

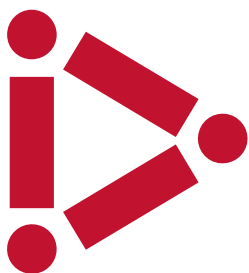
Integrated Innovation Institute

Master of Science in Technology Ventures Applied Engineering Courses – 2021-22

For students enrolled in the MSTV-Dual degree program, 36 units of pre-approved Applied Engineering & Technology coursework must be completed during the home engineering degree requirements. These units will double count within the MSTV degree and MS in Engineering degree.

Biomedical Engineering

- 42-447 Rehabilitation Engineering (9-units)
- 42-630 Introduction to Neuroscience for Engineers
- 42-632 Neural Signal Processing (crosslisted with 18-698)
- 42-640, Image-Based Computational Modeling & Analysis (Crosslisted with 24658)
- 42-642 Biological Fluid Mechanics
- 42-643 Microfluids
- 42-670 Biomaterial Host Interactions in Regenerative Medicine
- 42-671 Precision Medicine for Biomedical Engineers (9-units)
- 42-678 Medical Device Innovation (6-units)
- 42-679 Medical Device Realization (6-units)
- 42-341 Introduction to Biomechanics (9-units)
- 42-611 Engineering Biomaterials
- 42-612 Tissue Engineering
- 42-613 Polymeric Biomaterials (9-units)
- 42-648 Cardiovascular Mechanics
- 42-661 Surgery for Engineers (9-units)
- 42-672 Fundamentals of Biomedical Imaging and Image Analysis
- 42-674 Engineering for Survival: ICU Medicine (9-units)
- 42-673 Stem Cell Engineering (9-units)



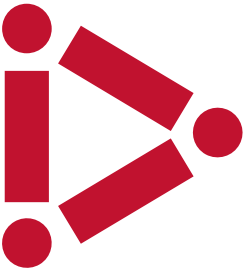
42-675 Fundamentals of Computational Biomedical Engineering
42-691, Biomechanics of Human Movement (Crosslisted with 24663)
42-735 Medical Images Analysis
42-737 Biomedical Optical Imaging
42-744 Medical Devices
42-772 Special Topics: Applied Nanoscience and Nanotechnology
(crosslisted with 27-765)

Chemical Engineering

06-606 Comp. Methods for Large-Scale Process Design & Analysis (9 units)
06-607 Physical Chemistry of Colloids & Surfaces (9 units)
06-609, Physical Chemistry of Macromolecules (*9 Units)
06-614, Special Topics: Atmospheric Nanoparticles & Climate
06-620 Global Atmospheric Chemistry: Fundamentals and Data Analysis
06-626, Bacterial Cell Culture & Fermentation (*6 unit mini)
06-627, Mammalian Cell Culture (*6 Units)
06-635 Production & Supply Chain Optimization
06-663 Analysis and Modeling of Transport Phenomena
06-665 Process System Modeling
06-681, Special Topics: Data Science & Machine Learning in Chemical Engineering (6-units)
06-702 Advanced Reaction to Kinetics (PhD Core)
06-704 Advanced Heat and Mass Transfer (PhD Core)
06-705, Advanced Chemical Engineering Thermodynamics
06-713, Mathematical Techniques in Chemical Engineering
06-714, Surfaces & Adsorption
06-720 Advanced Process Systems Engineering (PhD Core)
06-722 BioProcess Design

Civil and Environmental Engineering

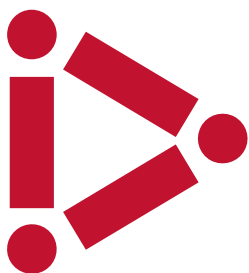
12-704, Probability & Estimation Methods for Engineering Systems
17-706, Civil Systems Investment Pricing & Planning
12-711 BIM for Engineering, Construction and Facility Management



12-714, Environmental Life Cycle Assessment
12-718 Environmental Engineering Sustainability and Science Project
12-724 Biological Wastewater Treatment
12-728 Remediation Engineering
12-735 Special Topics: Urban Systems Modeling
12-740 Data Acquisition (6-units)
12-741 Data Management (6-units)
12-745 Advanced Infrastructure Systems Project
12-748 Mechanical and Electrical System Design for Buildings (6-units)
12-749, Climate Change Adaptation (6 units)
12-750 Infrastructure Management (Cross-listed with 19-617)
12-752 Special Topics: Data-Driven Building Energy Management (6-units)
12-761 Special Topics: Sensing and Data Mining for Smart Structures and Systems
12-783, Geographic Information Systems

Electrical and Computer Engineering

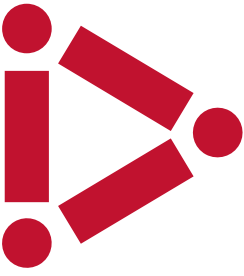
18-482, Telecommunications Technology & Policy for the Internet Age
(cross-listed with 19-402 & 19-722)
18-600, Foundations of Computer Systems
18-612 Neural Technology: Sensing and Stimulation
18-613 Nano-Bio-Photonics
18-631 Introduction to Information Security
18-638 Mobile & IoT Security
18-639 Policies of the Internet (crosslisted with 19-639)
18-645 How to Write Fast Code
18-650 Policies of a Wireless System
18-651 Networked Cyber-Physical Systems
18-662, Principles & Engineering Applications of AI
18-697 Statistical Discovery and Learning
18-698 Neural Signal Processing (crosslisted with 42-632)
18-730 Introduction to Computer Security
18-733, Applied Cryptography



