Approved Degree Courses

This is a sample list of courses that have been previously approved for degree credit in the System Design and Management program. Courses are noted as depth, foundation, or elective courses. The list is provided to give perspective on the range of options available through the SDM program. Courses are added and removed each term. As a result, this document is for informational purposes only and should not be used for planning degree completion.

For the most up-to-date information on course offerings, including complete course descriptions, please visit the MIT course catalog.

ENGINEERING COURSES

1.001 ENGINEERING COMPUTATION AND DATA SCIENCE
12 CREDITS | ELECTIVE

1.124[J] SOFTWARE AND COMPUTATION FOR SIMULATION
12 CREDITS | ELECTIVE

1.125[J] ARCHITECTING AND ENGINEERING SOFTWARE SYSTEMS
12 CREDITS | ELECTIVE

1.126[J] PATTERN RECOGNITION AND ANALYSIS
12 CREDITS | ELECTIVE

1.128[J] COMPUTATIONAL GEOMETRY
12 CREDITS | ELECTIVE

1.146 ENGINEERING SYSTEMS ANALYSIS FOR DESIGN
12 CREDITS | DEPTH

1.200[J] TRANSPORTATION SYSTEMS ANALYSIS: PERFORMANCE AND OPTIMIZATION
12 CREDITS | DEPTH

1.201[J] TRANSPORTATION SYSTEMS ANALYSIS: DEMAND AND ECONOMICS
12 CREDITS | ELECTIVE
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2.76 GLOBAL ENGINEERING
12 CREDITS | ELECTIVE

2.77 FUNDAMENTALS OF PRECISION PRODUCT DESIGN
12 CREDITS | ELECTIVE

2.782[J] DESIGN OF MEDICAL DEVICES AND IMPLANTS
12 CREDITS | ELECTIVE

2.788 MECHANICAL ENGINEERING & DESIGN OF LIVING
12 CREDITS | ELECTIVE

2.79 BIOMATERIALS: TISSUE INTERACTIONS
12 CREDITS | ELECTIVE

2.810 MANUFACTURING PROCESSES AND SYSTEMS
12 CREDITS | ELECTIVE

2.821[J] STRUCTURAL MATERIALS
12 CREDITS | ELECTIVE

2.83 ENERGY, MATERIALS AND MANUFACTURING
12 CREDITS | DEPTH

2.830[J] CONTROL OF MANUFACTURING PROCESSES
12 CREDITS | ELECTIVE

2.854 INTRODUCTION TO MANUFACTURING SYSTEMS
12 CREDITS | DEPTH

2.884 PROCESS DATA ANALYTICS
9 CREDITS | ELECTIVE

2.888 PROFESSIONAL SEMINAR IN GLOBAL MANUFACTURING INNOVATION AND ENTREPRENEURSHIP
3 CREDITS | ELECTIVE

3.207 INNOVATION AND COMMERCIALIZATION
12 CREDITS | ELECTIVE

3.22 MECHANICAL BEHAVIOR OF MATERIALS
12 CREDITS | ELECTIVE

3.36 CELLULAR SOLIDS: STRUCTURE, PROPERTIES, APPLICATIONS
12 CREDITS | ELECTIVE
3.371 SELECTION AND PROCESSING OF STRUCTURAL MATERIALS  
12 CREDITS | ELECTIVE

