control Machining 4 Credits
Prerequisites: None
The fundamentals of computer numerical control (CNC) programming and computer-aided manufacturing (CAM) are introduced in this course. The fundamental theoretical and operational concepts of machining are also presented. The course focuses on the programming of cutting operations; tool materials, selection, and uses. Significant topics include: G-code programming, Introduction to CAM software, Taylor's tool life model, Criteria for tool selection, and the Orthogonal Cutting Model. Laboratories use CNC machine tools for programming and cutting, and are designed to illustrate theoretical concepts and methods for solving practical engineering machining problems.
Lecture: 3, Lab 2, Other 0

IME-608 Industrial Robotics 4 Credits
Prerequisites: None
Basic concepts of robotic system theory and applications are presented. Human and robotic system interface with diverse real environments are discussed. Human and robotic safety is stressed. Advantages, limitations, business case justifications of investment and benefits of robotic systems for LEAN and quality operations are emphasized. Flexible manufacturing operations, Work cell design, cycle time, work path, end-effectors, collaborative robots are covered. Robotic computer model simulation is included in the course. Hands on Labs are included. Graduate students analyze more in-depth applications of robotic systems, simulations and current industry applications. Students may not receive credit for both IME-408 and IME-608.
Lecture: 3, Lab 2, Other 0

IME-614 Design for Manufacturing and Assembly 4 Credits
Prerequisites: None
This course aims to provide an in-depth understanding of the complex interrelationships between design and manufacturing. It covers essential topics, principles, and practices of Design for Manufacturability and Assembly, with a focus on the product development process, customer requirements, design requirements, robust design, manufacturability, assembly, and design for Misc (DOX), as well as designed experiments (DOE) and GD&T. In DFMA, the students will learn about assembly documentation, constraint analysis, variation, sequence analysis, concurrent engineering, and how to efficiently model assembly systems. Students will be expected to work in small teams, apply methods they learn, and present results and conclusions based on assigned work to practice being part of a project team. Graduate students will supplement course content by investigating and presenting late-breaking research findings and trends in the area of design for manufacturing and assembly. Students may not receive credit for both IME-414 and IME-614.

Lecture: 4, Lab 0, Other 0

IME-616 Additive Manufacturing 4 Credits
Prerequisites: None
Additive Manufacturing (AM), commonly known as 3D printing, involves creating three-dimensional objects directly from computer-aided designs (CAD) by adding material layer by layer. In this course, students will gain a comprehensive understanding of AM processes, design principles for AM, materials selection, and reverse engineering techniques. The course will explore how AM drives innovation in different industries, such as automotive, aerospace, and healthcare. Through laboratories, students will gain hands-on experience with advanced CAD for AM, SLA, FDM, reverse engineering, and tackling real-world challenges Graduate students will be required to do additional projects/assignments related to additive manufacturing technologies. Students may not receive credit for both IME-416 and IME-616.
Lecture: 3, Lab 2, Other 0

IME-622 Simulation 4 Credits
Prerequisites: None
An understanding and need for simulation in practice will be developed. The course will focus on basic and advanced concepts in simulation including comparing the simulated results with analytical results, and successfully develop simulation models useful in production/ manufacturing, supply chains, transportation, and other areas related to Industrial and Manufacturing Engineering. Simulation package such as ARENA will be integrated and used throughout the course. Graduate students will create advanced digital simulation models. Students may not receive credit for both IME-422 and IME-622.
Lecture: 4, Lab 0, Other 0

IME-652 Production System Design 4 Credits
Prerequisites: None
Students gain an understanding of the decision-making tools necessary to design value in the global supply chain from concept to customer. Quantitative methods are employed to aid the decision-making process of demand forecasting and enterprise planning for the purpose of increased profit and value to stakeholders. Basic concepts in strategy, forecasting, demand planning, inventory control and value stream mapping will be taught and utilized to enable the decision-making process to be based on quantitative metrics. Graduate students will be required to do additional projects/assignments related to supply chain management. Students may not receive credit for both IME-452 and IME-652.
Lecture: 4, Lab 0, Other 0

IME-653 Supply Chain Design 4 Credits
Prerequisites: IME-652
This course introduces principles of supply chain and logistics network from an engineering perspective. Students gain an understanding of the decision-making process required to design and manage the global supply chain. The key concepts such as inventory planning, warehousing, logistics and distribution networks, facility location planning, probabilistic project management, transportation systems, and sustainability are covered in this course. Graduate students will be required to do additional projects/assignments related to supply chain management. Students may not receive credit for both IME-453 and IME-653.
Lecture: 4, Lab 0, Other 0

IME-654 Enterprise Resource Planning 4 Credits
Prerequisites: None
An understanding of the integrated approach to enterprise planning and its evolution from MRP I and MRP II is provided in this course. It describes the core structure of ERP systems and highlights the characteristics of emerging ERP based organizations. Various ERP tools and techniques are described and compared. The fundamental success factors in moving from traditional business functions to an integrated process-based ERP environment are introduced.
Lecture: 3, Lab 0, Other 1

IME-656 Engineering for Healthcare Systems 4 Credits
Prerequisites: None
This course examines the technical structure of the healthcare delivery system and the role that industrial and systems engineering (ISE) plays in its design and improvement. Included will be how healthcare systems work in hospitals, medical offices, clinics and other healthcare organizations. Traditional ISE methods for improving quality, patient safety, and employee productivity and satisfaction will be presented within a systematic application of value chain engineering designed to produce lean processes.
Lecture: 3, Lab 0, Other 1

IME-662 Ergonomics 4 Credits
Prerequisites: None
Human factors and ergonomics concepts for design of work. Topics include functional anatomy, bio-mechanical analysis of physical work, work physiology, manual material handling, cumulative trauma disorders, hand tool design, and human factors related to applied job design. Graduate students will create and analyze additional, in-depth job simulations using industry-current software tools. Students may not receive credit for both IME-462 and IME-662.
Lecture: 3, Lab 2, Other 0

IME-663 Safety & Human Factors 4 Credits
Prerequisites: None
An introduction to occupational safety; including injury statistics, mandatory and voluntary specification and performance regulations, standards, and guidelines. Electrical, machine, fire and life safety, confined spaces, and fall hazards (among others) are discussed in the context of traditional safety and human factors engineering. Students apply systems safety analysis methods in real-world hazard analysis and control projects. Graduate students will be required to research and present to the class safety strategy and policy trends related to new technology disruption and how engineers and policy makers will approach safety for these systems in the future. Students may not receive credit for both IME-463 and IME-663.
Lecture: 4, Lab 0, Other 0

IME-665 Human-Computer Interaction and Interface Design 4 Credits
Prerequisites: None
New technology is increasingly being integrated into our minute-to-minute lives. This multidisciplinary course provides theoretical and practical skills that are needed to design, develop, and evaluate human interaction with computer and machine interfaces and virtual environments. Course topics are anchored around fundamentals of physical and cognitive human capabilities and their relationship to product design and testing. Example topics include human psychological and physical capabilities, cognition and models of interaction, heuristic evaluation. Rapid prototyping, usability testing, experimental evaluation of input devices and peripherals, haptics, virtual and augmented reality, and brain interfaces. Topics are reinforced through readings, guest lectures, hands-on experimentation and evaluation, current research trends, and a term design project. Graduate students will supplement course content by investigating and presenting late-breaking research findings and trends in the area of new technology HCI/HMI design. Students may not receive credit for both IME-465 and IME-665.
Lecture: 4, Lab 0, Other 0

