

Master of Engineering Management

The competitive Master of Engineering Management program bridges the gap between technology and business by providing students with the technical expertise and leadership skills needed to advance their careers. The 30-unit Master of Engineering Management is available for full-time or part-time students.

This program brings together Washington University faculty and industry-leading experts to help students learn to strategize, lead, make informed decisions, manage financials, and leverage both existing and emerging technology. The courses prepare individuals to utilize common management tactics across all of the engineering disciplines.

Full-time Master's Degree: 30 units, 1-1.5 years to complete

Part-time Master's Degree: 30 units, 2.5 years+ to complete

Email: sever@wustl.edu

Website: <https://sever.wustl.edu/degree-programs/engineering/index.html>

Faculty

Program Director

John Bade

Director of Graduate Studies, Engineering Management
 PhD, Missouri University of Science & Technology
 MBA, Saint Louis University
 ME, Missouri University of Science & Technology

For a list of our program faculty (https://sever.wustl.edu/faculty/#engineering_management), please visit our website.

Requirements

Master of Engineering Management

Total units required: 30

In order to earn the degree, all courses must be passed with a C- or higher. In addition, a student must have a cumulative grade-point average of at least 2.70 over all courses applied toward the degree.

Code	Title	Units
Required: 18 units		
ETEM 504	Engineering Management & Financial Intelligence	3
ETEM 506	Technology Strategy & Marketing	3
ETEM 510	Understanding Emerging & Disruptive Technologies	3

ETEM 530	Project Planning Methodologies	3
ETEM 582	Human Performance in the Organization	3
or ETEM 581	Leading in a Technology-Rich World	
ETEM 585	MEM Capstone	3
Electives: Choose 12 units		
Applied Data Analytics Emphasis		
INFO 506	Fundamentals of Information Technology	3
INFO 574	Foundations of Analytics	3
INFO 575	Enterprise Data Management	3
INFO 576	Analytics Applications	3
Computer Science & Security Emphasis		
CSE 501N	Introduction to Computer Science	3
CSE 502N	Data Structures and Algorithms	3
CYBER 559	Introduction to Cybersecurity	3
CYBER 560	Cybersecurity Technical Fundamentals	3
CYBER 567	The Hacker Mindset: Cyber Attack Fundamentals	3
CYBER 568	Emerging Issues and Technology in Cybersecurity	3
ETEM 505	Decision Analysis & Optimization	3
Managing, Leading & Innovating Emphasis		
ETEM 520	Intro to Innovation & Entrepreneurship	3
ETEM 525	Innovating For Defense	3
ETEM 581	Leading in a Technology-Rich World	3
ETEM 582	Human Performance in the Organization	3
ETEM 586	Cross-Cultural Negotiation	3
ETEM 587	Communication Excellence for Influential Leadership	3
MGT 501C	CEL Entrepreneurial Consulting Team	3
Project Management & Operational Excellence Emphasis		
CNST 523A	Construction Cost Estimating	3
CNST 572	Legal Aspects of Construction	3
CNST 573	Fundamentals in Construction Management	3
HLTHCARE 502	Facilitation Skills/Change Management	3
HLTHCARE 503	Lean Healthcare Concepts, Tools and Lean Management Systems	3
HLTHCARE 504	Six Sigma Concepts and Tools	3
ETEM 531	Intro to Agile Project Management	3
ETEM 532	The Art & Science of Risk Management	3

Courses

Visit online course listings to view semester offerings for T55 ETEM (<https://courses.wustl.edu/CourseInfo.aspx?sch=T&dept=T55&crslvl=5:8>).

T55 ETEM 504 Engineering Management & Financial Intelligence

Discover the full picture of how business works within the organization. This course walks the student through the complete business cycle -- the roles the various functions play in a business operation as well as how information is used to make business decisions (e.g. financial data, marketing data, production data, economic data). To bring these learnings to life, this course also uses management simulation games and classroom competitions. Includes strategy, product planning and management, sales and support, research and development, manufacturing and supply chain, with particular emphasis on accounting, finance and the use of financial statements. Credit 3 units.

T55 ETEM 505 Decision Analysis & Optimization

Expand your ability to analyze and optimize complex business situations by leveraging the key data. Decision-making in today's complex world requires advanced analytical methods and tools, including mathematical modeling and quantitative techniques. Powerful tools for forecasting, finance, operations, production and logistics. Emerging technologies such as the Industrial Internet of Things (IIoT) and Block Chain are enabling a whole new set of possibilities! Credit 3 units.

T55 ETEM 506 Technology Strategy & Marketing

Learn the art and science of technology-rich strategy and marketing. Every business rises and falls on the value it brings to the customer and the value it simultaneously brings to the business itself. The engineer that understands and can communicate strategy and marketing is powerful! Business, technology and research budgets are allocated based on this value proposition, whether the commercialization or operationalization of the technology is 1 year out or 10 years out. Prerequisite: T55 504. Credit 3 units.

