CASPER COLLEGE COURSE SYLLABUS
ENTK 2525 Design and Manufacturing Methods

Semester/Year: Spring 2016

Lecture Hours: 2  Lab Hours: 4  Credit Hours: 4

Class Time: 3:30pm-6:20pm  Days: Tuesday and Thursday
Room: GW 107

Instructor’s Name: Paul Brutsman

Instructor’s Contact Information: Office GW 116I
Phone 268-2529 w/voice mail
Email pbrutsman@caspercollege.edu

Office Hours: Monday 4:00 p.m. - 6:00 p.m.
Tuesday 8:00 a.m. 9:00 a.m.
Wednesday 4:00 p.m. – 6:00 p.m.

Course Description: A course emphasizing solid modeling and manufacturing techniques involved with various CNC equipment and the impacts of CAD on design and production. Manufacturing techniques utilizing CNC plasma, CNC router, laser engraver, machining/turning center and 3D printer will be covered in this course.

Statement of Prerequisites: Co-requisite of ENTK 2510 or instructor approval.

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 Drafting & Design department is for students to obtain an education and practical skill development that promotes lifelong learning and insures student success in a career in Drafting & Design or an allied field within Engineering Technology.

Course Goals: Students will be required to design and manufacture projects using CNC plasma cutter, laser engraver, 3D printer and CNC router. Students will be graded on the design, quality and manufacturability of each project.

Course Objectives: To educate the student in various manufacturing techniques used in industry
**Methodology:** Detailed lecture on the programming, operation and maintenance of CNC equipment in an everyday work environment.

**Evaluation Criteria:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (%)</th>
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</thead>
<tbody>
<tr>
<td>Individual Projects</td>
<td>70%</td>
</tr>
<tr>
<td>Class Projects</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
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</tbody>
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A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = <59

**Required Text:** No text

**Class Policies:** Last Date to Change to Audit Status or to Withdraw with a W Grade: Please refer to Casper College catalog for dates and deadlines.

**Fabrication Lab Safety Rules**

- You are required to get instructors permission before any use of the shop and equipment.
- Safety glasses must be worn in the Robotics Fabrication Lab shop at all times. There are dispensers located at the entrance door. Be sure to return glasses after use.
- Safety shield must be worn when grinding. No exceptions.
- If you are welding, safety curtains must be positioned properly.
- All general shop safety rules must be followed. If you are unsure, please ask the instructor for guidance.

**Design Studio Safety Rules**

- You are required to get instructors permission before any use of the shop and equipment.
- Safety glasses must be worn in the Design Studio if any equipment is running. Be sure to return glasses after use.
- All general shop safety rules must be followed. If you are unsure, please ask the instructor for guidance.

**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.

**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.

**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.

**Schedule**
There will be a couple community class projects that will require the participation of all students in the class.

- Science Zone – Catenary Arch

**Week 1-4**
Dimension 3D Printer operation and maintenance
Catalyst Software
Solid modeling and 3D printers
3D printer project

**Week 5-8**
ShopBot CNC router operation and maintenance
PartWorks software
ArtCam software
Solid modeling and CNC routers
CNC router project

**Week 9-12**
PlasmaCam CNC plasma operation and maintenance
PlasmaCam software
Solid modeling and CNC plasma
CNC plasma project

**Week 12-15**
Laser engraver operation and maintenance
CorelDraw
Solid modeling and Laser engraving
Laser engraver project