IME-671 Quality Control 4 Credits
Prerequisites: None
The basics of modern methods of quality control and improvement that are used in the manufacturing and service industries are covered in this course. It includes quality philosophy and fundamentals, statistical methods of quality improvement, concept of variation and its reduction, control charts, and Statistical Process Control (SPC). Deming's quality and management concepts will also be discussed. Students may not receive credit for both IME-471 and IME-671.
Lecture: 4, Lab 0, Other 0

IME-673 Design of Experiments 4 Credits
Prerequisites: None
The objective of the course is for students to develop the skills necessary to plan an experiment, collect the data, and analyze the results to improve quality, efficiency, and/or performance of working systems/products. Variable selection process, ANOVA, factorial designs, fractional factorial designs, blocking, and response surface methodology are covered. Statistical software such as Minitab is used extensively throughout the course. Graduate students will be required to do additional projects/assignments in the course. Students may not receive credit for both IME-473 and IME-673.
Lecture: 4, Lab 0, Other 0

IME-676 Lean Six Sigma 4 Credits
Prerequisites: None
Techniques to maximize production efficiency and to maintain control over each step in the process are examined in this course. The structured problem-solving methodology DMAIC (Define-Measure-Analyze-Improve-Control) will provide the framework for the course. Graduate students will research additional industry-current Lean Six Sigma methods. Students may not receive credit for both IME-476 and IME-676.
Lecture: 4, Lab 0, Other 0

IME-684 Engineering Ethics 4 Credits
Prerequisites: None
The professional and ethical consideration of an engineer in contemporary society is covered in this course. Discussions include the code of ethics for engineers, case studies on conflict of interest, teamwork, engineering/management responsibilities, government regulations, environmental and societal considerations and professional registration. This class requires live weekly discussion. Graduate students will be required to do additional projects/assignments related to engineering ethics. Students may not receive credit for both IME 484 and IME 684.
Lecture: 4, Lab 0, Other 0

INFORMATION SYSTEMS (ISYS)

ISYS-669 Enterprise Information System Models 4 Credits
Prerequisites: None
This course is designed to introduce students to several topics relevant to Information Systems. Effective information systems contribute to aiding organizations to achieve strategic objectives, operational excellence, and competitive advantage. Students have the opportunity to gain deeper insight into IS infrastructure, building and securing Information Systems, telecommunications, Internet technology, and social media, as well as the ethical and legal implications of using Information systems. Additional course topics include: Enterprise-wide Information Systems such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM), and E-Commerce.
Lecture: 4, Lab 0, Other 0

MATHEMATICS (MATH)

MATH-627 Probability and Stochastic Modeling 4 Credits
Prerequisites: None
This is a calculus-based introduction to probability theory and stochastic modeling. Students will learn fundamentals of probability, discrete and continuous random variables, expectation, independence, Bayes' rule, important distributions and probability models, joint distributions, conditional distributions, distributions of functions of random variables, moment generating functions, central limit theorem, laws of large numbers. Markov chains and Markov Chain Monte Carlo methods will be discussed. Programming language R will be introduced and used throughout the course.
Lecture: 4, Lab 0, Other 0

MATH-630 Statistical Methods for Data Science 4 Credits
Prerequisites: None
This is a course on statistical methods for data science with an emphasis on statistical learning. It provides a set of tools for modeling and understanding big and complex data. This course concentrates on applications and practical execution of the methods rather than on mathematical details. Areas discussed include various regression models, classification methods, resampling, non-linear techniques, tree-based analysis, support vector machines, and unsupervised learning. Programming language R will be introduced and used throughout the course. Students may not receive credit for both MATH-430 and MATH-630.
Lecture: 4, Lab 0, Other 0

MATH-637 Statistical Inference and Modeling 4 Credits
Prerequisites: MATH-627
A study of statistics including point and interval estimation, consistency, efficiency, and sufficiency, Minimum Variance Unbiased Estimators, Uniformly Most Powerful tests, likelihood ratio tests, goodness of fit tests, an introduction to non-parametric methods Linear models, including regression analysis and Analysis of Variance are included. Bayesian methods are introduced. Programming language R will be used throughout the course.
Lecture: 4, Lab 0, Other 0

MECHANICAL ENGINEERING (MECH)

MECH-523 Applied Computational Fluid Dynamics 4 Credits
Prerequisites: MECH-322 and (MATH-313 or MATH-418 or MATH-423)
This course includes solution methods to the Navier-Stokes equations in a discrete domain. Grid generation, coordinate transformation, discretization, explicit, implicit, semi-implicit, a variety of algorithms, post-processing, and interpretations of results are discussed. Solution techniques for compressible and incompressible flows, their applicability, robustness, and limitations are covered. External and internal flows with and without chemical reactions are also discussed. The learning process involves hands-on experience on grid generation, setting up a CFD code, post-processing, and a thorough discussion on the results. The students will work on a final project that is a practical problem of significant magnitude and importance to industry. This work must be publishable in the student's journal or presentable in a conference.
Lecture: 4, Lab 0, Other 0

MECH-564 Aerodynamics and Wing Theory 4 Credits
Prerequisites: MECH-322 and (MATH-305 or MECH-600)
Discussions on fundamentals of inviscid and viscous incompressible flows. Important topics in fluid mechanics such as potential flow, vortices, point sources, and coupling of inviscid and boundary layer flows are covered. Two and three dimensional wings (or airfoils) and some exact solutions to such flow problems are discussed. Semi-analytical methods for disturbance distribution on wings are introduced by perturbation method. The computational Panel method for two and three dimensional aerodynamics problems is discussed. Commercial computer programs are used to solve realistic problems in a three dimensional space.
Lecture: 4, Lab 0, Other 0

MECH-595 Automotive Seminar I 4 Credits
Prerequisites: None
Kettering has a partnership with the Society of Automotive Engineers (SAE) to offer both a certificate in Automotive Systems, as well as, a graduate degree in either Automotive Systems or the Mechanical Cognate. This seminar course would be comprised of a total of four Continuing Education Units (CEU) from SAE seminars, which have been reviewed and approved by a faculty review committee, consistent with Graduate academic policy. The transfer of credit must be supported by documentation from SAE for each individual applicant seeking such transfer.
Lecture: 4, Lab 0, Other 0

MECH-596 Automotive Seminar II 4 Credits
Prerequisites: None
Kettering has a partnership with the Society of Automotive Engineers (SAE) to offer both a certificate in Automotive Systems, as well as, a graduate degree in either Automotive Systems or the Mechanical Cognate. This seminar course would be comprised of a total of four Continuing Education Units (CEU) from SAE seminars, which have been reviewed and approved by a faculty review committee, consistent with Graduate academic policy. The transfer of credit must be supported by documentation from SAE for each individual applicant seeking such transfer.
Lecture: 4, Lab 0, Other 0

MECH-600 Advanced Engineering Mathematics with Computational Tools 4 Credits
Prerequisites: (MATH-305 or MATH-307) and MECH-420
The objectives of this course are to introduce students to various analytical and numerical methods used in the modeling, analysis, and design of engineering problems. Students will learn the theory and application of these methods, with a focus on practical implementation and real-world applications to mechanical systems. Comparisons between numerical and analytical methods will highlight their strengths, limitations, and the reasons they cannot solve all types of engineering problems. MATLAB will be used extensively for numerical solutions, while commercial software packages will address problems involving finite elements and finite differences, providing a balanced understanding of theory and applications.
Lecture: 3, Lab 0, Other 1

