Academic Prerequisites

- None

Non-Academic Prerequisites

- Full-time students: MET is a limited enrollment program for students seeking a certificate or degree. Qualified applicants are accepted in the order in which the application process is completed. Program starts in fall and winter terms. See a program advisor for other term starts.
- Job-upgrade students: Non-program students seeking to upgrade job skills are welcome to enroll in individual courses. Students must meet individual course prerequisites and complete an advising interview with a MET faculty advisor prior to enrollment. Admission is granted on a space-available basis after the needs of the full-time students have been met.
- Continuing Education Students: Students may transfer to Oregon Institute of Technology to pursue a bachelor degree in mechanical or manufacturing engineering technology. Faculty advisors will provide assistance in the selection of additional course work appropriate for each student’s goals.

Non-Academic Requirements

- None

ASSOCIATE OF APPLIED SCIENCE DEGREE

Mechanical Engineering Technology (p. 1)
Mechanical Engineering Technology: Green Technology and Sustainability Option (p. 2)

MECHANICAL ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 101 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the courses in the program of study indicated with a § symbol. Students should consult with program advisors for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMET 110</td>
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<td>CMET 111</td>
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<tr>
<td>CMET 112</td>
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<tr>
<td>or MTH 95</td>
<td></td>
</tr>
<tr>
<td>ENGR 102</td>
<td>3</td>
</tr>
<tr>
<td>CMET 121</td>
<td>4</td>
</tr>
<tr>
<td>CMET 122</td>
<td>4</td>
</tr>
<tr>
<td>CMET 123</td>
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<tr>
<td>or MTH 112</td>
<td></td>
</tr>
<tr>
<td>WR 121</td>
<td>4</td>
</tr>
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</table>

Second Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CMET 121</td>
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</tr>
<tr>
<td>CMET 122</td>
<td>4</td>
</tr>
<tr>
<td>or MTH 95</td>
<td></td>
</tr>
<tr>
<td>ENGR 102</td>
<td>3</td>
</tr>
<tr>
<td>CMET 131</td>
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<tr>
<td>or MTH 251</td>
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</tr>
<tr>
<td>&amp; MTH 252</td>
<td></td>
</tr>
<tr>
<td>CMET 213</td>
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<tr>
<td>CMET 227</td>
<td>2</td>
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</table>

Third Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Applied Calculus</td>
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</tr>
<tr>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>and Calculus II</td>
<td></td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>Applied Electricity Fundamentals</td>
<td>2</td>
</tr>
</tbody>
</table>

The coursework listed below is required. The following is an example of a term-by-term breakdown.
MECHANICAL ENGINEERING TECHNOLOGY

General Education

Fourth Term
CH 101 Inorganic Chemistry Principles 4
CMET 133 Materials Technology 5
CMET 221 Environmental Systems 3
CMET 226 Dynamics 3
COMM 100 Introduction to Communication 4
or COMM 111 Public Speaking 2

Fifth Term
CMET 211 Environmental Quality 4
CMET 212 Thermodynamics I 4
CMET 241 Structural Steel Drafting 3
CMET 255 Civil and Mechanical Professional Skills Development I 2
ENGR 262 Manufacturing Processes 4
General Education 3

Sixth Term
CMET 222 Thermodynamics II 4
CMET 223 Project Management 3
CMET 235 Machine Design 3
CMET 236 Structural Design 3
CMET 237 MET Applied Computer Aided Design 3

Total Credits: 101

* Could be used as General Education
1 Or any course for which MTH 95 is a prerequisite.
2 Or any course for which MTH 112 is a prerequisite.

GREEN TECHNOLOGY AND SUSTAINABILITY AAS DEGREE

Minimum 108 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the courses in the program of study indicated with a § symbol. Students should consult with program advisors for course planning.

Green Tech and Sustainability Degree Courses
CH 101 Inorganic Chemistry Principles 5
CMET 110 Statics 4
CMET 111 Portland Design: Brews, Bridges and Bikes 3
CMET 112 Technical Algebra/Trigonometry 4
or MTH 95 Intermediate Algebra 3
CMET 121 Strength of Materials 4
CMET 122 Global Energy Physics 4
CMET 123 Technical Algebra with Analytic Geometry 4
or MTH 112 Elementary Functions 4
CMET 131 Applied Calculus 8
or MTH 251 Calculus I 4
& MTH 252 and Calculus II 4
CMET 133 Materials Technology 3
CMET 211 Environmental Quality 4
CMET 212 Thermodynamics I 4
CMET 213 Fluid Mechanics 3
CMET 221 Environmental Systems 3
CMET 222 Thermodynamics II 4
CMET 223 Project Management 3
CMET 226 Dynamics 3
CMET 227 Applied Electricity Fundamentals 2

MECHANICAL ENGINEERING TECHNOLOGY
TWO-YEAR CERTIFICATE

Minimum 65 credits. Students must meet all certificate requirements.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term
CMET 110 Statics 4
CMET 111 Portland Design: Brews, Bridges and Bikes 3
CMET 112 Technical Algebra/Trigonometry 4
or MTH 95 Intermediate Algebra 3
ENGR 102 Engineering Graphics 3

Second Term
CMET 121 Strength of Materials 4
CMET 122 Global Energy Physics 4
CMET 123 Technical Algebra with Analytic Geometry 4
or MTH 112 Elementary Functions 4
WR 121 English Composition 4

