Approved electives outside the Mathematics Department for the Applied Mathematics Major

**Bioengineering**
- BIOEN 5001: Biophysics
- BIOEN 5101: Engineering Principles in Bioinstrumentation
- BIOEN 5201: Biomechanics

**Chemical Engineering**
- CH EN 3353: Fluid Mechanics
- CH EN 3453: Heat Transfer
- CH EN 4253: Process Design
- CH EN 5203: State Space Methods

**Computer Science**
- CS 3100: Models of Computation
- CS 4150: Algorithms
- CS 5150: Advanced Algorithms
- CS 5160: Computational Geometry
- CS 5310: Robotics
- CS 5320: Computer Vision
- CS 5600: Introduction to Computer Graphics
- CS 5605: Honors Introduction to Computer Graphics
- CS 5610: Interactive Computer Graphics
- CS 5630: Scientific Visualization

**Electrical and Computer Engineering**
- ECE 3300: Fundamentals of Electromagnetics and Transmission Lines
- ECE 3500: Fundamentals of Signals and Systems
- ECE 3510: Introduction to Feedback Systems
- ECE 3740: Introduction to Quantum Theory and Relativity
- ECE 5330: Introduction to Microwave Tubes and Electron Devices
- ECE 5340: Numerical Techniques in Electromagnetics
- ECE 5510: Random Processes
- ECE 5520: Digital Communication Systems
- ECE 5530: Digital Signal Processing
- ECE 5550: Survey of Function Approximation Methods
- ECE 5570: Control of Electric Motors

**Geology and Geophysics**
- GEO 5060: Global Geophysics
- GEO 5210: Seismology I: Tectonophysics and Elastic Waves
- GEO 5220: Seismology II: Exploration and Engineering Seismology
- GEO 5230: Physical Fields I: Gravity, Magnetics, and Thermal Physics
- GEO 5240: Physical Fields II: Electromagnetic Methods
- GEO 5250: Inversion Theory and Applications
- GEO 5310: Heat and Fluids
- GEO 5320: Signal and Image Processing in the Geosciences
- GEO 5330: Earthquake Seismology and Hazard Assessment
- GEO 5360: Fluid Dynamics of Earth Materials
- GEO 5390: Solute Transport and Subsurface Remediation
Materials Science and Engineering
MSE 3061: Transport Phenomena in Materials Science and Engineering

Mechanical Engineering
ME EN 5200: Classical Control Systems
ME EN 5210: State Space Methods
ME EN 5300: Advanced Strength of Materials
ME EN 5400: Vibrations
ME EN 5410: Intermediate Dynamics
ME EN 5500: Engineering Elasticity
ME EN 5510: Introduction to Finite Elements
ME EN 5600: Intermediate Thermodynamics
ME EN 5610: Modern Physics in Engineering
ME EN 5700: Intermediate Fluid Dynamics
ME EN 5710: Aerodynamics
ME EN 5720: Computational Fluid Dynamics
ME EN 5810: Thermal Systems Design

Metallurgical Engineering
MET E 5610: Proton Exchange Membrane Fuel Cells
MET E 5670: Mineral Processing I
MET E 5680: Mineral Processing II
MET E 5700: Hydrometallurgy
MET E 5710: High-Temperature Chemical Processing
MET E 5750: Rate Processes
MET E 5760: Process Synthesis, Design, and Economics

Mining Engineering
MG EN 5050: Mine Ventilation and Air Conditioning
MG EN 5060: Heat Energy Systems
MG EN 5150: Mechanics of Materials
MG EN 5160: Rock Mechanics Applications
MG EN 5290: Introduction to Finite Element and other Numerical Models in Geomechanics

Physics
PHYS 3740: Introduction to Quantum Theory and Relativity
PHYS 3760: Principles of Thermodynamics and Statistical Mechanics
PHYS 4410: Classical Physics I (Honors)
PHYS 4420: Classical Physics II (Honors)
PHYS 5010: Theoretical Classical Mechanics and Quantum Mechanics
PHYS 5020: Theoretical Electricity and Magnetism and Statistical Physics
PHYS 5110: Introduction to Nuclear and Particle Physics
PHYS 5450: Introduction to Quantum Mechanics (Honors)
PHYS 5460: Quantum Mechanics and Statistical Mechanics (Honors)
PHYS 5510: Solid-State Physics I (Honors)
PHYS 5520: Solid-State Physics II (Honors)
PHYS 5530: Introduction to Disordered Solids (Honors)
PHYS 5580: Extragalactic Astronomy and Cosmology (Honors)

9/2011