MECH-601 ME Principles for Mobility Systems 4 Credits
Prerequisites: None
This course introduces the basic principles of mechanical engineering that are required for application in mechanical automotive systems. Major topics include machine design, thermodynamics, fluid mechanics, heat transfer, and dynamic systems. Applications include chassis systems, suspension, steering, brakes, aerodynamics, powertrains, climate control, fuel cells, turbines, compressors, transmission systems, HVAC systems, shafts, and safety systems.
Lecture: 4, Lab 0, Other 0

MECH-610 Application of Artificial Intelligence in Mechanical Engineering 4 Credits
Prerequisites: None
This course examines the applications of Artificial Intelligence (AI) in mechanical engineering. Students will learn how AI technologies, such as machine learning, deep learning, and optimization algorithms, alter traditional mechanical engineering practices. Emphasis will be placed on real-world applications, hands-on projects, and using AI tools like Python, MATLAB, and commercial software platforms. Students may not receive credit for both MECH-410 and MECH-610.
Lecture: 4, Lab 0, Other 0

MECH-615 Engineering Optimization 4 Credits
Prerequisites: MECH-600
Introduction to the general model of numerical optimization and its application to engineering design. The formulation and classification of the optimization problems will be discussed. The computational search techniques for solving the different classes of optimization problems will be studied. These techniques include single and multivariable, zero and first order constrained and unconstrained, linear and nonlinear search algorithms. The developed algorithms will be used to find the optimum solutions for a variety of engineering design problems.
Lecture: 3, Lab 0, Other 1

MECH-623 Battery Science and Engineering with Applications 4 Credits
Prerequisites: None
Since battery is the heart of hybrid and full electric vehicles, a complete knowledge and understanding is essential to work as a productive engineer in this electric vehicle area. The purpose of this course is to introduce the fundamental concepts of battery science and engineering principles with applications. Students will learn in detail about batteries as both a power supply source and an energy storage device. Basic battery concepts, battery classification (Primary/Secondary) and standardization, electrochemical principles and reactions, battery electrochemistry, Butler-Volmer reaction kinetics and Nerst equation, factors affecting battery performance, charge/discharge mechanism, state of charge (SOC) equation, state of health (SOH) analysis/calculations, charge/energy balance equation and related calculations, selection of electrodes and electrolytes materials, estimation/calculation of battery power supply and energy storage capacity, battery cell/pack design and power management of battery pack will be discussed. The emphasis will be placed on advanced rechargeable battery cell design, electrochemistry, principles of operation, manufacturing/assembly of battery cell/pack, governing equations of a battery cell/pack, computer modeling of a battery cell/pack and experimental evaluation of battery performance, charge/discharge capacity estimation, state of charge estimation, safety, degradation and cycle-life analysis based on real-world mobility applications of batteries in hybrid/electric vehicles (EV). Industrial applications of rechargeable batteries/packs in electric vehicles, aerospace, consumer electronics and other emerging fields will also be presented. Students are required to complete all assigned battery laboratory experiments (total 5 Lab experiments).
Lecture: 4, Lab 0, Other 0

MECH-626 Hydrogen Generation, Storage and Safety 4 Credits
Prerequisites: None
This various methods of hydrogen production are covered: water electrolysis using photovoltaics, steam reformation and partial oxidation techniques of various types of conventional and alternative fuels. Various methods of hydrogen storage – compressed gas, liquefied gas, metal and chemical hydrides and nanotubes are included. Codes for underground and above ground pressurized hydrogen gas storage systems and safety aspects are covered. A comparison is made between hydrogen properties and known conventional fuels such as, methane (natural gas), gasoline, methanol and ethanol. Infrastructure design studies, dispensing transportation, codes and standards are covered. A hydrogen storage/production/safety laboratory for experimental studies is planned to be a major component of this course.
Lecture: 3, Lab 0, Other 1

MECH-629 Thermal Management Systems 4 Credits
Prerequisites: MECH-320
Fundamentals of thermal-fluid and energy conversion; thermal management of conventional and electrified powertrain and vehicle systems; thermal systems requirements; thermal impact on fuel economy and emissions; thermal management of high-voltage battery systems; heat exchanger design; hybrid and advanced cooling systems; electronics cooling of autonomous vehicles; thermoelectric devices; energy storage; waste heat recovery; thermal management systems simulations tools and design process.
Lecture: 4, Lab 0, Other 0

MECH-633 Multibody Dynamics 4 Credits
Prerequisites: None
The dynamics of two- and three-dimensional multibody systems will be investigated and modeled. Mechanisms consisting of rigid bodies as well as flexible bodies will be studied, including systems with mechanical joints, springs, dampers, and actuators. The kinematic and dynamic equations of motion will be derived, and both closed form and numerical solutions will be obtained. Newtonian and Lagrangian methods in dynamics will be reviewed and expanded in complexity. Linear graph theory will be introduced. Multibody dynamics software that is widely used in industry will be employed, including Adams and MapleSim, with the emphasis on both practical applications and an understanding of how these software packages formulate the governing equations and solve them. Students can expect to acquire advanced knowledge in dynamics and learn about the use of multibody dynamics software in the modeling of mechanisms and robotic manipulators.
Lecture: 4, Lab 0, Other 0

MECH-634 Introduction to MPC 4 Credits
Prerequisites: ECE-610 or MECH-600
The primary purpose of this course is to expose students to the fundamental principles and the application of Model Predictive Control (MPC), a control technique that is frequently used in many industrial applications. Students will learn the basic principles of the control technique as well as how to implement it in MATLAB/Simulink.
Lecture: 4, Lab 0, Other 0

MECH-635 Digital Twins and Model-Based Engineering 4 Credits
Prerequisites: None
This course introduces the concept of digital twins for mechanical systems, focusing on finite element analysis (FEA), multibody dynamic simulations, and experimental testing, including data collection, correlation, and model updating. Students will develop digital twins using commercial software packages such as NX, Abaqus, ADAMS, LabVIEW, and MATLAB to model, simulate, and validate mechanical systems. The course covers the integration of sensor data, real-time monitoring, and predictive modeling to enhance system performance and optimize mechanical designs. Students will learn techniques for data assimilation, machine learning-driven model updates, and uncertainty quantification to create accurate and reliable digital twins. Practical applications will include structural health monitoring, mechanical analysis, and performance optimization in mechanical and automotive systems. Students may not receive credit for both MECH-435 and MECH-635.
Lecture: 4, Lab 0, Other 0

MECH-641 Advanced Auto Power Systems 4 Credits
Prerequisites: MECH-420
Terms Offered: Winter, Spring
This course serves to expand student's knowledge of automotive power systems. Topics covered include, detailed thermodynamic cycle analysis of various power cycles, emerging alternative fuels and power systems for automotive use (current topics include high-blend alcohol/gasoline fuels, gasoline direct injections (GDI) engines, hybrid electronic Powertrains, and fuel-cells). Students are also expected to work on design projects which are determined by the instructor. Students are expected to work on projects leading to the development of presentations and/or technical papers for professional society meetings (i.e. SAE, Global Powertrain Congress, etc.). This course is an advanced version of MECH-441. Students in MECH-641 are required to complete additional propject challenges and a final project in addition to the workload for MECH-441.
Lecture: 4, Lab 0, Other 0

