# Course Outline

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AMT 103</td>
<td>Blueprint Reading Basics</td>
<td>2</td>
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<tr>
<th>Hours: Lecture/lab</th>
<th>Co-or Pre-requisite</th>
<th>Implementations</th>
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<tr>
<td>2</td>
<td>DRA 190</td>
<td>F/2019</td>
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## Course Description

Introduces students to the basic and reading of manufacturing prints. Topics include Views, Dimensions, Tolerances Geometric Dimensioning and Tolerancing, Surface Finish, Threads, Casting, Forging, and Molded Part Prints, Welding and Sheet Metal Prints.

Required Text: **Hammer’s Blueprint Reading Basics, 4th Edition**

By C. Gillis
Publisher: Industrial Press, 2017

Revision date: 4/4/2019

Course Instructor: Michael Hanna
Ext. 3828,
hannam@mecc.edu
Office Hours: Thursday 3pm – 5:30 pm or by appointment
General Objectives
Course Competencies/Goals

Students will be able to:
1. Interpret and describe the technical information provided on industrial prints through drawings, dimensions, and notes.
2. Visualize three-dimensional parts from the standard orthographic projections found on prints.
3. Navigate the total manufacturing print, including lines, scale, language, symbols, title blocks, and other components.
4. Visualize parts from drawings consisting of multiple views, including basic, auxiliary, partial and various types of section views.
5. Determine part dimensions and tolerances according to American Society of Mechanical Engineers (ASME) standards including geometric dimensioning and tolerancing.
6. Interpret standard surface finish symbols and screw thread designations.
7. Interpret symbols and notes used to communicate special manufacturing requirements that are not directly illustrated and dimensioned.
8. Understand drawing features, symbols and notes unique to castings, forgings, and molded part prints.
9. Read weld symbols and understand the unique symbols and notes found on welded part prints and sheet metal prints.
10. Understand drawing features, symbols and notes unique to gears, splines, and cams.
11. Identify relevant information from a variety of other common types of prints used to convey specific types of information.

General Education Knowledge Goals [GEKG]

Goal 1. Communication. Students will communicate effectively in both speech and writing.

Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

MCCC Core Skills [CS]

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.

Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.

Goal D. Information Literacy. Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.

Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.
Unit Objectives


Unit 2 - The Reading of Manufacturing Prints: Introduction, Types Of Drawings, Projections, Projection Systems, Visualization, Interpretation

Unit 3 - The Total Manufacturing Print: Introduction, Print Sizes, The Lines Of Manufacturing Prints, Lettering, The Print Arrangement, Drawing Views, Scale, Language On Prints, Symbols, Notes On Prints, Title Block, Revision History Block, Bills Of Materials

Unit 4 - Views: Introduction, The Basic Views Of Prints, Section Views, General Rules For Views, General Rules For Section Views


Unit 5 - Dimensions: Arrangement Of Dimensions, Special Indications, Dimensioning Features

Unit 6 - Tolerances: Introduction, Tolerancing And Related Principles, Implicit Tolerances, Explicit Tolerances, Tolerance Expression, Symbolic Tolerances, Tolerance Applications, Geometric Tolerances, Statistical Tolerancing

Unit 7 - Geometric Dimensioning and Tolerancing: Introduction, Symbols, Basic Dimensions, Features, Feature Control Frames, Bonus Tolerance, Form Controls, Datums, Orientation Controls, Location Controls, Profile Controls, Runout Controls

Unit 8 - Surface Finish: Symbol Application, Prior Practice Symbols, Other Designations, Surface Treatments, Surface Coatings

Unit 9 - Threads: Introduction, Thread Terminology, Thread Forms, Methods Of Displaying Threads

Unit 10 - Machine Terms and Manufacturing Processes: Introduction, Machine Terms, Manufacturing Processes

Unit 11 - Casting, Forging, and Molded Part Prints: Introduction, Manufacturing Processes, General Considerations, Print Methods, Casting, Forging, And Molded Part Prints, Datum Referencing, Sample Prints

Unit 12 - Welding and Sheet Metal Prints: Introduction, Welding, Welding Symbols, Symbol Application, Welding Prints
Unit 13 - Gears, Splines, and Cams: Splines, Spline Tooth Representation, Spline Data, Spline Prints, Cams, Displacement Diagrams, Cam Prints

Unit 14 - Types of Manufacturing Prints: Single Part, Assembly, Common, Piping Diagrams
**Method of Instruction**
Learning will take place via classroom instruction, demonstrations, and student activities, as well as through textbook reading and homework assignments. Lab activities will augment this. Use of equipment and manual skills will be developed in the lab.

**Student Evaluation**
Students' achievement of the course objectives will be evaluated through the use of the following:
- Three unit tests assessing students' comprehension of terminology, calculations and practices related to the unit objectives.
- Lab grade based on shop projects and lab assignment results.
- In class participation, homework and attendance.

<table>
<thead>
<tr>
<th>Evaluation Tools</th>
<th>Percentage of Grade</th>
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<tbody>
<tr>
<td>3 Unit Tests</td>
<td>50%</td>
</tr>
<tr>
<td>Lab Assignments/ Shop Projects</td>
<td>25%</td>
</tr>
<tr>
<td>Homework / In-Class Assignments</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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