MAJOR: MECHANICAL ENGINEERING
DEGREE: BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The engineering majors prepare students to help solve many exciting and demanding problems including important global issues related to energy and the environment, as well as the development of new devices, products and materials. Students work with advanced computer simulations and modern, well-equipped laboratories that provide exciting and valuable hands-on experience.

### General Education Requirements – Competencies

<table>
<thead>
<tr>
<th>Macomb Community College</th>
<th>Credits</th>
<th>Central Michigan University Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1180 Communications I OR ENGL 1210 Composition I</td>
<td>4 or 3</td>
<td>ENG 101 Freshman Composition</td>
</tr>
<tr>
<td>ENGL 1190 Communications II OR ENGL 1220 Composition II</td>
<td>4 or 3</td>
<td>ENG 201 Intermediate Composition</td>
</tr>
<tr>
<td>SPCH 1060 Speech Communications OR SPCH 2550 Argumentation Debate</td>
<td>3 or 4</td>
<td>COM 101 Intro to Communication OR COM 267 Intro to Debate</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>MATH 1760 (see below)</td>
</tr>
<tr>
<td>Writing Intensive</td>
<td>1</td>
<td>Satisfied by PHYS 2220 (see below)</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six credits waived if MTA or MACRAO is satisfied. The remaining 6 must be completed at CMU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### General Education – University Program Requirements

<table>
<thead>
<tr>
<th>Group I Humanities (6 – 8) from at least 2 subjects</th>
<th>6 – 8</th>
<th>Various Humanities Course Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACRAO: Requires 8 hours – MTA: Requires 2 courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select courses from: ARAB 1260, 1270, 2360; ARTT 1620, 2650, 2660; CHIN 1260, 1270; ENGL 1730, 2410, 2420, 2510, 2520, 2600, 2610, 2640, 2710, 2720, 2730, 2800, 2810, 2850; FREN 1260, 1270, 2360, 2370; GRMN 1260, 1270, 2360; HUMN 1210, 1250, 1270, 1300, 1460, 1472, 1473, 1474, 1476, 1700, 1750, 2000, 2100; INTL 2000, 2360, 2800; ITAL 1260, 1270, 2360, 2370; MUSC 1030, 1050, 1060, 1070, 1160, 1170, 2080, 2180, 2710, 2720; PHIL 2100, 2120, 2220, 2400; SPAN 1260, 1270, 2360, 2370</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 1170 General Chemistry I</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PHYS 2220 Analytical Physics I</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

### Group II Natural Sciences (4 – 8) from at least 2 subjects

<table>
<thead>
<tr>
<th>MACRAO: Requires 8 hours (Math + Natural Science)-MTA: Requires 2 courses</th>
<th>6 – 8</th>
<th>Various Social Science Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select courses from: ANTH 1000, 2220; ECON 1160, 1170, 2110; GEOG 1100, 1500, 2000; HIST 1260, 1270, 1400, 1500, 1600, 1700, 2000, 2100, 2200, 2330, 2340, 2360, 2370, 2375, 2390, 2520, 2650; INTL 2010, 2500, 2700; POLS 1000, 1101, 1104, 1120, 1200, 1500, 1600, 1700, 1900; PSYC 1010, 2170, 2210, 2220, 2300, 2310, 2400, 2450, 2500, 2550, 2600, 2700, 2750, 2760; SOCY 1010, 1100, 1120, 1200, 2000, 2121, 2450, 2550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 1170 General Chemistry I</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PHYS 2220 Analytical Physics I</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

### Group IV Studies in Culture and Diversity

<table>
<thead>
<tr>
<th>Mathematics (3 – 4):</th>
<th>4</th>
<th>MTH 132 Calculus I</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACRAO: Requires 8 hours (Math + Natural Science) - MTA: Requires 1 course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 1760 Analytic Geometry &amp; Calculus I</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### Major or Degree Related Transferable Courses

| BLAW 1080 Business Law I AND 1090 Business Law II | 4 & 4 | BLR 202 Legal Environment of Business |
| MATH 1770 Analytic Geometry & Calculus II | 4 | MTH 133 Calculus II |
| MATH 2760 Analytic Geometry & Calculus III | 4 | MTH 233 Calculus III |
| MATH 2000 Introduction to Linear Algebra | 3 | MTH 223 Linear Algebra and Matrix Theory |
| MATH 2770 Differential Equations | 4 | MTH 334 Differential Equations |
| PHYS 2230 Analytical Physics II | 5 | PHY 146 University Physics II & 176 University Physics Lab |

