

Course Syllabus – MFG201

Course Identification -

Course Number - MFG201

Credit Hours - 6.0

Contact Hours - 10

Course Title - Introduction to CNC

Current Term – Fall 2017

Course sections - 1946 Classroom – 1950 Lab

Meeting Times and Days:

- Classroom - Monday and Wednesday 1:00PM – 2:20PM
- Lab - Tuesday and Thursday 8:00AM – 11:15AM
- Classroom BTC110 – Lab BTC105

Instructor Information -

Instructor's Name - **Andrew Paad**

Office Location - 105B BTC

Office Hours - 2:30PM -4:30 Monday and Wednesday

Phone Number - (989) 358-7421

Home Phone Number - (989) 255-1066

Email: paada@alpenacc.edu

Course Materials -

Third Edition, Industrial Press, Inc., 2004 *CNC Programming Handbook (CNC)*

Course Description -

This is an introductory course for CNC machinery. Students will develop safe working habits and calculate machine speeds and feeds of milling machines and lathes. They will study the Cartesian coordinate system, absolute and incremental positioning, and datum and delta dimensioning for CNC machines. Math for CNC programming and calculations of linear and circular interpolations will be covered.

Prerequisites –

MFG101(L) or permission from instructor.

Course Instructional Objectives

Objectives - Instructional objectives define the scope of the knowledge, attitude and skills which students are expected to acquire for successful completion of the course.

1. Explain what Computer Numerical Control (CNC) is and what basic components comprise CNC systems.
2. Understand CNC Axis of motion.
3. Identify the importance and the order of CNC process planning.
4. Understand the meaning of the terms associated with G and M code programming.
5. Ability to produce a complete CNC program that will create a part that meets blueprint specifications.

Topics

1. Cartesian coordinate system
2. G & M codes
3. Basic CNC tooling
4. Work & tool offsets
5. Cutter diameter compensation
6. Circular profiles
7. Tool length offset
8. Automatic tool changers
9. Canned cycles

Core Competencies -

This course contributes to the development of the following core competencies basic to all associate degree students:

- I. How to learn effectively:** Students will learn to follow machine tool processes to write programs.
- II. How to solve problems:** Students will use geometric figures to solve programming problems.
- III. How to use mathematical concepts:** Students will use mathematical concepts to locate points on a blueprint.

Activity Schedule -

See activity schedule attachment

Attendance Policy –

1. Students are expected to attend their scheduled classes according to the requirements of the instructor.
2. Students will be expected to attend class every day that class is scheduled. Each day a new topic is introduced and missing even one class can put the student behind.
3. If a student knows that he or she cannot attend class, the instructor should be notified prior to class through email or voicemail.
4. If classes are being cancelled or the college is opening later due to inclement weather, announcements will be aired on local radio stations.
5. If the instructor's unavoidable absence requires cancellation of a class, "Class Cancellation" signs are posted in Van Lare Hall next to VLH 100. In Besser Technical Center in the front lobby and in the hall next to the Bookstore, and in the Charles R. Donnelly Natural Resources Center on first and second floor bulletin boards.
6. All lab projects are required to be completed in ACC lab. Instructors prior approval is required if any projects are to be completed off campus.

Make-up and Late Paper Work Procedures –

1. Lab Assignments and tests can **only** be made up if the instructor has been notified of student's absence prior to class. If no prior notice has been given assignments cannot be made up.
2. The lowest two quiz scores will be discarded to account for normal absences. Quizzes may not be made up whatsoever.

3. It is important to stay for the whole lab time. Proper machining takes practice and since lab time cannot be made up, every effort possible should be made to attend class.