Third Term
CMET 131 Applied Calculus 8
or MTH 251 Calculus I 4
& MTH 252 Calculus II 4
CMET 213 Fluid Mechanics 3
CMET 227 Applied Electricity Fundamentals 2
CMET Human Relations Electives 4

Fourth Term
CH 101 Inorganic Chemistry Principles 5
CMET 133 Materials Technology 3
CMET 221 Environmental Systems 3
CMET 226 Dynamics 3
COMM 100 Introduction to Communication 4
or COMM 111 Public Speaking 2

Total Credits: 65

Total Credits: 108

1 Or any course for which MTH 95 is a prerequisite.
2 Or any course for which MTH 123 is a prerequisite.
CMET 110. Statics. 4 Credits.
Covers fundamental concepts of mechanics relating to forces acting on rigid bodies in both two dimensions and three dimensions. Includes drawing complete free-body diagrams to solve engineering problems. Addresses external forces, moments of a couple, reactions, internal forces and moments. Covers friction for dry surfaces, moments of inertia and centroids. Corequisite: CMET 111. Prerequisites: MTH 60 and placement in WR 115. Audit available.

CMET 111. Portland Design: Brews, Bridges and Bikes. 3 Credits.
Enhances appreciation for design and engineering through the prism of three design topics that Portland is known for: coffee, bridges and bikes. Focuses on ‘back of the envelope’ engineering, problem solving, making and building, and professional skills and teamwork. Covers trigonometry and scientific calculator operations. Introduces the engineering technician profession and engineering ethics. Includes time in the MakerSpace, CMET labs and field trips. Audit available.

CMET 112. Technical Algebra/Trigonometry. 4 Credits.
Includes algebra and trigonometry used in CMET 110 and 111, emphasizing simultaneous linear equations, quadratic equations and applied problems. Prerequisites: MTH 60 and placement in WR 115. Department approval required. Audit available.

CMET 121. Strength of Materials. 4 Credits.
Covers the relationship between stress and strain on deformable solids. Applies analysis to members subjected to axial, bending, and torsional loads. Covers combined stresses and properties of structural materials. Prerequisites: CMET 110, CMET 112, and (ENGR 102 or ENGR 105). Prerequisite/Concurrent: CMET 123. Audit available.

CMET 122. Global Energy Physics. 4 Credits.
Introduces physical, chemical and biological parameters relating to the quality of water. Presents sampling systems, data analysis techniques and computational methods, including mathematical models.Recommended: CMET 131. Prerequisites: CMET 123, CH 104, and (WR 115 or IRW 115). Prerequisite or concurrent: WR 121. Audit available.

CMET 123. Thermal Physics I. 4 Credits.
Covers principles of classical thermodynamics. Develops understanding of mass, energy, heat, work, efficiency, ideal and real thermodynamic cycles and processes. Covers first and second laws of thermodynamics, perfect gas laws, properties of real gases, and the general energy equation for closed and open systems. Prerequisites: CMET 131, CMET 122 and CH 101. Audit available.

CMET 124. Surveying II. 3 Credits.
Provides techniques for preliminary location and construction surveys. Includes elements of horizontal and vertical location for roadways, including circular and parabolic curves. Covers use of advanced capabilities of electronic total stations, include data logging. Prerequisite: ENGR 226. Audit available.

CMET 211. Environmental Quality. 4 Credits.
Presents advanced topics in civil engineering-oriented computer aided design and drafting meeting industry standards. Prerequisite: CMET 241; Prerequisite or concurrent: CMET 214. Audit available.
CMET 235. Machine Design. 3 Credits.
Examines fundamentals of machine design, including analysis and design of mechanical components. Covers shafts, fasteners, belt and chain drives, brakes, gears, springs and bearings. Includes predicting static and fatigue failures for various loadings and materials. Prerequisite: CMET 121, 226. Audit available.

CMET 236. Structural Design. 3 Credits.
Introduces design of steel, wood, and reinforced concrete structures with emphasis on steel buildings. Covers beam and column design along with bolted and welded connections. Recommended: CMET 131. Prerequisites: CMET 121, 122, 123, and (WR 115 or IRW 115). Audit available.

CMET 237. MET Applied Computer Aided Design. 3 Credits.
Introduces topics in solid modeling for mechanical/manufacturing engineering computer aided design and drawing, meeting industry standards. Prerequisite: ENGR 102. Audit available.

CMET 241. Structural Steel Drafting. 3 Credits.
Introduces structural detail drafting of engineering design drawings and shop fabrication drawings for steel construction. Covers steel grades and shapes, and design, fabrication, and erection drawings for steel structures. Prerequisites: ENGR 102, CMET 121. Audit available.

CMET 254. Civil/Mechanical Engineering Technology Seminar. 1 Credit.
Topics include information on finding employment in the civil/mechanical manufacturing industry, writing resumes, and interviewing. Prerequisite: WR 115 or IRW 115. Audit available.

CMET 255. Civil and Mechanical Professional Skills Development I. 2 Credits.
Covers job searching and resume building skills for civil and mechanical engineering technicians. Includes resumes, interviewing, communication skills, and professionalism in the workplace. Prerequisites: CMET 133, WR 121. Audit available.

CMET 280A. Cooperative Ed: Civil/Mechanical Engineering Technology. 1-5 Credit.
An opportunity to develop engineering technology skills in a department-approved work setting. Department permission required. Audit available.