CASPER COLLEGE COURSE SYLLABUS
Course Number and Title: MCHT 2800 02 Computer-Assisted Manufacturing

Semester/Year: Fall 2015

Lecture Hours: 2	**Lab Hours:** 2	**Credit Hours:** 3
Class Time: 3:30 – 6:30 p.m.	**Days:** Tuesday	**Room:** GW 107

Instructor's Name: Paul Brutsman

Instructor's Contact Information:	**Office Phone:** (307) 268-2529 w/voice mail	**Email:** pbrutsman@caspercollege.edu

Office Hours: Monday and Wednesday 12:00 p.m. - 1:00 p.m. and 5:30 p.m. – 6:00 p.m.
Tuesday 12:00 p.m. 12:30 p.m. and 3:15 p.m. -3:30 p.m.
Thursday 12:00 p.m. – 12:30 p.m. and 3:15 p.m. -4:00 p.m.

Course Description: Computer applications in programming machine tools. Part programming using SURFCAM, a menu driven software package to acquaint students with a CAD/CAM system.

Prerequisites: None

Institutional Outcomes:

☐Demonstrate effective oral and written communication
☐Use the scientific method
☒Solve problems using critical thinking and creativity
☐Demonstrate knowledge of diverse cultures and historical perspectives
☐Appreciate aesthetic and creative activities
☐Use appropriate technology and information to conduct research
☐Describe the value of personal, civic, and social responsibilities
☐Use quantitative analytical skills to evaluate and process numerical data

Program Goals: The goal of the Machine Tool department is for students to obtain an education and practical skill development that promotes lifelong learning and insures student success in a career in machining.

Course Goals: To educate the student in basic SURFCAM 2-axis machining center programming.

Course Objectives: To educate the student in basic SURFCAM 2-axis machining center programming. The student will import models from SolidWorks, then manipulate and machine the models using SURFCAM. Model orientation, toolpath creation and verification will be explored.

Methodology: Practical application of theoretical concepts is emphasized in the classroom and lab. Concepts discussed in lecture will be demonstrated and then applied by the students.

Evaluation Criteria:

Homework	70%	A= 90-100%	
Projects	30%	B= 89-80%	
		C= 70-79%	
		D= 60-69%	
		F= <59%	

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:
- Refer to Casper College Catalog.
- Late assignments will not receive full credit. A letter grade will be deducted for each day the assignment is late. After four class periods the assignment will not be accepted.
- Cell phone use in the classroom is reserved for emergency purposes only. Please set all phones to vibrate and excuse yourself from the classroom if use is necessary.
- No i-pod or other electronic devices will be used during lecture or in the shop.
- Personal and equipment safety standards will be strictly enforced. It is the individual's responsibility to develop a safe work attitude. Jackets (hoodie) with strings are not allowed in the shop!
- Attendance is very important. It will be very difficult to make up missed class time. Students missing 3 classes will be given the choice of taking an "F" for the class, withdrawing from class or changing to an audit **and** continue to participate.
- Required Supplies: Clip Board, Graph Paper, *Safety Glasses* and 4 GB or smaller thumb drive
- Please wipe down the keyboard and desks before or after class.

Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty: (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

ADA Accommodations Policy: If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu .

The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Course Outline

Week 1
Course review
Review syllabus
Review computer lab rules
Username and Passwords
Machine axis
Datums
Lab exercises:
Import the following models and orient as follows
Carburetor spacer – Datum is top center of part
Tubesheet.sldprt - Datum is top center of part
WB04Ejector2.sldprt - Datum is center top of part. Change datum to top front left corner.
Construction view orientation for model rotation
Change color of geometry elements
Analyze distance of elements
Rename layers to Wireframe and Surfaces
Pan and Zoom model
7 standard views of model
Shade model

Week 2

No Class - Holiday

Week 3
Review
Importing models
SurfCam interface
Model orientation using C-View and transform
Edit color of element geometry
Masking elements

Carburetor spacer
Import Solidworks file Holley Carb spacer.sldprt
Model manipulation C-view
Layering
Masking
2 axis drilling
2 axis contouring
Arc in/ Arc out – Line in/Line out
Plunge/Peck
Plunge point selection
Cutter compensation
Graphically verify program
Create operator setup sheet
        Print operator setup sheet

Week 4
Finish Carburetor Spacer

Week 5
Machining operations for an injection mold ejector plate
Import Solidworks file EjectorPlate2.sldprt
Model manipulation C-view
Layering
Masking
2 axis drilling
2 axis contouring
Arc in/ Arc out – Line in/Line out
Plunge/Peck
Plunge point selection
Cutter compensation
Graphically verify program
Create operator setup sheet
        Print operator setup sheet

Week 6
Machining operations for a tubesheet.
Import Solidworks file tubesheet.sldprt
Model manipulation C-view
Layering
Masking
2axis drilling
2axis pocketing
Leadin/leadout moves
Arc in/ Arc out
Plunge point selection
Graphically verify program
Create operator setup sheet
Print operator setup sheet

Week 7
Complete tubesheet/ejector plate projects
Post programs for ejector plate and tubesheet – HAAS VF-1 – save in project folder
Practice concepts covered in class

Week 8
Complete machining operations for a scale and keychain
Files W20016.SCEDU and weld2.SCEDU
Create and machine text on a part
Use layers for multiple setups
Create front and back setup sections
Graphically verify programs
Create setup sheet
Print and submit setup sheet
Post program and save in project folder

Week 9
Student Project - Student to design their own key chain

Week 10
  Continue student key chain project

Week 11
  Continue student key chain project

Week 12
  Machine shop – Manufacturer key chains

Week 13
Final Project – Design and manufacture billet aluminum name plate

Week 14
Final Project

Week 15
Final Project

<div align="center">**SCHEDULE SUBJECT TO CHANGE**</div>