SELECTION OF ELECTIVES- ME PROGRAM
MECHANICAL ENGINEERING (ME ) PROGRAM

List of technical electives (ME Program)
Students enrolled in the Mechanical engineering program are allowed to take two courses (each three credit hours) from: College of Science, College of Engineering Sciences, or College of Computer Science & Engineering, with the following restrictions:
1) The course must be 3XX or 4XX levels.
2) The following courses are not accepted because of overlap with ME required courses: CE 432, CHE 300, CHE 303.
3) The following courses overlap with ME elective courses and will not be credited if both are taken: CHE 432/ME437, CHE 463/ME 480, CHE 472/ME 472, CHE 473/ME 496, CHE 480

List of major electives
(TWO ME ELECTIVES ME 4XX CAN BE TAKEN )
One of them say ME 4xx -ME (Design) Elective 1 must be from a restricted list of Electives with Major Design Components (Table 1)
The second ME Elective can be any course from the all ME Elective list in (Table

Table 1- Select One Elective from the Following List (ME 4xx- ME (Design) 
Elective 1)
Mandatory ME (Design) Elective 1
Tentative List
(One Course (3 credits) from the Following List)

- ME 437 Design and Rating of Heat Exchangers
- ME 438 Pumping Machinery
- ME 463 Tool Design (Production Engineering I)
- ME 469 Computer-Aided Manufacturing(CAD/CAM)
- ME 483 Mechanisms – Theory and Design (3-0-3)
- ME 485 Mechanical System Design
- ME 486 Optimization of Mechanical Systems
- ME 489 FEA in Mechanical Design
- ME 443: Mechanics of Robotic Manipulators (3-0-3)
- ME 444: Introduction to Mechatronics (2-3-3) (MIT Collaboration Benefit)
A multi-discipline course ME ,EE and SE Department
- ME 409: Design and Manufacturing of Composite Structures (3-0-3)
- ME 442  Design of PV-Solar Systems (3-0-3) *(MIT Collaboration Benefit)* A multi-discipline course ME and EE Department
- ME 408  Rapid Prototyping and Digital Manufacturing (2-3-3)
- ME 459  Design of Renewable Energy Systems (3-0-3) *(MIT Collaboration Benefit)* A multi-discipline course ME and CHE Department
- ME 465  Designing Robust Products and Systems (3-0-3) *(MIT Collaboration Benefit)* A multi-discipline course ME and SE Department

**Table 2- Select One Elective from the Following List (ME 4xx- ME Elective II)**

- ME 408 Rapid Prototyping and Digital Manufacturing  
  (2-3-3)
- ME 409 Design and Manufacturing of Composite Structures  
  (3-0-3)
- ME 410 Ceramics  
  (3-0-3)
- ME 422 Propulsion Systems  
  (3-0-3)
- ME 423 Energy Conversion  
  (3-0-3)
- ME 424 Maintenance Engineering  
  (3-0-3)
- ME 425 Compressible Fluid Flow  
  (3-0-3)
- ME 427 Turbomachinery  
  (3-0-3)
- ME 428 Structure of Flight Vehicles  
  (3-0-3)
- ME 430 Air Conditioning  
  (3-0-3)
- ME 431 Refrigeration  
  (3-0-3)
- ME 432 Internal Combustion Engines  
  (3-0-3)
- ME 433 Fundamentals of Combustion  
  (3-0-3)
- ME 434 Wind Engineering  
  (3-0-3)
- ME 435 Thermal Power Plants  
  (2-3-3)
- ME 436 Fluid Power Systems  
  (3-0-3)
ME 437 Design and Rating of Heat Exchangers  
ME 438 Pumping Machinery  
ME 439 Solar Energy Conversion  
ME 440 Convective Heat and Mass Transfer  
ME 441 Energy and the Environment  
ME 442 Design of PV-Solar Systems  
ME 443 Mechanics of Robotic Manipulators  
ME 444 Introduction to Mechatronics  
ME 445 Principles of Nanostructure Materials & Sensor Technology  
ME 446 Computational Fluid Dynamics and Heat Transfer  
ME 450 Mechanical Engineering Experimentation  
ME 459 Design and Operation of Renewable Energy Systems  
ME 460 Thermal Desalination Systems  
ME 461 Risk Management Tools In Systems Design and Operation  
ME 463 Tool Design  
ME 464 Quality in Manufacturing  
ME 465 Designing Robust Products and Systems  
ME 466 Fundamentals of Heat Treatment  
ME 468 Casting and Welding Engineering  
ME 469 Computer-Aided Manufacturing  
ME 471 Mechanical Metallurgy  
ME 472 Corrosion Engineering I
ME 473  Corrosion Engineering II  (3-0-3)
ME 474  Physical Metallurgy  (3-0-3)
ME 475  Mechanical Behavior of Materials  (3-0-3)
ME 476  Non-Metallic Materials  (3-0-3)
ME 477  Non-Ferrous Extractive Metallurgy  (3-0-3)
ME 478  Iron and Steel Making  (3-0-3)
ME 479  Modern Materials  (3-0-3)
ME 480  Plastics Materials and Processing  (3-0-3)
ME 481  Advanced Dynamics  (3-0-3)
ME 482  Mechanical Vibrations.  (3-0-3)
ME 483  Mechanisms  (2-3-3)
ME 484  Acoustics  (3-0-3)
ME 485  Mechanical System Design  (3-0-3)
ME 486  Optimization of Mechanical Systems  (3-0-3)
ME 487  Mechanics of Materials  (3-0-3)
ME 488  Systems Control  (3-0-3)
ME 489  Finite Element Analysis in Mechanical Design  (3-0-3)
ME 494  Fundamentals of Nondestructive Evaluation  (3-0-3)
ME 495  Directed Research / BSc Research Thesis  (3-0-3)
ME 490  Special Topics in Mechanical Engineering  (3-0-3)
ME 491  Special Topics in Energy  (3-0-3)
ME 492  Special Topics in Dynamics & Control  (3-0-3)
ME 493 Special Topics in Materials & Manufacturing (3-0-3)

