2020-21 GRADUATION GUIDE

Pathway: Applied Technology

Manufacturing/Engineering Technology
Associate of Applied Science Degree

About the Program
This two-year program integrates conventional manufacturing techniques with computer integrated manufacturing skills. Computer aided drafting (CAD) and computer aided manufacturing (CAM) are used as basic tools in the manufacturing engineering process. In addition to technical training, students receive a solid education in mathematics and physical science, along with human relations and computer skills courses.

Graduates typically enter the workforce as computer aided design drafters, entry-level machinists, or computer numerical control (CNC) machine operators or engineering assistants. With additional on-the-job experience, this training facilitates movement into fields such as tool and die maker, quality control inspector, computer aided manufacturing (CAM) programmer, or lower-level supervisory positions. For transfer to a four-year institution in engineering, additional or alternate transfer courses will be recommended.

Program Learning Outcomes
The curriculum in RCC courses is derived from a set of identified learning outcomes that are relevant to the discipline. Program learning outcomes for manufacturing programs are:

- Interpret and create mechanical blueprints to industry standards.
- Follow, develop, and troubleshoot manufacturing processes and procedures.
- Demonstrate the ability to adhere to personal and industry safety standards to protect personnel and equipment.
- Operate and program CNC mills and lathes to print specifications.

Entry Requirements
Students are required to complete the Placement Process to determine skill level and readiness in math, reading, and writing. As part of their training program, students must begin with the courses within their skill level as determined through the Placement Process. In addition, students may also be required to enroll in classes that would increase their employability and success.

Advanced Standing
Coursework from accredited colleges and universities will be accepted in accordance with college registration policies and with the Manufacturing/Engineering Technology Department chair’s recommendation. In order to ensure that coursework is current, program courses over four years old must be reviewed and approved by the appropriate program coordinator before being accepted toward core requirements. Students must complete coursework in their major at a “C” or better level before proceeding to advanced coursework. Each College Now credit student must meet with the program coordinator to determine placement.

Graduation Requirements
Students are required to complete all courses in this program with a grade of “C” or better to receive their degrees. Certain required courses are graded on a pass/no pass basis only. A grade of “P” for these courses indicates a student earned the equivalent of a “C” or better grade.

Prerequisites

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS102</td>
<td>Introduction to Manufacturing</td>
<td>3</td>
</tr>
<tr>
<td>MFG116</td>
<td>Metrology</td>
<td>2</td>
</tr>
<tr>
<td>MFG121</td>
<td>Manufacturing Processes I</td>
<td>4</td>
</tr>
<tr>
<td>MTH63</td>
<td>Applied Algebra I or MTH60 Fundamentals of Algebra I or higher level math</td>
<td>4</td>
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Second Term

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MET104</td>
<td>Applied Shop Practices or MTH112 Elementary Functions</td>
<td>3</td>
</tr>
<tr>
<td>MET121</td>
<td>Computer Aided Drafting I: Mechanical (SolidWorks)</td>
<td>3</td>
</tr>
<tr>
<td>MET160</td>
<td>Materials and Metallurgy or WLD225 Industrial Metallurgy</td>
<td>3</td>
</tr>
<tr>
<td>MFG122</td>
<td>Manufacturing Processes II</td>
<td>4</td>
</tr>
<tr>
<td>MFG140</td>
<td>CNC Controls</td>
<td>2</td>
</tr>
<tr>
<td>WR115</td>
<td>Introduction to Expository Writing or BT113 Business English I or higher level composition</td>
<td>3-4</td>
</tr>
</tbody>
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Third Term

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIB127</td>
<td>Introduction to Academic Research or LIB101 Introduction to Information Literacy</td>
<td>1</td>
</tr>
<tr>
<td>MET122</td>
<td>Computer Aided Drafting II: Mechanical (SolidWorks)</td>
<td>3</td>
</tr>
<tr>
<td>PSY101</td>
<td>Psychology of Human Relations or BT101 Human Relations in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MFG123</td>
<td>Manufacturing Processes III</td>
<td>4</td>
</tr>
<tr>
<td>MFG241</td>
<td>CNC Programming – Mill</td>
<td>4</td>
</tr>
</tbody>
</table>

Total First Year Credits

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</tr>
<tr>
<td>MFG116</td>
<td>Metrology</td>
<td>2</td>
</tr>
<tr>
<td>MFG121</td>
<td>Manufacturing Processes I</td>
<td>4</td>
</tr>
<tr>
<td>MTH63</td>
<td>Applied Algebra I or MTH60 Fundamentals of Algebra I or higher level math</td>
<td>4</td>
</tr>
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First Year Required Courses

<table>
<thead>
<tr>
<th>Course No.</th>
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</thead>
<tbody>
<tr>
<td>MET101</td>
<td>Mechanical Drafting</td>
<td>3</td>
</tr>
<tr>
<td>MET105</td>
<td>Blueprint Reading - Mechanical</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Year Required Courses