MECH-643 Noise, Vibration & Harshness 4 Credits
Prerequisites: None
An integrated approach to the analysis of Noise, Vibration and Harshness of automotive engineering is presented. Techniques for evaluating the vibration and acoustic characteristics of vehicle systems are discussed. Then the principles of noise and vibrations control are presented through automotive applications.
Lecture: 4, Lab 0, Other 0

MECH-644 Introduction to Automotive Powertrains 4 Credits
Prerequisites: None
Terms Offered: Winter, Spring
An introduction to the performance of motor vehicle and the design of automotive power transmission systems. Topics covered include, loads on the vehicle, evaluation of various engine and vehicle drive ratios on acceleration performance and fuel economy, manual transmission design, and automatic transmission design. This course is an advanced version of MECH-444. Students in MECH-644 are required to complete additional project challenges and a final project in addition to the workload for MECH-444.
Lecture: 4, Lab 0, Other 0

MECH-645 Hybrid Electric Vehicle Propulsion 4 Credits
Prerequisites: None
An introduction to the principles of hybrid electrical vehicle propulsion systems for Mechanical and Electrical Engineering students. A major emphasis of the course will be to broaden the mechanical engineering student's knowledge of electrical engineering so that he/she can understand the fundamentals of electrical motors, electrical motor controls, and electrical energy storage systems. The course is also intended to strengthen the knowledge of electrical engineering students relative to automotive powertrain design. With this background, the integration of these hybrid electric components into the hybrid electric vehicle powertrain system will be studied, including electric energy storage (batteries, flywheels, ultra-capacitors) and electrical energy production-fuel cells. Relevant codes and standards will be emphasized. This course is an advanced version of MECH-445. Students in MECH-645 are required to complete additional project challenges and a final project in addition to the workload for MECH-445.
Lecture: 4, Lab 0, Other 0

MECH-646 Advanced Vehicle Dynamics 4 Credits
Prerequisites: None
Advanced vehicle dynamics is the study of the motion of rubber-tired ground vehicles. Dynamic vehicle responses result from the tire, gravitational, and aerodynamic forces that a vehicle is subjected to. Ride quality, handling characteristics, performance, and safety can be evaluated by examining a vehicle's dynamic responses. This course provides an advanced understanding of vehicle dynamics behavior and the means to model it from a mathematical point of view. Special emphasis is placed on dynamic systems modeling approaches, including the creation and numerical evaluation of state space mathematical models.
Lecture: 4, Lab 0, Other 0

MECH-647 Combustion & Emissions 4 Credits
Prerequisites: None
Introduction to the basic principles of combustion and how to apply them to basic engineering problems. Various technologies of this field will be explored. However, a large portion of the course will cover the fundamentals of combustion. Topics relating to flame speed, flame thickness, flame spread, flame quenching, blow-off, stabilization, ignition energy, flammability limits, and flashback will be presented. Laminar and turbulent premixed and diffusion flames will be discussed. These topics will be related to combustion and emissions in spark-ignition and diesel engines.
Lecture: 3, Lab 0, Other 1

MECH-650 Automotive Bioengineering: Occupant Protection and Safety 4 Credits
Prerequisites: None
Terms Offered: Winter, Spring
A discussion and application of the following fundamental concepts: (1) an overview of Federal Motor Vehicle Safety Standards; (2) basic anatomy and physiology of the overall human body; (3) introduction to injury biomechanics including rate, load, and acceleration dependent injury mechanisms; (4) overview of injury prevention strategies including a variety of air bags, multipoint restraint systems, and occupant sensing methodologies; (5) the basic structure and function of anthropomorphic test devices; (6) introduction to experimental crash simulation; (7) virtual occupant simulation; (8) develop the necessary algorithms to filter crash sensor data using the appropriate CFC per SAEJ211; (9) develop a simulation of a pretensioner; (10) develop a method oto determine the relevant due care criteria from a crash simulation in addition to the mandated criteria.
Lecture: 4, Lab 0, Other 0

MECH-682 Mechanics and Design Simulation of Fiber-Reinforced Composite Materials 4 Credits
Prerequisites: None
The properties, mechanics, and design simulation aspects of fiber-reinforced composite materials are covered in this course. Topics include: constituents and interfacial bonding, microstructure and micromechanics, theory of anisotropy, classical laminate theory, material characterization, failure and damage, manufacturing techniques, composite structure design, and introduction of nanocomposite.
Lecture: 4, Lab 0, Other 0

MECH-697 ME Elective Credit 4 Credits
Prerequisites: None
Lecture: 4, Lab 0, Other 0

MASTER OF ENGINEERING (MENG)

MENG-6003 Introductory Programming Methods for Data Science and Learning 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. Introduction to computer science concepts and basic programming skills that are specifically geared toward data science and machine learning, and forms a part of the introductory coursework for the MEng program. Course emphasizes writing programs that are capable of retrieving and manipulating large amount of data. The first half of the course focuses on Python as a first programming language, while the second half of the course covers selected advanced topics such as web scraping, database access and others.
Lecture: 3, Lab 0, Other 0

MENG-6013 Applications of Electrical and Computer Engineering in Mobility Systems 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. It is designed to introduce the fundamental principles of electrical and computer engineering that are required for application in mobility systems for students with non-ECE degrees. Topics include: passive circuit components, basic laws and analysis techniques; active electronic elements and circuits, digital logic circuits, digital & analog sensors and actuators, electrical machines; power electronics & batteries; digital systems; signal processing; microcomputers and interfacing; and basic mobility system networking and CAN concepts. Approximately one week is devoted to each topic illustrated in the context of specific applications in mobility systems. Case studies with specific applications of ECE in mobility systems will be assigned.
Lecture: 3, Lab 0, Other 0

MENG-6023 Applications of Industrial and Manufacturing Engineering in Mobility Systems 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The course is designed to introduce the fundamental principles of industrial and manufacturing engineering that are required for application in mobility systems for students with non-IME degrees. Topics include: product and process design, work design, production systems, quality/six sigma, and management/leadership. Approximately two weeks are devoted to each topic illustrated in the context of specific applications in mobility systems. Case studies with specific applications of IME in mobility systems will be assigned.
Lecture: 3, Lab 0, Other 0

MENG-6033 Applications of Mechanical Engineering in Mobility Systems 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. It introduces the basic principles of mechanical engineering that are required for application in mechanical automotive systems. Major topics include machine design, thermodynamics, fluid mechanics, heat transfer, and dynamic systems. Applications include chassis systems, suspension, steering, brakes, aerodynamics, powertrains, climate control, fuel cells, turbines, compressors, transmission systems, HVAC system, shafts, and safety systems.
Lecture: 3, Lab 0, Other 0

MENG-6063 Survey of New Energy Vehicles 3 Credits
Prerequisites: None
Fundamentals of Battery Electric Vehicles (BEVs) and Hybrid Electric Vehicles (HEVs); electrified vehicles attributes; design, economical, and regulatory considerations; electrified propulsion system; eDrive system; differences with conventional (ICE) vehicles; energy management and energy recovery; energy efficiency of xEVs vs. ICE vehicles; high-voltage battery (HVB) systems; high-voltage BEV platforms; 800-Volt platform architecture; functional safety; charging standards; fast charging; wireless charging; EMC requirements; NVH characteristics; power electronics; future trends.
Lecture: 3, Lab 0, Other 0