List of general electives

The students can take any GS course with the following conditions

GS Elective 1 - can be taken any 200 or above level course from GS courses

GS Elective 2 - can be taken from any 200 or above level course from GS courses

List of courses to be included in major GPA calculation.

ME 201 Dynamics (3-0-3)
ME 203 Thermodynamics I (3-0-3)
ME 204 Thermodynamics II (3-0-3)
ME 205 Materials Science (for non-ME students) (2-3-3)
ME 210 Mechanical Engineering Drawing & Graphics (2-3-3)
ME 216 Materials Science and Engineering (3-0-3)
ME 217 Materials Lab (0-3-1)
ME 218 Introduction to Mechanical Engineering Design (1-3-2)
ME 307 Machine Design I (3-0-3)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ME 308</td>
<td>Machine Design II</td>
<td>(3-3-4)</td>
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<tr>
<td>ME 309</td>
<td>Mechanics of Machines</td>
<td>(3-0-3)</td>
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<td>ME 311</td>
<td>Fluid Mechanics</td>
<td>(3-0-3)</td>
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<td>ME 315</td>
<td>Heat Transfer</td>
<td>(3-0-3)</td>
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<td>ME 316</td>
<td>Thermofluids Lab</td>
<td>(0-3-1)</td>
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<td>ME 322</td>
<td>Manufacturing Processes</td>
<td>(3-0-3)</td>
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<tr>
<td>ME 323</td>
<td>Manufacturing Lab</td>
<td>(0-3-1)</td>
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<tr>
<td>ME 351</td>
<td>Applied Mechanical Engineering Cooperative Work</td>
<td>(0-0-9)</td>
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<td>ME 399</td>
<td>Summer Training</td>
<td>(0-0-0)</td>
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<td>ME 411</td>
<td>Senior Design Project I</td>
<td>(1-0-1)</td>
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<td>ME 412</td>
<td>Senior Design Project II</td>
<td>(0-6-2)</td>
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<tr>
<td>ME 413</td>
<td>Systems Dynamics and Control</td>
<td>(2-3-3)</td>
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<td>ME 451</td>
<td>Design and Analysis of Engineering Experiments</td>
<td>(3-0-3)</td>
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<td>ME 452</td>
<td>Measurements and Lab</td>
<td>(0-3-1)</td>
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<td>ME 4xx ME Elective 1</td>
<td>(3-0-3) or (2-2-3)</td>
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<tr>
<td>ME 4xx ME Elective 2</td>
<td>(3-0-3) or (2-2-3)</td>
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