### MECHANICAL ENGINEERING CURRICULUM SHEET | Fall 2015

#### FRESHMAN (35)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCP 101*</td>
<td>Intro. to Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111 &amp;L*</td>
<td>SCI: General Chemistry I &amp; Lab</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 101*</td>
<td>CMW: Critical Reading &amp; Comp.</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141*</td>
<td>ARP: Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>ELECTIVE</td>
<td>AIU: Aest. &amp; Intr. Understanding</td>
<td>3</td>
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#### SOPHOMORE (31)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EMCH 200*</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 201*</td>
<td>Intro. to App. Num. Methods</td>
<td>3</td>
</tr>
<tr>
<td>MATH 241*</td>
<td>Vector Calculus</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212 &amp;L*</td>
<td>Essentials of Physics II &amp; lab</td>
<td>4</td>
</tr>
<tr>
<td>STAT 509*</td>
<td>Statistics for Engineers</td>
<td>3</td>
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</tbody>
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#### JUNIOR (30)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EMCH 310</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 327</td>
<td>Design Mech. Elements</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 330</td>
<td>Mechanical Vibrations</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 360</td>
<td>Fluids</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 362</td>
<td>EMCH Lab II</td>
<td>3</td>
</tr>
<tr>
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#### SENIOR (30)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMCH 377</td>
<td>Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 427</td>
<td>Mechanical Design I</td>
<td>3</td>
</tr>
<tr>
<td>EMCH ELCT</td>
<td>EMCH Elective</td>
<td>3</td>
</tr>
<tr>
<td>ELECTIVE</td>
<td>Technical Elective</td>
<td>3</td>
</tr>
<tr>
<td>ELECTIVE</td>
<td>GSS: Social Science</td>
<td>3</td>
</tr>
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<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### ADDITIONAL REQUIREMENTS (0-12)

These additional University requirements may be satisfied through overlay courses, by placement testing, or by stand alone courses beyond the curriculum requirements above.

**CMS Effective, Engaged, and Persuasive Communication: Spoken Component**
PHIL 325 (CMS/VSR overlay) or SPCH 140

**INF Information Literacy**
USC's ENGL 102 or other approved Carolina Core INF overlay or stand alone course.

**GFL Global Citizenship and Multicultural Understanding: Foreign Language**
Score of two or better on foreign language test, or equivalent study of approved Carolina Core GFL course(s).

**VSR Values, Ethics, and Social Responsibility**
SAEL 200 (CMS/VSR overlay), PHIL 325 (CMS/VSR overlay), HIST 108 (VSR/GHS overlay), PHIL 211, 320, 321, 322

* Indicates a lower division course to be completed before junior level courses.
**Technical Elective (3 hours)**
Choose from any EMCH elective or from a list of acceptable technical elective courses that is maintained in the department office and on its website.

**Mechanical Engineering Electives (9 hours)**

**Design/Manufacturing**
- EMCH 507-Computer Aided Design
- EMCH 508-Finite Element Analysis
- EMCH 509-Computer Aided Manufacturing
- EMCH 516-Control Theory in ME
- EMCH 521-Concurrent Engineering
- EMCH 522-Design for Manufacture & Assembly
- EMCH 527-Design Of Mechanical Systems
- EMCH 528-Product Safety Engineering
- EMCH 529-Sustainable Design & Dev.
- EMCH 535-Robotics in Mechanical Engineering

**Thermal-Fluid Systems**
- EMCH 497-Design Thermal Systems
- EMCH 544-Compressible Fluid Flow
- EMCH 554-Inter. Heat Transfer
- EMCH 560-Inter. Fluid Mechanics
- EMCH 592-Introduction Combustion
- EMCH 594-Solar Heating
- EMCH 597-Thermal Environmental Eng.

**Aerospace Engineering**
- EMCH 508-Finite Element Analysis
- EMCH 516-Control Theory in ME
- EMCH 522-Design for Manufacture & Assembly
- EMCH 532-Intermediate Dynamics
- EMCH 544-Compressible Fluid Flow
- EMCH 554-Inter. Heat Transfer
- EMCH 560-Inter. Fluid Mechanics
- EMCH 571-Adaptive Material Behavior of Materials
- EMCH 575-Adaptive Material Sys. & Structures
- EMCH 577- Aerospace Structures I
- EMCH 578-Intro to Aerodynamics
- EMCH 585-Nature of Composite Materials
- EMCH 592-Introduction Combustion

**Mechanics of Solids**
- EMCH 308-Finite Element Stress Anal.
- EMCH 532-Intermediate Dynamics
- EMCH 586-Exp. Stress Analysis

**Nuclear Engineering**
- EMCH 552-Intro. Nuclear Engineering
- EMCH 553-Nuclear Fuel Cycle
- EMCH 555-Inst. for Nuclear Engineering
- EMCH 556-Intro to Risk Anal. & Reactor Safety
- EMCH 557-Intro to Radiation Shielding
- EMCH 558-Intro to Nuclear Reactor Systems
- EMCH 573-Intro to Nuclear Materials

**Other Approved EMCH Electives**
- EMCH 441-Automotive System Fundamentals
- EMCH 460-Special Problems
- EMCH 501-Engineering Analysis I
- EMCH 502-Engineering Analysis II
- EMCH 561-Current Topics
- EMCH 562-Micro/nanofluidics and Lab-On-A-Chip
- EMCH 580-Mechanics of Solid Biomaterials

**Curriculum Notes**
C or better is required in ENGL 101, 102, MATH 141, 142, CHEM 111, PHYS 211 & Lab, EMCH 200.

*updated spring 2016*