3.560 INDUSTRIAL ECOLOGY OF MATERIALS  
12 CREDITS | ELECTIVE

3.57[J] MATERIALS SELECTION, DESIGN, AND ECONOMICS  
9 CREDITS | ELECTIVE

3.70 MATERIALS SCIENCE & ENGINEERING OF CLEAN ENERGY  
12 CREDITS | ELECTIVE

6.231 DYNAMIC PROGRAMMING AND REINFORCEMENT LEARNING  
12 CREDITS | ELECTIVE

6.241[J] DYNAMIC SYSTEMS AND CONTROL  
12 CREDITS | ELECTIVE

6.254 GAME THEORY WITH ENGINEERING APPLICATIONS  
12 CREDITS | ELECTIVE

6.267 HETEROGENEOUS NETWORKS: ARCHITECTURE, TRANSPORT, PROTOCOLS, AND MANAGEMENT  
12 CREDITS | ELECTIVE

6.268 NETWORK SCIENCE AND MODELS  
12 CREDITS | ELECTIVE

6.320 FEEDBACK SYSTEM DESIGN  
12 CREDITS | ELECTIVE

6.335[J] FAST METHODS FOR PARTIAL DIFFERENTIAL AND INTEGRAL EQUATIONS  
12 CREDITS | ELECTIVE

6.336[J] INTRODUCTION TO NUMERICAL SIMULATION  
12 CREDITS | ELECTIVE

6.338[J] PARALLEL COMPUTING  
12 CREDITS | ELECTIVE

6.341 DISCRETE-TIME SIGNAL PROCESSING  
12 CREDITS | ELECTIVE

6.345 AUTOMATIC SPEECH RECOGNITION  
12 CREDITS | ELECTIVE
6.374 ANALYSIS AND DESIGN OF DIGITAL INTEGRATED CIRCUITS
12 CREDITS | ELECTIVE