MENG-6093 Practical Technology Management 3 Credits
Prerequisites: None
This course instructs applied methods in the management of the technology domain of an enterprise. Leading the technological direction of an enterprise will include the processes of technology cycle evaluation, strategy formulation, development pipeline management, development process management, leading the development process, and the financial performance of innovation in an enterprise.
Lecture: 3, Lab 0, Other 0

MENG-6193 Practical Project Management 3 Credits
Prerequisites: None
This course instructs applied methods of managing projects utilizing standards of the Project Management Institute, including the processes related to initiating, planning, executing, controlling, reporting, and closing a project. Additionally, methods of Agile project management, as applied in recent business models, are introduced. Principles of the course are practiced in project-based learning activities as well as application experiences utilizing the tools and techniques of project management.
Lecture: 3, Lab 0, Other 0

MENG-6213 Introduction to Energy Storage Systems with EV Applications 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The purpose of this course is to introduce the basics of energy storage systems. We will look at several competing energy storage concepts and management systems. The emphasis is on rechargeable Li-ion batteries for EV applications. The course will focus on the fundamentals of Li-ion batteries with respect to the physical principles of operation, design, manufacturing, modeling and state estimation. Students are required to complete research projects and independent review of research topics with approval of the instructor.
Lecture: 3, Lab 0, Other 0

MENG-6263 Power Electronics for Vehicle Electrification 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. It is an advanced class in power electronics. Advanced converter topologies, control methods, and analyses used in electric-vehicle and power-system domains will be discussed. topics include state-variable modeling of DC-DC converters for closed-loop control system design, isolated DC-DC converter topologies (half, full, and dual bridges) and resonant DC-DC converter topologies (series, parallel and series-parallel) for wireless power transfer and battery charging, soft-switching concepts and control methods for isolated DC-DC converters, single-phase and three-phase inverter design, inverter control methods including six-step, Sine PWM, Space Vector PWM, and Discontinuous PWM and the design and control of multilevel and modular multilevel inverters.
Lecture: 3, Lab 0, Other 0

MENG-6303 Applied Digital Signal Processing for Automotive Engineering 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The course is designed to introduce critical digital signal/image processing principles/theories and techniques applied to a variety of automotive engineering applications. Special focus is given to autonomous driving and NVH analysis. Examples include, but not limited to, edge detection methods in traffic sign recognition and identification; Kalman filtering for vehicle state estimation; Modal analysis (frequency domain) and expansion to time-frequency domain analysis of dynamic response using techniques such as wavelets and Empirical Mode Decomposition (EMD). MATLAB will be heavily used for analysis and simulations.
Lecture: 3, Lab 0, Other 0

MENG-6323 Introduction to Automotive Control Systems 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. This class will focus on applying students' knowledge of fundamental principles of control systems to a variety of systems within automobiles. Specific topics will include the control of the air-fuel ratio, spark timing, idle speed, transmissions, cruise and headway, lane-keeping, and active suspensions. Other topics that may be included are antilock brakes, traction control, and vehicle stability control. Simulations will be used, and students will be using MATLAB/Simulink for many of the assignments.
Lecture: 3, Lab 0, Other 0

MENG-6423 Mobile Robotics 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. This course covers the fundamentals of robotics with an emphasis on mobile robots, which are intelligent integrated mechanical, electrical and computational systems functioning in the physical world. Topics include state-of-the-art technologies in mobile robotics, such as locomotion, sensing, control, communication, localization, mapping, navigation, etc. Advanced topics such as coordination of multiple mobile robots will also be explored. The course aims to provide both theoretical and practical experience to students through lectures and hands-on experience with real robots and simulation software. Students will also complete independent projects or research on current topics covering mobile robotics technologies and related fields.
Lecture: 3, Lab 0, Other 0

MENG-6453 Introduction to Electrified Vehicle Propulsion 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. It introduces students to electrified propulsion systems for automotive applications. Topics in the course include the fundamentals of chassis energy requirements, combustion engines, electrical motors, electrical motor controls, and electrical energy storage systems. With this background, the integration of these hybrid electric components into the hybrid electric vehicle powertrain system will be studied, including electric energy storage (batteries, flywheels, ultra-capacitors) and electrical energy production-fuel cells. Relevant codes and standards will be emphasized.
Lecture: 3, Lab 0, Other 0

MENG-6463 Introduction to Vector Control of AC Electric Machines 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. Methods of controlling electric machines and their applications in electric vehicles are discussed. Topics include theory of permanent-magnet and induction machines; coordinate-frame transformations; analysis and tuning of torque and speed control systems; modeling and dynamics of electric drives and vehicles; power-electronic devices, power-electronic circuits and switching schemes; rotor-flux-oriented vector control; regenerative braking; and rotor-flux position-sensing methods. Machine and vehicle models will be developed using MATLAB Simulink. A low-voltage permanent-magnet machine and power-electronic inverter will be analyzed and tested. Students are also required to complete a research project, to be determined and assigned with approval of the instructor.
Lecture: 3, Lab 0, Other 0

MENG-6523 Introduction to Artificial Intelligence for Autonomous Driving 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. This course will provide introductory theories and technologies in artificial intelligence focusing on machine learning, covering a wide range of machine learning methods, concepts and applications. Machine learning studies algorithms that learn from large quantities of data, identify patterns and make predictions on new data. The major list of machine learning fields are computer vision, robotics, autonomous driving, voice/gesture recognition, and automated planning & scheduling, etc. Student will study the concepts that underlie intelligent systems and investigate advanced topics in intelligent system through the course project.
Lecture: 3, Lab 0, Other 0

MENG-6543 Introduction to Computer Vision for Autonomous Driving 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The course will cover introductory theories and modern technologies in computer vision systems for autonomous driving. Data from visual sensors play crucial roles in many fields such as autonomous driving, surveillance camera, and robotics. The computer vision system seeks to automate tasks that the human visual system can do. The goal of this course is to learn technologies that enable a computer automatically to understand the content of visual sensors for autonomous driving. The first half of this course will focus on fundamental models and algorithms in computer vision and in the second half of the course students can learn about computer vision applications and programming skills to accomplish computer vision tasks. Graduate students taking this course are also required to complete independent review or survey of cutting edge research topics in computer vision systems, such as object-detection methods for autonomous driving, Deep Neural Network for environmental perception, and innovative applications, etc., selected by the students with approval of the instructor. The survey or research report must be presented in a conference paper format that is ready for submission to a conference.
Lecture: 3, Lab 0, Other 0

MENG-6653 Introduction to Information Retrieval and Data Mining 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. Information retrieval and data mining topics, including information storage and retrieval, file structures, precision and recall, probabilistic retrieval, search strategies, automatic classification, automatic text analysis, decision trees, nearest neighbor method, and rule induction. Graduate students will create and analyze additional material about Mining of Massive Datasets.
Lecture: 3, Lab 0, Other 0

MENG-6813 Introduction to Artificial Intelligence 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The course covers types of intelligence, knowledge representation, cognitive models. Heuristic and algorithmic techniques in problem solving, knowledge representation. Selected topics from natural language processing, vision processing, game playing, pattern recognition, speech recognition, robots, and other current topics in artificial intelligence.
Lecture: 3, Lab 0, Other 0

