1. **Require/Strongly-Recommend to elect One from Core Environment Courses:**
   - ENGR 538 – Intro to Environmental Engineering (offered every year by ME or CE)
   - ME 529 – Environmental Protection for Energy Systems (in 2-year)

2. **Require/Strongly-Recommend to elect One from Core Energy Courses:**
   - ME 532 - Design of Power/Propulsion Systems (in 1-year)
   - ME 534 – Design of HVAC/Refrigeration (in 2-year)

3. **Elect One or More from Qualified Courses (Short List):**
   - ME 526 – Alternative Energy Engineering (in 2- or 3-year)
   - ME 527 – Renewable Energy and Technology (in 2- or 3-year)
   - ME 529 – Environmental Protection for Energy Systems (in 2-year)
   - ME 531 – Optimal Design of Energy Systems (in 1- or 2-year)
   - ME 532 - Design of Power/Propulsion Systems (in 1-year)
   - ME 533 – Energy Conservation and HVAC (in 2- or 3-year)
   - ME 534 – Design of HVAC/Refrigeration (in 2-year)
   - ME 537 – Air Pollution & Control (in 2- or 3-year)
   - ENGR 538/ME 438 – Intro to Environmental Engineering (in 1-year)
   - ME 550 – Waste Management & Combustion (in 2- or 3-year)
   - ME 552 – Introduction to Flight Dynamics (in 1-year)
   - ME 581 - Intro to Microfluidic and Lab-on-Chip Technology (in 2- or 3-year)
Elective Courses (Long List) -- Take 3 or more
-- Energy & Environment Concentration

ME 526 – Alternative Energy Engineering
ME 527 – Renewable Energy and Technology
ME 529 – Environmental Protection for Energy Systems
ME 530 – Applied Energy Systems
ME 531 – Optimal Design of Energy Systems
ME 532 – Design Power/Propulsion Systems
ME 533 – Energy Conservation and HVAC
ME 534 – Design HVAC/Refrigeration
ME 536 – Thermal Environmental Engineering
ME 537 – Air Pollution & Control
ENGR 538/ME 438 – Intro to Environmental Engineering
ME 539 – Combustion and Incineration
ME 543 – Heat Exchanger: Design and Analysis
ME 552 – Introduction to Flight Dynamics
ME 550 – Waste Management/Combustion
ME 581 – Intro to Microfluidic and Lab-on-Chip Technology

(The followings need approval from Program Chair)

ME 544 – Intro to Multiphase Flows/Systems
ME 548 – Intermediate Heat Transfer
ME 549 – Intermediate Fluid Dynamics
ME 554 – Aerospace Design
ME 574 – Orbital Mechanics and Mission Design
# Courses/Specialty in Mechanical Systems

<table>
<thead>
<tr>
<th>No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>ENGR 503/ENGR 403</td>
<td>Control Systems</td>
<td>Control Engineer</td>
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<td></td>
<td>ME 510</td>
<td>Modern Control Systems</td>
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<td>10.</td>
<td>ME 503/ME 404</td>
<td>Structural Mechanics</td>
<td>Structural Engineer</td>
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<td>ME 504</td>
<td>Finite Element Methods</td>
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<td>ME 566</td>
<td>Vibration and Structural Dynamics</td>
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<td>ME 457</td>
<td>Applied Ridge Body Dynamics</td>
<td>Vibration Engineer</td>
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<td>ME 565</td>
<td>Nonlinear Dynamics and Chaos</td>
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<td>ME 592</td>
<td>Experimental Vibration and Acoustics</td>
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<td>ME 560</td>
<td>Introduction to Acoustics</td>
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<td>ME 660</td>
<td>Intermediate Acoustics</td>
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<td>ME 760</td>
<td>Advanced Topics in Acoustics</td>
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<td>13.</td>
<td>(ME 314)</td>
<td>Fundamentals of Mechatronics</td>
<td>Mechatronics Engr</td>
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<td>ME 577</td>
<td>Applied Mechatronics</td>
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<td>ENGR 501</td>
<td>Intro to Mechatronics</td>
<td>Robotics Engineer</td>
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<td>EE/ME 576</td>
<td>Intro to Robotics</td>
<td>MEMS/Nano Engineer</td>
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<td>14.</td>
<td>ME 502</td>
<td>Intro to MEMS/Electronic Packaging</td>
<td>Materials Engineer</td>
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<td>ME 584</td>
<td>Introduction to Nanotechnology</td>
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<td>MSE 501</td>
<td>Intro to Material Engineering</td>
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<td>ENGR 522</td>
<td>Mechanical Properties of Materials</td>
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<tr>
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<td>MSE 591</td>
<td>Composite Materials</td>
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</tbody>
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Courses/Specialty in Energy(Environment) Systems

1. **ME 530/ME 311 – Applied Energy Systems**
   - ME 526 – Alternative Energy Engineering
   - ME 527 – Renewable Energy and Technologies
   - ME 531 – Design/Optimization of Thermal/Energy Systems → Energy Engineer

2. **ME 530/ME 311 – Applied Energy Systems**
   - ME 532 – Design Power/Propulsion Systems → Power/Propulsion Engineer

3. **ME 530/ME 311 – Applied Energy Systems**
   - ME 533 – Energy Conservation & HVAC
   - ME 534 – Design HVAC/Refrigeration → HVAC/Refrigeration Engineer

4. **ENGR 538/ME 438 – Intro to Environmental Engineering**
   - ME 529 – Envi’tal Protection Energy Systems → Environmental Engineer

5. **ME 536 – Thermal Environmental Engineering**
   - ME 537 – Air Pollution & Control → Air Pollution Engineer

6. **ENGR 538/ME 438 – Intro to Environmental Engineering**
   - ME 550 – Waste Management/Combustion → Waste Treatment Engineer

7. **ME 544 – Intro to Multiphase Flows/Systems**
   - ME 539 – Combustion and Incineration → Combustion Engineer

8. **ME 552 – Introduction to Flight Dynamics**
   - ME 554 – Aerospace Design → Aerospace Engineer

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**Mechanical Engineering Department**