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<tr>
<th>Course No.</th>
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</tr>
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<tbody>
<tr>
<td>MFG242</td>
<td>CAM I: Mastercam</td>
<td>4</td>
</tr>
<tr>
<td>WLD101</td>
<td>Welding Fundamentals I</td>
<td>1</td>
</tr>
</tbody>
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Fourth Term

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET101</td>
<td>Introduction to Electronics</td>
<td>3</td>
</tr>
<tr>
<td>MFG230</td>
<td>Statistics and Quality Control</td>
<td>3</td>
</tr>
<tr>
<td>MFG242</td>
<td>CAM I: Mastercam</td>
<td>4</td>
</tr>
<tr>
<td>WLD101</td>
<td>Welding Fundamentals I</td>
<td>1</td>
</tr>
</tbody>
</table>

Fifth Term

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFG220</td>
<td>Research and Development Prototyping or MFG280 Cooperative Work Experience/Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>MFG243</td>
<td>CAM II: Mastercam</td>
<td>4</td>
</tr>
</tbody>
</table>

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WLD102  Welding Fundamentals II or approved program elective  3
WR121  English Composition I or
BT114 Business English II or higher level composition  4
——  Approved program electives
1-3  16-18

Sixth Term
HE112  Emergency First Aid  1
MET111  Computer Aided Drafting I: Mechanical (Autodesk Inventor)  3
MFG255  Computer Integrated Manufacturing or
MFG280 Cooperative Work Experience/Manufacturing  4
MFG262  Lean Manufacturing  3
——  Approved program electives  1-4  12-15

Total Second Year Credits  41-46
TOTAL PROGRAM CREDITS  93-100

Approved Program Electives
(minimum 2-7 credits required)

Course No.  Course Title  Credits
BA109  Ready, Set, Work: Techniques for Landing a Job  2
CHEM104  Introductory Chemistry with lab and recitation  5
CHEM105  Introductory Organic Chemistry with lab  4
CHEM106  Introductory Biochemistry with lab  4
CHEM221.222.223  General Chemistry I, II, III with lab and recitation  5-5-5
CIS____  Any CIS applications course (CIS125SS highly recommended) variable
CIS140  Introduction to Operating Systems  4
CIS179  Introduction to Networks  4
CS161J  Computer Science I (Java)  4
CS161U  Computer Science I (C++)  4
CS162J  Computer Science II (Java)  4
CS162U  Computer Science II (C++)  4
EET104  Fundamentals of Manufacturing Electronics  4
EET106  Electronic Assembly  3
EET129  Introduction to Embedded Systems  3
EET225  Electronics Troubleshooting  3
ENGR101  Engineering Orientation I: Careers, Skills and Computer Tools  2
ENGR102  Engineering Orientation II: Careers, Skills and Computer Tools  2
ENGR103  Engineering Orientation III: Careers, Skills and Computer Tools  2
ENGR201  Electrical Fundamentals with lab  3
ENGR202  Electrical Fundamentals II with Lab  3
ENGR211  Statics  3
ENGR212  Dynamics  3
ENGR213  Strength of Materials  3
GS104  Physical Science with lab or approved program elective  4
MEC103  Industrial Safety (Highly Recommended)  1
MEC114  Safety for Industry  3
MEC116  Quality Practices and Measurement  3
MEC118  Manufacturing Processes and Production  3
MEC120  Maintenance Awareness  4
MEC130  Hydraulics I  3
MEC140  Green Production  2
MEC149  Electric Motor Control  4
MEC240  Robotics I  3
MET112.113  Computer Aided Drafting II, III: Mechanical (Autodesk Inventor)  3-3
MET123  Computer Aided Drafting III: Mechanical (SolidWorks)  3
MFG199  Selected Topics in Manufacturing variable
MFG210  AC/DC Electrical Systems for Manufacturing  3
MFG215  Electrical Control Systems and Sensors for Manufacturing  3
MFG244  CNC Programming – Lathe  3
MFG280  Cooperative Work Experience/Manufacturing variable
MFG280S  CWE/Manufacturing Seminar  1
MFG291  Laser Cutting and Engraving Fundamentals  2
MTH65  Fundamentals of Algebra II or higher level math courses variable
PH201,202,203  General Physics I, II, III with lab and recitation  5-5-5
PH211,212,213  General Physics (Calculus Based) I, II, III with lab and recitation  5-5-5
WLD102  Welding Fundamentals II (if not taken core requirement)  3
WLD111.112.113  Technology of Industrial Welding I, II, III  6-6-6
WLD111M  Technology of Industrial Welding for Manufacturing  6
WLD121.122  Fabrication and Repair Practices I, II  5-5
WLD250P  Selected Topics: CNC Plasma Cutting  3

1 Required for graduation.
2 If not taken as required course.

For more information contact the Manufacturing and Engineering Technology Department:
Grants Pass or Medford. .......................... 541-245-7902
Toll free in Oregon ................................. 800-411-6508, Ext. 7902
email  ........................................... manufacturing@roguecc.edu
Web address ...................................... www.roguecc.edu/manufacturing
TTY  ............................................ Oregon Telecom Relay Service, 711

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