T55 ETEM 510 Understanding Emerging & Disruptive Technologies

We live in an era of rapid technology innovation and disruption. Blockbuster was the darling of Wall Street in 2004 and filed for bankruptcy in 2010. Blockbuster CEO in 2008: "Neither Redbox nor Netflix are even on the radar screen in terms of competition." Blockbuster is not alone in their blindness. Microsoft laughed off the first i-phone, and laughed off Google. IBM laughed off the first personal computer. These should be a horrible warning to all business leaders. Numerous technologies are threatening disruption today: block chain, Internet of Things (IoT), artificial intelligence, autonomous vehicles, unmanned aerial vehicles (UAVs), 3D printing, 5G wireless networks, gene editing. Understanding what they are and how they might disrupt will make or break countless companies in the coming years. Credit 3 units.

T55 ETEM 520 Intro to Innovation & Entrepreneurship

What exactly is innovation, and what is entrepreneurship? How do they drive business and society? Where do good ideas come from? Can anyone learn to be innovative or be an entrepreneur, and does "thinking like an engineer" help or hinder this process? What does an innovative organization look and act like? What barriers exist to innovation/entrepreneurship, and can they be overcome? This course introduces important frameworks and concepts, offers the student hands-on individual and team learning, includes numerous guest lecturers, and cultivates essential communication skills, all with the goal of fostering an understanding of, and confidence in, innovation and entrepreneurship - both for the individual as well as for the organization. Credit 3 units.

T55 ETEM 525 Innovating For Defense

This interdisciplinary entrepreneurial course gives students the unique opportunity to solve real problems facing the U.S. Department of Defense (DoD) and the U.S. Intelligence Community (IC). This course is open to all students who want to solve real problems for real customers in real time. Students will form their own interdisciplinary teams. Each team chooses their own DoD problems from those available to the class. Each problem has a dedicated DoD problem sponsor who will be regularly engaged with the team. Student teams learn and use the Lean Startup methodology and the Mission Model Canvas made famous by Stanford University to iteratively cut through the complexity of the problem. Teams develop a keen understanding of the problem, craft a business model and solution, and develop a prototype. Note: This course is sponsored by the U.S. DoD. It was originally developed at Stanford University and is now taught at 30+ U.S. universities. A student does NOT have to be a citizen of the United States to take this course; none of the DoD problems are classified. Recommended completion of T55 ETEM 520. Credit 3 units.

T55 ETEM 581 Leading in a Technology-Rich World

Leadership has fundamentally changed from top-down, autocratic and task-focused to collaborative and people-focused in just a few generations. Great senior leaders now get their people to do the greatest things. They must constantly learn, think innovatively, move and adapt very quickly, and collaborate over short and long distances. Students will learn new leadership skills, explore their individual leadership styles, and discuss the senior leadership challenges in an evolving tech-rich world. Credit 3 units.

T55 ETEM 582 Human Performance in the Organization

Have you ever wondered why some careers soar and others stall? Why you find it easy to build relationships with some people - but not others? Why some teams function well and consistently outperform others? Are you curious about what kind of manager you are, or will be? Do you want to know more about how organizations decide who to hire and who to promote? Human Performance in the Organization is designed to help you answer these questions. The content is a mix of relevant theory, personal reflection, and practical application. Our goal is to understand human performance at all levels of the organization. Topics include performance and career management; negotiation and influence; power and politics; mentoring and coaching; high-performance teams; conflict management; talent development and succession planning; and change management. Credit 3 units.

T55 ETEM 585 MEM Capstone

The MEM capstone course is the culmination of the Master of Engineering Management degree program. Taken at the end of the program, the capstone course gives each student (as part of a team) an opportunity to apply a cross-section of knowledge and skills gained toward a current challenge/project from industry, government or nonprofit organization. Student teams are encouraged to interface with the sponsoring organization throughout the semester. Prerequisite: Completion or co-enrollment in all Required MEM courses. Credit 3 units.

T55 ETEM 586 Cross-Cultural Negotiation

This course introduces students to and gives them practice with principle-based tools and techniques to reach agreements across varied cultures. Best practices from the most famous negotiators of ancient history (i.e., the Phoenicians) are studied and used as a methodology that includes the role of a third party in resolving conflict. The cross-cultural elements are based on multicultural experiences,

research studies and the real-life experiences of the instructor. The course is highly interactive (about 70% of the course work). Participants learn through role plays and simulation as well as through readings and case-study analysis.

Credit 3 units.

T55 ETEM 587 Communication Excellence for Influential Leadership

Exceptional communicators become extraordinary leaders. This course will guide students to learn to exceptionally communicate their message by applying refined nuances that inspire and transform those with whom they converse. Through a proven communicative process, students will acquire skills necessary to differentiate them as leaders. Students will learn how to communicate across a variety of settings using strategies that result in clear, vivid, and engaging exchanges. Students will practice: storytelling; creating and using clear visuals; engaging listeners; demonstrating passion when speaking; responding to questions with clarity and brevity, and, using their distinctive voice as a leadership asset. Each student will learn how to assess his or her own communication capabilities, adjust to different listeners, and how to evaluate speaker effectiveness and provide valuable feedback to others. Video recordings will be used to demonstrate incremental communicative changes throughout the course, and to show how these strategies bring about outstanding leadership.

Credit 3 units.
