# CAD/CAM III Toolpath

## Outline of Instruction

### Course Information

<table>
<thead>
<tr>
<th>Organization</th>
<th>Monroe County Community College, Applied Science and Engineering Technology</th>
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<tr>
<td>Developers</td>
<td>Bob Leonard</td>
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<tr>
<td>Course Number</td>
<td>MECH 231</td>
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<tr>
<td>Instructional Level</td>
<td>Associate Degree</td>
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<tr>
<td>Potential Hours of Instruction</td>
<td>60</td>
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<tr>
<td>Total Credits</td>
<td>3</td>
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### Description

This course covers the latest Master Cam PC Solids, Design & Toolpath software with 2 and 3 dimensional mechanical part geometry with tool path generation. Import functions for surfacing and rapid prototype from Catia, Solid Works or Pro E will be used for this course. Projects will be advanced and cover associativity, level management and post processor to machine parameter creation. Students will design, run toolpath and use set up functions with best economical production process planning. The course includes surfacing, verifying with automatic G and M code generation to a post processor exclusive to that controller. Two and three dimensional creations using modify, edit, analyze, extrude, loft, sweep, rotate, extrude and boolean functions will be included in this surface and toolpath generation. Aluminum and steel will be used for design and fabrication of the project. Also covered will be group technology dynamics, robotic interfacing, rapid prototype and high speed machining (HSM). Vocabulary and safety stressed.

### Major Units
- Solid model definitions
- Export & import models
- High speed machining & post process
- Face, contour, pocket, drill
- Derived & composite surface
- Toolpath projections, rough & finish toolpath
- Feature based machining
- Turning features, tool nose radius
- Offsets & cutter diameter compensation

### Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Classroom Presentation</td>
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<tr>
<td>On-Campus Lab</td>
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<td>3</td>
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### Textbooks


### Prerequisites
Course Outcomes
1. Create stock, boundaries, tool libraries & machine definitions exclusive to CNC controller
2. Create feature based solids and surfaces to machined economically
3. Create and manage history trees & identify features and steps of derived surfaces
4. Design from print specifications feature based solid geometry
5. Import & machine complex geometrical features from other software models
6. Demonstrate nomenclature of toolpaths their shapes and their functions
7. Machine a surface from composite or exotic material using rough and finish toolpath on a CNC machine
8. Pass certification for MasterCam CPgmM, CAD-CAM technologist