COURSE SYLLABUS

LAST REVIEW   Fall 2022

COURSE TITLE   CAD/CAM II

COURSE NUMBER   MACH 0205

DIVISION   Career and Technical Education

DEPARTMENT   MACH

CIP CODE   48.0501

CREDIT HOURS   4

CONTACT HOURS/WEEK Class: 1   Lab: 6

PREREQUISITES   MACH 0204

COURSE DESCRIPTION
The learner will be introduced to geometry creation by the use of icon driven methods to create lines, points and circles that will produce a drawing that can be used to create a part. This part creation will then be sent to our equipment to produce programs that CNC operators use to operate our equipment.

PROGRAM ALIGNMENT
This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:
https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Students will be able to create 2D and 3D CNC mill programs using Mastercam software.
2. Students will be able to create 4th and 5th axis CNC mill programs using Mastercam and Solidworks software.
3. Students will be able to program a CNC Lathe using CAM Software

TEXTBOOKS
http://kckccbookstore.com/

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE
I. General applications
    A.   Introduction

      B.   Geometry creation
      C.   Free-form CAD
      D.   Geometry expert
      E.   Loading shapes
      F.   Process information from prints

II. Introduction
      A.   The system requirements
      B.   Prompting
      C.   Text
      D.   Technical support

III. Create geometry
      A.   Geometry overview
      B.   Free form CAD
      C.   Geometry expert
      D.   Connecting and disconnecting geometry
      E.   Shapes and connections

IV. Free-Form Cad
      A.   Points creation
      B.   Line creation
      C.   Circle creation
      D.   Shape creation
      E.   Curve creation
      F.   Chafer and fillet creation

V. Geometry expert
      A.   Geometry expert button
      B.   R creations
      C.   Annotations
      D.   Workgroups
      E.   Work group summaries

VI. Loading shapes
      A.   File imports
      B.   File extensions
      C.   Import terms
      D.   Import dialog
      E.   Import translation
      F.   Point list files
      G.   File exports
      H.   IGES export
      I.   DXF export
      J.   Point list export
      K.   Export translation

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A.   Recognize requirements for system to operate.

1. Print system properties.
2. Identify systems requirements.

B. Identify system prompts.
  3. Access ballooning.
  4. Set tick display.
  5. Select ballooning and prompting.
  6. Access hot keys.

C. Locate shapes menus.
  7. Identify shapes in menus.
  8. Create shapes for menus.
  9. Give an overview of shapes menus.

D. Contact systems on-line help and related menus.
  10. Access help menus.
  11. Contact technical support on-line.

E. Create geometry using various methods of creations.
  12. Give a brief geometry overview.
  13. Identify free form CAD.

F. Create geometry utilizing geo expert.
  14. Locate geometry expert.

G. Create cad drawing utilizing free-form CAD methods.
  15. Interpret drawings to create CAD/CAM interfaces.
  16. Translate geometry to surfaces.

H. Disconnect and connect geometry.
  17. Connect and disconnect geometry.

I. Access shapes menus.
  18. Identify shapes menu and give explanation for uses.

J. Create points.
  19. Create various types of points.

K. Create lines.
  20. Create various types of lines.

L. Create circles.
  21. Create various types of circles.

M. Create shapes.
  22. Create various types of shapes.

N.   Create curves.
   23.   Create various types of curves.

O.   Create chafers and fillets.
   24.   Create chafers and fillets of various sizes and locations.

P.   Locate and use geo expert.
   25.   Create geometry using geo expert

Q.   Create spline R values.
   26.   Create splines.
   27.   Create various radius splines.

R.   Understand annotations.
   28.   Symbols for creating various special shapes.

S.   Identify and work with workgroups.
   29.   Create workgroups.
   30.   Interpret work group continents'.

T.   Create a functional workgroup and modify sequence.
   31.   Modify sequence of operations within workgroups.
   32.   Remove and correct false workgroup information.

U.   Import files.
   33.   Receive files from outside sources.
   34.   Convert outside files to correct format.

V.   Recognize file extensions.
   35.   Identify file extensions.
   36.   Translate file extensions to correct format.
   37.   Save corrected file extensions to new formats.

W.   Identify import terms.
   38.   Identify differences of file formats.
   39.   Explain why all formats will not work.

X.   Export files.
   40.   Export files in various formats.
   41.   Explain why various formats might be used.
   42.   Describe which formats can be used in various types of equipment within our shop.

Y.   Export files with various extensions
   43.   Explain the values of exporting files.
   44.   Perform exporting files.

Z.   Export files with extensions for various software versions.
    45.   Export a created file to various formats to different types of equipment.
    46.   Save and send files with various software versions.
    47.   Explain why different versions might not work.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES
Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES
Student Handbook
https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf

College Catalog
https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements
https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations
https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.