MENG-6823 Introduction to Machine Learning 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. This course provides an introduction to machine learning. Topics include: supervised learning including generative, discriminative learning, parametric and non-parametric learning, neural networks, support vector machines; unsupervised learning including clustering, dimensionality reduction, kernel methods, learning theory bias/variance trade-offs, VC theory, large margins.
Lecture: 3, Lab 0, Other 0

MENG-6843 Introduction to Internet of Things (IoT) 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. The most important topics of the Internet of Things and its applications will be addressed. Topics include an introduction to network stacks and embedded operating systems, IoT architecture models, smart devices, connection and access technologies, the IoT network layer, application layer protocols relevant to IoT, and IoT security practices. Various IoT application areas will be discussed, such as industrial, home automation, manufacturing, energy, utilities, vehicles, smart cities, agriculture, and health care. Students complete a term project to develop a complete IoT application. Students are also required to complete a research project, to be determined and assigned with approval of the instructor.
Lecture: 3, Lab 0, Other 0

MENG-6933 Internship 3 Credits
Prerequisites: None
This graduate level course is designed for practicing engineers. Guided professional practicum experience for MENG graduate students serving as an extension of the curriculum that facilitates the development of knowledge and skills in the application of theory to real-world problems in a non-classroom setting. This experiential learning engagement builds upon, applies, and assesses the concepts that are developed through the curriculum and advances the student's professional growth through a meaningful real-world job experience.The internship should be substantial and practical, including analysis, evaluation, and application of engineering concepts. At least 240 clockhours of on-site work over the term are required for three credit hours. Requires prior approval of the organization in which the internship will be done and appropriate review and approval of the specific experience gained. Internships are graded on a Credit/No Credit basis, to be entered by the Dean upon the student's completion of all internship requirements.
Lecture: 3, Lab 0, Other 0

MENG-6953 Mobility Systems Seminar 1 3 Credits
Prerequisites: None
Students in the professionally-oriented Master of Engineering General program may receive credit for taking seminars either through Kettering University's Professional Development Program or SAE International's Professional Development Program. To receive credit students must complete a total of four Continuing Education Units (CEU), equivalent to 40 hours of instruction, which have been reviewed and approved by a faculty review committee, consistent with Graduate academic policy. The transfer of credit must be supported by documentation from the provider for each individual applicant seeking such transfer.
Lecture: 0, Lab 0, Other 3

MENG-6963 Mobility Systems Seminar II 3 Credits
Prerequisites: None
Students in the professionally-oriented Master of Engineering General program may receive credit for taking seminars either through Kettering University's Professional Development Program or SAE International's Professional Development Program. To receive credit students must complete a total of four Continuing Education Units (CEU), equivalent to 40 hours of instruction, which have been reviewed and approved by a faculty review committee, consistent with Graduate academic policy. The transfer of credit must be supported by documentation from the provider for each individual applicant seeking such transfer.
Lecture: 0, Lab 0, Other 3

LEAN/MANUFACTURING OPS (MFGO)

MFGO-601 Globally Integrated Manufacturing Company 4 Credits
Prerequisites: None
This course is an introduction and integrated overview of contemporary global manufacturing operations. The focus is on the importance of agility and the introduction of lean concepts in business and manufacturing. Instruction will emphasize the application of attitudes, skills, and knowledge required of managers, supervisors, team leaders, and manufacturing professionals in a cross-functional and cross-cultural manufacturing environment. Topics include a brief historical overview of global manufacturing, and a strong emphasis on process re-engineering. Students are required to use the concepts from the class to analyze their own work environment.
Lecture: 3, Lab 0, Other 1

MFGO-610 Foundations of Lean Organizations 4 Credits
Prerequisites: None
Foundations of Lean Organizations is designed to introduce learners to the principles, methodologies, and applications of Lean Thinking and Six Sigma within organizational contexts. Learners explore the origins of Lean through studying its evolution from manufacturing to diverse sectors such as healthcare, information technology, and services. Through reviewing a list of curated resources, actively participating in discussion questions, and completing assignments, learners also deepen their knowledge t of Lean and Six SIgma in an effort to eliminate waste, drive efficiency, ensure quality, initiate continuous improvement, and spark innovation in various organizational settings.
Lecture: 4, Lab 0, Other 0

MFGO-619 Six Sigma: Introduction to DMAIC 4 Credits
Prerequisites: None
Students examine techniques to maximize production efficiency and to maintain control over each step in the production process. DMAIC (Define-Measure-Analyze-Improve-Control), the structured problem-solving methodology, provides the framework for the course.
Lecture: 3, Lab 0, Other 1

MFGO-633 Lean Production Systems 4 Credits
Prerequisites: None
Minimum Class Standing: NA
Terms offered: Fall, Spring
This course begins with an overview of the theory and application of lean production systems. Systems thinking and business dynamics are presented along with contemporary lean thinking principles, lean enterprise development, and value stream mapping. Specific emphasis will be devoted to modern enterprise improvement techniques such as Six Sigma, Theory of Constraints, and Business Process Reengineering.
Lecture: 3, Lab 0, Other 1

MFGO-635 Work Analysis for Lean Production Application 4 Credits
Prerequisites: MFGO-633
This course addresses a critical issue facing organizations in the design of a competitive and low-cost manufacturing operation. The intent of this course is to survey the basic techniques of methods design, work measurement, business process analysis, and ergonomics. The student will be expected to solve complex problems encountered during the design, analysis, or operation of a facility that produces goods or services.
Lecture: 3, Lab 1, Other 0

MFGO-639 Quality Assurance and Reliability 4 Credits
Prerequisites: None
This course covers topics in quality assurance including an introduction to quality and quality philosophy, statistical methods of quality improvement, the concept of variation and its reduction, statistical process control, and acceptance sampling. In this course, students will make extensive use of statistical software.
Lecture: 3, Lab 0, Other 1

MFGO-649 Metrics for Lean Production Improvement 4 Credits
Prerequisites: MFGO-635 or MFGO-639
This course is intended to provide the operations professional with an understanding of the data typically available within a manufacturing or service environment, and how to use information derived from such data employing a lean paradigm to improve operations. The course covers basic financial accounting, activity-based metrics, trend analysis, decision making and linking operational decisions to strategic considerations.
Lecture: 3, Lab 0, Other 1

MFGO-659 Integrative Capstone Project 4 Credits
Prerequisites: MFGO-649
Students should take this course as one of their last two core courses. The focus of this course is on a business-focused, project-oriented perspective applicable to the integrated operating environment. Project Management tools and techniques, recognized as part of the body of knowledge by the Project Management Institute, are examined in detail. The Final Project is designed to enable students to apply project management concepts, and techniques to ensure application of lean principles to a process or service.
Lecture: 3, Lab 0, Other 1

MFGO-669 Lean Systems Capstone Project 4 Credits
Prerequisites: None
The course provides the opportunity to work on a team-based Lean Systems project. This project focuses specifically on an issue in a non-manufacturing organization or business or service process that would benefit from the application of Lean principles, tools and techniques. In addition, solid project management guidelines are employed to plan and implement the project within the timeframe allotted. The goal is the apply the tools, techniques and principle to create a change that reduces waste, maximized customer value or provide an opportunity for continuous improvement. The project should ultimately provide an opportunity for real-world application of Lean to a specific issue or challenge within an organization or business.
Lecture: 4, Lab 0, Other 0

MANAGEMENT (MGMT)