6.431 INTRODUCTION TO PROBABILITY
12 CREDITS | ELECTIVE

6.434[J] STATISTICS FOR ENGINEERS AND SCIENTISTS
12 CREDITS | DEPTH

6.438 ALGORITHMS FOR INFERENCEx
12 CREDITS | ELECTIVE

6.441 INFORMATION THEORY
12 CREDITS | ELECTIVE

6.450 PRINCIPLES OF DIGITAL COMMUNICATION
12 CREDITS | ELECTIVE

6.453 QUANTUM OPTICAL COMMUNICATION
12 CREDITS | ELECTIVE

6.521[J] CELLULAR BIOPHYSICS
12 CREDITS | ELECTIVE

6.522 QUANTITATIVE PHYSIOLOGY: ORGAN TRANSPORT SYSTEMS
12 CREDITS | ELECTIVE

6.525[J] MEDICAL DEVICE DESIGN
12 CREDITS | ELECTIVE

6.555[J] BIOMEDICAL SIGNAL AND IMAGE PROCESSING
12 CREDITS | ELECTIVE

6.561[J] FIELDS, FORCES, AND FLOWS IN BIOLOGICAL SYSTEMS
12 CREDITS | ELECTIVE

6.621 FUNDAMENTALS OF PHOTONICS
12 CREDITS | ELECTIVE

6.630 ELECTROMAGNETICS
12 CREDITS | ELECTIVE

6.631 OPTICS AND PHOTONICS
12 CREDITS | ELECTIVE

6.637 OPTICAL IMAGING DEVICES, AND SYSTEMS
12 CREDITS | ELECTIVE
6.685 ELECTRIC MACHINES
12 CREDITS | ELECTIVE

6.690 INTRODUCTION TO ELECTRIC POWER SYSTEMS
12 CREDITS | ELECTIVE

6.720[J] INTEGRATED MICROELECTRONIC DEVICES
12 CREDITS | ELECTIVE

6.728 APPLIED QUANTUM AND STATISTICAL PHYSICS
12 CREDITS | ELECTIVE

6.776 HIGH-SPEED COMMUNICATION CIRCUITS
12 CREDITS | ELECTIVE

6.777[J] DESIGN AND FABRICATION OF MICROELECTROMECHANICAL SYSTEMS
12 CREDITS | ELECTIVE

6.781[J] NANOSTRUCTURE FABRICATION
12 CREDITS | ELECTIVE

6.820 FOUNDATIONS OF PROGRAM ANALYSIS
12 CREDITS | ELECTIVE

6.823 COMPUTER SYSTEM ARCHITECTURE
12 CREDITS | DEPTH

6.824 DISTRIBUTED COMPUTER SYSTEM ENGINEERING
12 CREDITS | DEPTH

6.826 PRINCIPLES OF COMPUTER SYSTEMS
12 CREDITS | DEPTH

6.828 OPERATING SYSTEM ENGINEERING
12 CREDITS | DEPTH

6.829 COMPUTER NETWORKS
12 CREDITS | ELECTIVE

6.830 DATABASE SYSTEMS
12 CREDITS | ELECTIVE

6.832 UNDERACTUATED ROBOTICS
12 CREDITS | ELECTIVE
6.833 THE HUMAN INTELLIGENCE ENTERPRISE
12 CREDITS | ELECTIVE

6.834[J] COGNITIVE ROBOTICS
12 CREDITS | ELECTIVE

6.835 INTELLIGENT MULTIMODAL USER INTERFACES
12 CREDITS | ELECTIVE

6.836 MULTICORE PROGRAMMING
12 CREDITS | ELECTIVE

6.839 ADVANCED COMPUTER GRAPHICS
12 CREDITS | ELECTIVE

6.840[J] THEORY OF COMPUTATION
12 CREDITS | ELECTIVE

6.844 ARTIFICIAL INTELLIGENCE
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6.846 PARALLEL COMPUTING
12 CREDITS | ELECTIVE

6.849 GEOMETRIC FOLDING ALGORITHMS: LINKAGES, ORIGAMI, POLYHEDRA
12 CREDITS | ELECTIVE

6.852[J] DISTRIBUTED ALGORITHMS
12 CREDITS | ELECTIVE

6.857 NETWORK & COMPUTER SECURITY
12 CREDITS | ELECTIVE

6.858 COMPUTER SYSTEMS SECURITY
12 CREDITS | ELECTIVE

6.860 STATISTICAL LEARNING THEORY & APPLICATIONS
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6.861 ASPECTS OF A COMPUTATIONAL THEORY OF INTELLIGENCE
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6.862 APPLIED MACHINE LEARNING
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16.343 SPACECRAFT AND AIRCRAFT SENSORS AND INSTRUMENTATION
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16.355[J] CONCEPTS IN THE ENGINEERING OF SOFTWARE
12 CREDITS | ELECTIVE

16.422[J] HUMAN SUPERVISORY CONTROL OF AUTOMATED SYSTEMS
12 CREDITS | ELECTIVE

16.423[J] AEROSPACE BIOMEDICAL AND LIFE SUPPORT ENGINEERING
12 CREDITS | ELECTIVE

16.430 SENSORY-NEURAL SYSTEMS: SPATIAL ORIENTATION FROM END ORGANS TO BEHAVIOR AND ADAPTATION
12 CREDITS | ELECTIVE

16.453[J] HUMAN SYSTEMS ENGINEERING
12 CREDITS | DEPTH

16.470[J] STATISTICAL METHODS IN EXPERIMENTAL DESIGN
12 CREDITS | ELECTIVE

16.475[J] HUMAN-COMPUTER INTERFACE DESIGN COLLOQUIUM
4 CREDITS | ELECTIVE

16.511 AIRCRAFT ENGINES AND GAS TURBINES
12 CREDITS | ELECTIVE

16.512 ROCKET PROPULSION
12 CREDITS | ELECTIVE

16.522 SPACE PROPULSION
12 CREDITS | ELECTIVE

16.851 SATELLITE ENGINEERING
12 CREDITS | ELECTIVE

16.861 ENGINEERING SYSTEMS ANALYSIS FOR DESIGN
12 CREDITS | DEPTH

16.863[J] SYSTEM SAFETY CONCEPTS
12 CREDITS | DEPTH

16.885 AIRCRAFT SYSTEMS ENGINEERING
12 CREDITS | ELECTIVE
16.886 AIR TRANSPORTATION SYSTEMS ARCHITECTING  
12 CREDITS | ELECTIVE

