RARITAN VALLEY COMMUNITY COLLEGE

ACADEMIC COURSE OUTLINE

ENTC-111 CAD/CAM Processes

I. Basic course Information

A. Course Number and Title: ENTC-111 CAD/CAM Processes

B. Date of Proposal or Revision: Spring 2003

C. Sponsoring Department: Science and Engineering Department

D. Semester Credit Hours: 4 hrs

E. Weekly Contact Hours: Combined Lecture and Laboratory 6 hrs

F. Prerequisites: Intermediate Algebra or MATH-025 – Algebra MOD 4
   Co-requisite: CISY-102 Computer Literacy

G. Laboratory Fees: YES

II. Catalog Description

This course covers fundamentals of computer aided drafting (CAD) and computer aided manufacturing (CAM). Subjects to be covered will be technical drawing, multi-views, electrical and pneumatic schematics, sections, isometrics, introduction to 3D, and facilities layout (architectural plans). AutoCAD 2000 or higher will be used. The student will progress from CAD to CAM-Mill processing. Fabrication techniques will be demonstrated on a laboratory CNC milling machine. This course will provide the student with an understanding of the manufacturing process from concept through design, to the end product.

III. Statement of Course Need:

This course is taken in the first semester of the first year. Required to provide the student an understanding of computer aided drafting and computer aided manufacturing, and how they interact to produce a final product from a design concept. Based on industry standards, this course will provide students with a basic understanding of cad & cam in the facilities engineering field. Students will have the opportunity to produce a product from a design concept typically found in the field. Without this course students will not
be able
to learn the important CAD/CAM concepts of this field.

IV. Place of Course in College Curriculum

A. Satisfies general education requirements

B. Degree program, option or certificate requirement (specify program, option or certificate)

Associate of Applied Science in Facilities Engineering Technology

C. Course transferability___________________

V. General Education Goals

1. To develop the ability to prepare design drawings for manufacturing.

2. To understand and interpret technical drawings, and provide a fundamental understanding of computer aided manufacturing.

3. To be able to think technically and analytically, and communicate effectively.

4. To develop the ability to reason quantitatively.

VI. Student Learning Outcomes

- The student will be able to:

- Understand, prepare and modify technical drawings, and will be familiar with basic machine operations.
- Understand the steps required to go from concept to drawing to manufacturing.
- Utilize the AutoCAD program which is the standard of the industry.
- Prepare multi-view drawings.
- Prepare schematic diagrams as used in controls and flow sheets.
- Prepare sectional views.
- Prepare architectural floor plans.
- Draw in 3D.
- Understand how parts are made using CAM software.
- Understand the structure of the CNC programming language.
- Describe the nine basic steps to operate a CNC mill.
- Operate a laboratory scale CNC machine.

VII. Outline of Course Content

CAD/CAM Processes

- CAD Drawing Fundamentals
- Introduction to Technical Drawing
- Multiview CAD Drawings
- Schematic Diagrams
- Sectional Drawings and Fasteners Transformers
- 3D Drawings
- Facilities Layout
- Introduction to CAM-Mill
- Introduction to CNC Mill Programming
- Circular Interpolation
- CNC Mill Setup and Tooling

VIII. Suggested Materials


References:


Amatrol provided Learning Activity Packets

Equipment: CAD stations in class, CNC Mill and software by Novamill and Amatrol; Amatrol Learning Activity Packets and multimedia software