MGMT-510 Foundations of Business 4 Credits
Prerequisites: None
This course provides the prerequisite knowledge necessary for studying management in a graduate program. Students are introduced to both a theoretical understanding, and practical application, of concepts in the disciplines of management, marketing, accounting, finance, economics, and statistics. Through readings, videos, discussion questions, and assignments, students are introduced to basic content from each topic area, as well as APA writing style, in preparation for entry into a graduate management program.
Lecture: 4, Lab 0, Other 0

MGMT-521 Statistical and Quantitative Methods for Managerial Decision 4 Credits
Prerequisites: None
Learn about the principles and techniques for collecting, analyzing, interpreting, and communicating information based on data. Data analysis emphasizes the fundamentals behind designing data collection strategies that lead to useful information for problem solving and process and product improvements. Data analysis techniques include descriptive statistics, basic hypothesis testing, experimental design, and regression analysis. Use of a statistical software will be made to illustrate important data analysis concepts with a focus on understanding the computer output. The project requirement is expected to enable students to apply the data analysis concepts learned in the class. In summary, this course will assist the students to become knowledgeable consumers of data analysis, its applications and limitations.
Lecture: 3, Lab 0, Other 1

MGMT-550 Mgmt Concepts and Applications 2 Credits
Prerequisites: None
Both the art and the science of management will be introduced and examined through multiple perspectives within a global and ethical context. An examination of the functions of a manager builds upon the elements of organizational and behavioral theory. Principles of organizational structure and design will also be discussed. The importance of management in dealing with the complexity of modern organizations will be emphasized throughout.
Lecture: 2, Lab 0, Other 0

MGMT-609 Technology Management 4 Credits
Prerequisites: None
This course is an overview of the management of technology and its impact on contemporary organizational performance. The focus of the course is on the application of skills, and knowledge required of managers and professionals responsible for technology implementation in a product or service development environment. Concepts of cybersecurity and managing technology in the future are considered. Case studies and simulations are used to bring to life the critical challenges confronting managers of technology.
Lecture: 4, Lab 0, Other 0

MGMT-619 Project Management 4 Credits
Prerequisites: ACCT-518 or MGMT-510
This course covers managing projects within an organizational context, including the processes related to initiating, planning, executing, controlling, reporting, and closing a project. Concepts such as project integration, scope, time, cost, quality control, and risk management are highlighted. Identifying project champions, working with user teams, training, and documentation are key concepts of project management that are detailed in the course.
Lecture: 4, Lab 0, Other 0

MGMT-620 Business Communication and Presentation 4 Credits
Prerequisites: None
The ability to listen and craft well-written messages verbally, in writing, and within digital spaces are valued skills among employers regardless of industry. This course is designed to provide opportunities for you to sharpen your writing, improve your editing, hone your critical thinking skills, and create effective persuasive messages. Course content also includes best practices for organizing, revising and presenting information in-person and remotely.
Lecture: 4, Lab 0, Other 0

MGMT-6203 Business Communication and Presentation 3 Credits
Prerequisites: None
The ability to listen and craft well-written messages verbally, in writing, and within digital spaces are valued skills among employers regardless of industry. This course is designed to provide opportunities for students to sharpen writing, improve editing, hone critical thinking skills, and create effective persuasive messages. Course content also includes best practices for organizing, revising and presenting information in-person and remotely. This course is designed for online delivery and available only through Kettering University Online to students in the MS in Engineering: Electrical & Computer Engineering-Advanced Mobility program.
Lecture: 3, Lab 0, Other 0

MGMT-621 Cultural Competency in the Workplace 4 Credits
Prerequisites: None
Leading and managing organizations rich in diversity (race, gender, socioeconomic class, ethnicity, religion, sexual orientation, and life experience) can be both challenging and rewarding. This course is designed to explore the scope of diversity and its impact on building and maintaining productive professional relationships.Personal assessment of cultural competence, as well as identifying strategies for improving cross-cultural communication and harnessing the strength of diverse perspectives in the workplace are highlighted. Increasing the ability to lead diverse teams and departments can enrich individuals personally and provide a distinct competitive advantage for the organizations with whom they work.
Lecture: 4, Lab 0, Other 0

MGMT-622 Organized Labor and Management Relations 4 Credits
Prerequisites: None
Since the Industrial Revolution, unions have been formed in various industries to secure improvements in working conditions and fair wages for their members. This course is designed to offer key details, insights, skills, and techniques for improved working relationships in a union environment. A major focus of this course will include the perspectives of both management working with union members, and union members working with management.
Lecture: 4, Lab 0, Other 0

MGMT-623 Data Analytics 4 Credits
Prerequisites: CS-601
The rise of big data and machine learning has transformed the business world. In fact, these tectonic shifts in the business landscape are labeled as the fourth industrial revolution. Data is the new oil, creating enormous wealth and opportunity for businesses. This course will introduce the strategic importance and applications of these new Artificial Intelligence (AI) technologies. This is a hands-on learning course towards developing skills in using the Python language for data cleaning, exploration and modeling. The overarching aim is to provide a strong start towards developing skills that will eventually lead towards becoming an accomplished data scientist, who understands and is able to apply these skills towards achieving organizational competitive advantage. Students may not receive credit for both MGMT-423 and MGMT-623.
Lecture: 4, Lab 0, Other 0

MGMT-624 Data Visualization 4 Credits
Prerequisites: CS-601
This course encompasses the principles, techniques, aesthetics, and applications of data visualization. Starting with development of the basics of computer programming for visualization, the students learn methods to develop effective univariate, multivariate, and high dimensional data visualizations. The course also covers geographic and text-based visualization techniques. The course uses the highly demanded Python-based packages: Matplotlib, Seaborn, and Plotly. Students will also develop skills in using the grammar of graphics approach encapsulated in ggplot. Students may not receive credit for both MGMT-424 and MGMT-624.
Lecture: 4, Lab 0, Other 0

MGMT-625 Digital Strategy and Competitive Advantage 4 Credits
Prerequisites: None
This course is the intersection of strategic management with data-science. Cases and simulations are used to examine how firms use strategy and data-science to build competitive advantage. The course explores the strategy and dynamics of Artificial Intelligence (AI) based firms. It also brings the perspectives of practicing data-scientists and expand on their roles in reshaping the competitive landscape of their industries. Students may not receive credit for both MGMT-425 and MGMT-625.
Lecture: 4, Lab 0, Other 0

MGMT-629 Management Science 4 Credits
Prerequisites: MATH-258 or MGMT-521 or MGMT-510
This course is intended to develop student facility with a variety of quantitative techniques to facilitate the managerial decision-making process. Simulation approaches are covered along with optimization techniques such as linear programming and stochastic techniques such as queuing models. In this course, students will develop spreadsheet modeling skills, and emphasis will be placed on the application of these quantitative techniques to a variety of managerial areas.
Lecture: 4, Lab 0, Other 0

MGMT-639 Managing People & Organization 4 Credits
Prerequisites: MGMT-550 or MGMT-510
This course is intended to prepare students for management positions in various organizations. Students are introduced to concepts and issues concerning management, and leadership of organizational staff. Subjects include technology-related leadership, organizational communication, change management, lean thinking, human resource issues, decision-making, ethics and persuasion.
Lecture: 4, Lab 0, Other 0

MGMT-649 Ethics and Leadership 4 Credits
Prerequisites: MGMT-639 or MGMT-510
The focus of this course is preparing students for leadership roles in the workplace, and in society, by facilitating knowledge of management and leadership from an ethical perspective. The course includes an overview of the evolution of ethical theories and the role of the leader within the business context. Students use their understanding of business, leadership, team development and the processes of moral reasoning to examine contemporary issues related to organizational leadership and building community partnerships.
Lecture: 3, Lab 0, Other 1