16.89 SPACE SYSTEMS ENGINEERING  
12 CREDITS | ELECTIVE

12 CREDITS | ELECTIVE

20.201 FUNDAMENTALS OF DRUG DEVELOPMENT  
12 CREDITS | ELECTIVE

20.203[J] NEUROTECHNOLOGY IN ACTION  
12 CREDITS | ELECTIVE

20.405[J] PRINCIPLES OF SYNTHETIC BIOLOGY  
12 CREDITS | ELECTIVE

20.410[J] MOLECULAR, CELLULAR, AND TISSUE BIOMECHANICS  
12 CREDITS | ELECTIVE

20.420[J] BIOMOLECULAR KINETICS AND CELLULAR DYNAMICS  
12 CREDITS | ELECTIVE

20.445 METHODS & PROBLEMS IN MICROBIOLOGY  
12 CREDITS | ELECTIVE

20.452 PRINCIPLES OF NEUROENGINEERING  
12 CREDITS | ELECTIVE

20.463[J] BIOMATERIALS SCIENCE AND ENGINEERING  
12 CREDITS | ELECTIVE

20.490 COMPUTATIONAL SYSTEMS BIOLOGY: DEEP LEARNING IN THE LIFE SCIENCES  
12 CREDITS | DEPTH

20.554 FRONTIERS IN CHEMICAL BIOLOGY  
12 CREDITS | ELECTIVE

22.13 NUCLEAR ENERGY SYSTEMS  
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22.38 PROBABILITY AND ITS APPLICATIONS TO RELIABILITY, QUALITY CONTROL, AND RISK ASSESSMENT  
12 CREDITS | ELECTIVE
22.55 RADIATION BIOPHYSICS
12 CREDITS | ELECTIVE