18-738, Sports Technology
18-743, Neuromorphic Computer Architecture & Processor Design
18-734 Foundations of Privacy
18-739F Special Topics in Security: Security of Fairness and Deep Learning
18-741, Computer Networks
18745 Rapid Prototyping of Computing Systems
18-785, Data Inference, and Applied Machine Learning
18-794 Pattern Recognition Theory
18-847, ST in Computer Systems: Neuromorphic Computer Architecture

Materials Science and Engineering

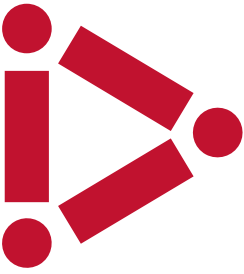
27-700 Special Topics: Energy Storage Materials and Systems
27-701, Additive Manufacturing Laboratory (Cross-listed with 24-633 & 39-603)
27-702 Metal-Environment Reactions
27-703, Additive Manufacturing and Materials
27-705 Nanostructured Materials
27-706 Hard and Superhard Materials (*6 units)
27-709 Engineering Biomaterials
27-715 Applied Magnetism and Magnetic Materials
27-721 Processing Design
27-724 Materials for Energy Storage
27-725 Materials in Nuclear Energy Systems
27-728 Materials for Future Energy Systems
27-729 Solid State Devices for Energy Conversion
27-731 Special Topics: Hard and Superhard Materials
27-733 Principles of Growth and Processing of Semiconductors
27-737 Mechanical Behavior in Extreme Environments
27-742 Processing and Properties of Thin Films
27-752 Foundations of Semiconductor Nanostructures
27-764 Special Topics: Data Analytics for Materials Science
27-765 Special Topics: Engineering Optical and Thermal Energy Transport: Energy Efficiency Applications



27-765 Additive Manufacturing and Materials
27-765 Additive Manufacturing Laboratory (crosslisted with 39-603)
27-765 Special Topics: Applied Nanoscience and Nanotechnology
(crosslisted with 47-772)
27-792 Solidification Processing

Mechanical Engineering

24-613 Special Topics: Particle Technology
24-628, Energy Transport & Conversion at a Nanoscale
24-629 Direct Solar and Thermal Energy Conversion
24-632 Special Topics: Additive Manufacturing Processing and Product
Development (crosslisted with 39-601 & 24-632)
24-633, Additive Manufacturing Laboratory (Cross-listed with 27-701 &
39603)
24-642 Fuel Cell Systems
24-645 Special Topics: Air Pollutant Sensor Design and Application
24-651 Materials Selection for Mechanical Engineers
24-656, Introduction to Vibrations with Applications (Cross-listed with 24-
356)
24-658 Computational Bio-Modeling and Visualization (crosslisted with 42-
640)
24-662 Special Topics: Robotic Systems and Internet of Things
24-663, Special Topics: Biomechanics of Human Movement (Cross-listed
with 42-691)
24-682, Special Topics: Design for the Fourth Industrial Revolution
24-683 Design for Manufacture and the Environment
24-671 Special Topics: Electromechanical Systems Design
24-672 Special Topics in DIY Design and Fabrication
24-673 Soft Robots - Mechanics, Design and Modeling
24-678 Special Topics: Computer Vision for Engineers
24-679 Special Topics: Designing & Deploying AI/ML Systems
24-689 Special Topics: Modern Manufacturing in Steeltown
24-775 Special Topics: Robot Design and Experimentation



24-778 Mechatronic Design (crosslisted with 16-778, 18-578, & 24-778)
24-787 Artificial Intelligence and Machine Learning for Engineering Design
24-788 Artificial Intelligence and Machine Learning – Project
24-789, Special Topics: Deep Learning for Engineers

College of Engineering

39-603 Additive Manufacturing Laboratory (Cross-listed with 27-701 & 24633)

Chemistry

09-860 Special Topics in Computational Chemistry: Machine Learning for Experimentalists (2 6-unit minis)

School of Computer Science

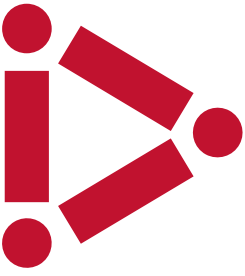
05-818, Design Educational Games
15-686, Neural Computation
15-694, Cognitive Robots
16-865, Advanced Mobile Robot Development
16-761, Mobile Robots
16-785, Integrated Intelligence in Robotics: Vision Language Planning: Social Robots
16-861, Space Robotics
17-630, Data Structures and Algorithms for Engineers
17-634, Applied Machine Learning (6 units)
17-644, Applied Deep Learning (6 units)
17-637, Web Application Development

ETIM

19-707, Multiple Criteria & Decision Making

INI

14-813, Special Topics: Security & Privacy Enhancing Technologies



NOTE: This is a sample list of Applied Engineering & Technology coursework; MSTV students will receive an official list of eligible courses each semester as part of the advising process.

Last updated: 11/12/21

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Mellon
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