**IMPORTANT NOTES**

- It is strongly recommended that transfer students contact CMU early in their college career to ensure proper course sequencing for their major, optimizing course scheduling, and timely degree completion at CMU. CMU Engineering and Technology (E&T) 989.774.3033 or etdept@cmich.edu
- Students interested in signing an Engineering Major are required to meet with a CMU Engineering and Technology (E&T) advisor during their first semester of attendance at CMU.
- Engineering majors are required to meet with their engineering advisor each semester for appropriate class selection.
- Pre-requisites are strictly enforced.
Major or Degree Related Courses to be Completed at CMU

DEGREE REQUIRED COURSES (33 - 36)

Business Component – Required (3 hours)
BLR 202 satisfied at Macomb with BLAW 1080 AND 1090

Mathematics & Science Requirements I (24 hours)
MTH 132 satisfied at Macomb with MATH 1760
MTH 133 satisfied at Macomb with MATH 1770
MTH 233 satisfied at Macomb with MATH 2760
PHY 145QR satisfied at Macomb with PHYS 2220
PHY 146 satisfied at Macomb with PHYS 2230
PHY 175 satisfied at Macomb with PHYS 2220
STA 392 Probability and Statistics for Engineers (3)

Mathematics & Science Requirements II (3 – 6 hours)
Select one of the following options:

Option A (3 hours)
MTH 232 Linear Algebra and Differential Equations (3)

Option B (6 hours)
MTH 223 satisfied at Macomb with MATH 2000
MTH 334 satisfied at Macomb with MATH 2770

Mathematics & Science Requirements III (4 – 5 hours)
Select one of the following:
CHM 131 satisfied at Macomb with CHEM 1170
CHM 161 Principles of Chemistry (5)

SPECIALIZED STUDIES - MAJOR REQUIRED COURSES

Required Courses I (63 hours)
EGR 200 Computer Aided Problem Solving for Engineers (3)
EGR 251 Engineering Statics (3)
EGR 253 Engineering Dynamics (3)
EGR 255 Strength of Materials (3)
EGR 290 Circuit Analysis I (3)
EGR 300 Engineering Economic Analysis (3)
EGR 355 Engineering Materials (3)
EGR 356 Thermodynamics I (3)
EGR 358 Fluid Mechanics (3)
EGR 359 Machine Design I (3)
EGR 360 Solid Mechanics Laboratory (3)
EGR 456 Thermodynamics II & Heat Transfer (3)
EGR 458 Measurement and Instrumentation Laboratory (3)
EGR 459 Machine Design II (3)
EGR 460 Thermal Fluids Laboratory (3)
EGR 477 Finite Element Analysis (3)
EGR 489WI Senior Design I (3)
EGR 499WI Senior Design II (3)
IET 154 Engineering Design Graphics (3)

Electives (9 hours)
Select at least 9 hours from the following:
EGR 292, EGR 298, EGR 371, EGR 397, EGR 437, EGR 479,
EGR 553, EGR 554, EGR 576, EGR 578

Notes:
- Not more than three credits of EGR 437 will count
- You may only select one of EGR 292 or 298

General Notes
- A grade of C- or better is required for a course to transfer.
- A bachelor’s degree requires a minimum of 124 semester hours of credit. CMU will accept community college transfer credits beyond the recommended 64 semester hours; however students will need to complete a minimum of 60 semester hours from an accredited 4-year-degree granting institution. A minimum of 40 hours must be completed at the 300 level or above. A minimum of 30 semester hours of credit must be earned from CMU.
- The University Program Requirements and competencies may be fulfilled by students who satisfy the MACRAO Agreement or the MTA
- Students are required to meet CMU Competency Requirements prior to reaching 56 credit hours. Competency requirements consist of: two Written English (composition) courses, one Oral English (communication) course, and one Mathematics course be completed with a grade of “C” or above.

Any remaining required and elective courses for a bachelor’s degree will be selected in consultation with an academic advisor to ensure that CMU degree requirements are being met.

Contact Undergraduate Admissions at cmuadmit@cmich.edu for major related course information and or explore http://admissions.cmich.edu, CMU’s Transfer Equivalency Tool and the CMU’s Transfer Simulation Tool.

Effective Bulletin Year: 2017 – 2018

Central Michigan University
Admissions: Warriner Hall 102 | Mount Pleasant, MI 48859 | 1-888.292.5366 Toll Free
cmuadmit@cmich.edu | http://admissions.cmich.edu
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