MGMT-659 Strategy 4 Credits
Prerequisites: BUSN-659 and FINC-619 and MGMT-639 and MRKT-679
This course focuses on the formulation, implementation, and evaluation of organizational policy and strategy from the perspective of the senior manager/strategy planner. Additional consideration is given to information technology, global operations, ethics, legal perspectives and the functional level strategies of the organization. The Final Project is an integrative approach designed to have direct application to a current job or future career.
Lecture: 4, Lab 0, Other 0

MGMT-661 Operations Management 4 Credits
Prerequisites: MATH-258 or MATH-408 or MGMT-521 or MFGO-619
This course provides students with an exposure to the core concepts and tools of operations management in both manufacturing and service enterprises. Course content includes an overview of the fundamental importance of coordinated operational activities as students examine how to integrate effective operations across all functional areas of the organization. Emphasis is placed on the importance of adding value, and customer satisfaction, to the long-term viability of both for-profit and not-for-profit firms.
Lecture: 4, Lab 0, Other 0

MGMT-665 Strategic Management 4 Credits
Prerequisites: None
The focus of this course is on strategic investigation, analysis, and planning within organizations. Emphasis is placed on combining analytical and emergent views to produce strategic thinking maps designed to assist leaders in: acknowledging the reality of change, questioning current assumptions and activities, collecting and reviewing data relevant to the industry, and facilitating future organizational development.
Lecture: 4, Lab 0, Other 0

MGMT-669 Supply Chain Management 4 Credits
Prerequisites: None
In this course, students are presented with a conceptual framework for understanding Supply Chain Management (SCM). The course covers concepts, trends, and technologies that enable global SCM. Students consider how customer needs, competitive advantage, operational measures, and financial performance support successful implementation of SCM. Topics covered include aligning information systems, procurement, demand planning and forecasting, inventory management and logistics to support organizational goals.
Lecture: 4, Lab 0, Other 0

MGMT-679 Leadership 4 Credits
Prerequisites: None
A comprehensive examination of different leadership theories and models along with leadership development with emphasis on relevant empirical evidence and application of these constructs to case studies that involve leadership and group functioning. Additionally, process of decision-making in a variety of leadership settings will be introduced, including the processes of leading independently or with direct authority. The distinction between leadership and management, crucial role of leadership when managing groups and teams, and the importance of ethical conduct and persuasion in effective leadership are covered. This course cannot be repeated to earn credits for both MGMT-479 and MGMT-679 and there will be different course requirements for undergraduate and graduate levels.
Lecture: 3, Lab 0, Other 1

MGMT-693 Internship in Management 4 Credits
Prerequisites: None
Guided professional practicum experience for on-campus graduate students serving as an extension of the curriculum that facilitates the development of knowledge and skills in the application of theory to real-world problems in a non-classroom setting. This experiential learning engagement builds upon, applies, and assesses the concepts that are developed through the curriculum and advances the student's professional growth through a meaningful real-world job experience. The internship should be substantial and practical, including analysis, evaluation, and application of management concepts. At least 240 clock hours of on-site work over the term are required for four credit hours. Requires prior approval of the organization in which the internship will be done by the Dean of the School of Management and appropriate review and approval of the specific experience gained. Four-credit hour enrollments in this course will be considered as full-time status. The course can be repeated a second time, however, it will not count toward degree completion once four credit hours are earned. Internships are graded on a Credit/No Credit basis, to be entered by the Dean upon the student's completion of all internship requirements.
Lecture: 0, Lab 0, Other 0

MARKETING (MRKT)

MRKT-570 Marketing Concepts and Applications 2 Credits
Corequisites: MGMT-550
Prerequisites: None
An overview of consumer marketing's role in business is provided in this course. Marketing Concepts and Applications are integrated into a marketing discipline that enables students to become effectively engaged in consumer to customer product and service related endeavors.

Lecture: 2, Lab 0, Other 0

MRKT-679 Marketing Management 4 Credits
Prerequisites: MRKT-570 or MGMT-510
In this course, students will gain a managerial perspective on how organizations understand and select target markets, and then how they attract, retain and grow customers within those selected markets. A strategic perspective of how firms create, deliver, and communicate superior customer value for competitive advantage will be emphasized. Students will gain understanding of the analysis, planning, implementation, and control of activities to develop and sustain beneficial exchanges with target buyers.
Lecture: 4, Lab 0, Other 0

SUPPLY CHAIN MANAGEMENT (SCM)

SCM-610 Foundations Supply Chain Management 4 Credits
Prerequisites: None
Students receive an overview of effective strategies for managing supply chains as well as an introduction to operations within complex networks and logistics. Practical skills to increase service levels and reduce costs are examined. Additional areas of examination include the following: strategic planning and operation of an effective supply chain design, advantages of competitive supply chains and how weaknesses in the chain impact operations, key drivers of supply chain performance, application of analytical methodologies to impact demand planning in supply chains, and an overview of the use of technology in supply chain management.
Lecture: 4, Lab 0, Other 0

SCM-611 Collaboration Supply Chain Management 4 Credits
Prerequisites: None
Students in this course examine traditional approaches to supply chain management as well as electronic commerce and issues related specifically to Internet delivery and evaluate innovative approaches to create efficiencies that enhance collaboration and decision-making. Technology structure for information sharing, team management, as well as issues of leadership and power are also examined.
Lecture: 4, Lab 0, Other 0

SCM-612 Customer Relationship Management 4 Credits
Prerequisites: None
Customer Relationship Management is at the core of all effective supply chains. Students in this course examine the comprehensive set of processes and technologies necessary for managing potential and current customers. Students in this course examine effective ways of managing the customer relationship to ensure an effective supply of materials required for product development. A range of CRM software is examined.
Lecture: 4, Lab 0, Other 0

SCM-613 Supply Chain Logistics 4 Credits
Prerequisites: None
An overview of strategic and tactical elements of logistics management is the focus of this course. Transportation, including multi-model freight operations, high-tech automated warehousing, and order delivery are fundamental. Critical analysis of logistics with an emphasis on effective decision-making and innovation is primary. Students review basic distribution and logistics issues that impact overall business performance with the goal of analyzing and resolving distributions and logistics challenges evident in today's business environment.
Lecture: 4, Lab 0, Other 0

SCM-614 Procurement and Risk Management 4 Credits
Prerequisites: None
This course provides an overview of purchasing and strategic procurement of products and services to gain a competitive advantage. The focus is on contract negotiation and supplier management with the goals of identification, mitigation, and reduction of risks to ensure effective supply chains.
Lecture: 4, Lab 0, Other 0

SCM-615 Supply Chain Planning 4 Credits
Prerequisites: None
This course provides an overview of effective strategies for companies with global operations. These strategies consider the full spectrum of the supply chain from raw material to finished product. Emphasis is placed on planning and integration of supply chain components into a coordinated system. A range of tactics are explored to produce optimal outcomes in supply chains and provide competitive advantage including the appropriate technology, and software solutions applicable to the Final Project. The final capstone project allows for the analysis of a supply chain to provide insight into ways to streamline a current supply chain. Another option, students may choose is to provide an in-depth response to a supply chain challenge in a current or former workplace.
Lecture: 4, Lab 0, Other 0