22.611[J] INTRODUCTION TO PLASMA PHYSICS 1
12 CREDITS | ELECTIVE

22.811[J] SUSTAINABLE ENERGY
12 CREDITS | ELECTIVE

EM.428 MULTIDISCIPLINARY DESIGN OPTIMIZATION
12 CREDITS | DEPTH

IDS.131 STATISTICS, COMPUTATION AND APPLICATIONS
12 CREDITS | ELECTIVE

IDS.330 REAL OPTIONS FOR PRODUCT AND SYSTEMS DESIGN
6 CREDITS | DEPTH

IDS.333 RISK AND DECISION ANALYSIS
6 CREDITS | DEPTH

IDS.412 SCIENCE, TECHNOLOGY, & PUBLIC POLICY
12 CREDITS | ELECTIVE

IDS.521 ENERGY SYSTEMS AND CLIMATE CHANGE MITIGATION
12 CREDITS | ELECTIVE

IDS.526[J] SUSTAINABILITY SCIENCE AND ENGINEERING
9 CREDITS | ELECTIVE

SCM.264 DATABASES AND DATA ANALYSIS FOR SUPPLY CHAIN MANAGEMENT
6 CREDITS | ELECTIVE

SCM.266 FREIGHT TRANSPORTATION
6 CREDITS | DEPTH
MANAGEMENT COURSES

15.011 ECONOMIC ANALYSIS FOR BUSINESS DECISIONS
9 CREDITS | FOUNDATION

15.020 ECONOMICS OF ENERGY, INNOVATION, AND SUSTAINABILITY
12 CREDITS | ELECTIVE

15.025 GAME THEORY FOR STRATEGIC ADVANTAGE
9 CREDITS | ELECTIVE

15.027 BUSINESS OPPORTUNITIES IN DEVELOPING ECONOMIES
6 CREDITS | ELECTIVE

15.034 ECONOMETRICS FOR MANAGERS: CORRELATION & CAUSALITY IN A BIG DATA WORLD
9 CREDITS | FOUNDATION

15.038 ENERGY ECONOMICS AND POLICY
12 CREDITS | ELECTIVE

15.068 STATISTICAL CONSULTING
9 CREDITS | ELECTIVE

15.071 THE ANALYTICS EDGE
12 CREDITS | FOUNDATION

15.079 INTRODUCTION TO APPLIED PROBABILITY
12 CREDITS | ELECTIVE

15.083 INTEGER PROGRAMMING AND COMBINATORIAL OPTIMIZATION
12 CREDITS | ELECTIVE

15.124 EVALUATING A BIOMEDICAL BUSINESS CONCEPT
9 CREDITS | ELECTIVE

15.128 REVOLUTIONARY VENTURES
9 CREDITS | ELECTIVE

15.132 MEDICINE FOR MANAGERS AND ENTREPRENEURS
9 CREDITS | ELECTIVE

15.137 CASE STUDIES AND STRATEGIES IN DRUG DISCOVERY AND DEVELOPMENT
6 CREDITS | ELECTIVE
15.141 ECONOMICS OF HEALTH CARE INDUSTRIES  
6 CREDITS | ELECTIVE

15.225 MODERN BUSINESS IN CHINA: CHINA LAB  
12 CREDITS | ELECTIVE

15.232 EFFECTIVE BUSINESS MODELS IN FRONTIER MARKETS  
6 CREDITS | ELECTIVE

15.235 BLOCKCHAIN & MONEY  
9 CREDITS | ELECTIVE

15.248 ISRAEL LAB: STARTUP NATION’S ENTREPRENEURSHIP & INNOVATION ECOSYSTEM  
9 CREDITS | ELECTIVE

15.269 LEADERSHIP STORIES: LITERATURE, ETHICS, AND AUTHORITY  
9 CREDITS | ELECTIVE

15.270 ETHICAL PRACTICE: LEADING THROUGH PROFESSIONALISM, SOCIAL RESPONSIBILITY, AND SYSTEM DESIGN  
6 CREDITS | ELECTIVE

15.281 ADVANCED LEADERSHIP COMMUNICATION  
9 CREDITS | ELECTIVE

15.282 ENACTING LEADERSHIP: SHAKESPEARE & PERFORMANCE  
9 CREDITS | ELECTIVE

15.283 SOCIAL MEDIA MANAGEMENT: PERSUASION IN NETWORKED CULTURE  
9 CREDITS | ELECTIVE

15.286 COMMUNICATING WITH DATA  
6 CREDITS | ELECTIVE

15.310 PEOPLE, TEAMS, AND ORGANIZATIONS  
9 CREDITS | FOUNDATION

15.318 DISCOVERING YOUR LEADERSHIP SIGNATURE  
9 CREDITS | ELECTIVE

15.320 STRATEGIC ORGANIZATIONAL DESIGN  
9 CREDITS | FOUNDATION
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15.389 GLOBAL ENTREPRENEURSHIP LAB
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15.395 ENTREPRENEURSHIP WITHOUT BORDERS
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15.398 CORPORATIONS AT THE CROSSROADS: THE CEO PERSPECTIVE
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15.431 ENTREPRENEURIAL FINANCE & VENTURE CAPITAL
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15.878 CAPSTONE SEMINAR IN SUSTAINABILITY AND CORPORATE RESPONSIBILITY
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15.912 STRATEGIC MANAGEMENT OF INNOVATION & ENTREPRENEURSHIP
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15.915 LABORATORY FOR SUSTAINABLE BUSINESS
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15.933 STRATEGIC OPPORTUNITIES IN ENERGY
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### SPLIT ENGINEERING AND MANAGEMENT COURSES

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15.428[J] TOOLS FOR ANALYSIS: DESIGN FOR REAL ESTATE AND INFRASTRUCTURE DEVELOPMENT
6 CREDITS | ELECTIVE

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9 CREDITS | ELECTIVE

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15.657[J] TECHNOLOGY, GLOBALIZATION, AND SUSTAINABLE DEVELOPMENT
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15.762[J] SUPPLY CHAIN PLANNING
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15.763[J] MANUFACTURING SYSTEM AND SUPPLY CHAIN DESIGN
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EM.427[J] TECHNOLOGY ROADMAPPING AND DEVELOPMENT
12 CREDITS | ELECTIVE

SCM.290 SUSTAINABLE SUPPLY CHAIN MANAGEMENT
6 CREDITS | ELECTIVE