Grading Procedure –

1. Tests - 20 %
2. Quizzes - 10%
3. Homework - 10%
4. Participation - 15%
5. Lab Skill - 25%
6. Final Exam - 20 %
7. Total - 100%

GRADE SCALE

1. A = 100 - 93%
2. A- = 92 - 90%
3. B+ = 89 - 87%
4. B = 86 - 83%
5. B- = 82 - 80%
6. C+ = 79 - 77%
7. C = 76 - 73%
8. C- = 72 - 70%
9. D+ = 69 - 67%
10. D = 66 - 63%
11. D- = 62 - 60%
12. E = BELOW 59

Ethics Policy –

1. Disruptive Conduct - Student behavior that is detrimental to an environment conducive to learning or to the maintenance of a reasonable level of order on the campus or in the classroom shall be considered disruptive conduct. Students involved in disruptive conduct will be subject to disciplinary action as outlined in the handbook and which includes suspension or dismissal.
2. **Cell phones must be turned off during lecture.**
3. Dishonest Scholarly Practices - Dishonest scholarly practices include, but are not necessarily limited to taking, using, or copying another's work and submitting it as one's own, intentionally falsifying information or taking another's ideas with the intention of passing ideas in class as one's own.
4. Alpena Community College is firmly committed to maintaining a campus environment free from sexual harassment and sexual violence, including domestic violence, dating violence, sexual assault, stalking and sexual exploitation, which are collectively referred to as 'Sexual Misconduct.' All students should refer to the College's Sexual Misconduct Policy – 7009 for complete definitions, policy provisions and procedures. Policy 7009 and other important resources can be found on the College website at <http://discover.alpenacc.edu/safety/sexualmisconduct.php>

5. Consequences for proven cases of dishonest scholarly practices: The course instructor will determine the appropriate penalty for proven cases of dishonest scholarly practice in their classes. **Minimum penalties will be:**
6. The first offense may result in an equivalent grade of "E" being given for the particular test, project, paper, course, etc. on which the cheating has occurred. The instructor may require the student to demonstrate mastery of the objectives for the particular test, project, paper, course, etc.; the grade will remain as "E."
7. The second offense (two total offenses, not necessarily in one course) will result in the student being assigned a failing grade for the course in which the second offense occurred.
8. Any student involved in three total offenses (not necessarily in one course) will be immediately dismissed from the college for one full academic semester.

Additional Resource Materials –

See instructor

Available Assistance -

1. Should a student encounter difficulty with any of the concepts covered in this course or otherwise require outside resources and/or expertise, assistance is available from the following:
 - a. Student Services Center, Van Lare Hall 101: Contact Yvonne White at 989.358.7270.
 - b. Free tutoring is available to all students in the areas of basic composition, reading, numerical, and study skills. The Student Services Center also offers students access to computers, printers, and various resources.
 - c. Workshops are put on throughout the semester to support students with topics such as: Effective Study Habits, Conducting Research, APA & MLA formatting, Understanding your Degree Requirements, Applying for Scholarships, etc.
 - d. Stephen H. Fletcher Library, Center Building 111: Contact Wendy Brooks at 989.358.7249, Kelly Jackson at 989.358.7252, or Nat Salziger at 989.358.7406.
 - i. The Library consists of books, pamphlets, periodicals, microform, reference, CD and on-line materials. Computerized local and regional library catalogs and inter-library loan facsimile service give quick access to materials anywhere in the country.
 - ii. Computer access to the Internet, websites and e-mail is also available in the Library.
 - iii. Research papers and projects are supported in the library through various databases and research materials.
 - e. Testing Center, Van Lare Hall 122: Contact Kim Montague at 989.358.7209.
 - i. Students may be asked to take make-up tests in the ACC Testing Center. ALL students must provide Testing Center Staff with a photo ID prior to testing. Please anticipate your testing needs and allow enough time for testing. Making an appointment will ensure you have a spot reserved to take your test.

Class Cancellations:

If the College alters its normal operating schedule, a message is sent to the local news media and is recorded on the ACC phone system (1-888-468-6222). When possible the message is included on the college's homepage (www.alpenacc.edu).

SchoolMessenger

Alpena Community College has signed on with *SchoolMessenger*, a service that provides alert notifications of emergency broadcasts, weather delays and cancellations, and course instructor cancellations, to subscribers via SMS text messaging and/or email. Students can opt-in anytime by texting **OPTIN** to the number 68453; students who successfully enrolled in the service will receive the following message: "You are registered to receive approx 3 msg/mo. Text STOP to quit, HELP for help."

myacc.alpenacc.edu

E-mail accounts are provided to every student. Official correspondence from the College will be sent to this account. Students are responsible for the information received and will need to monitor their account on a regular basis. If you need help or have questions regarding your account, please contact the ACC help desk at 989.358.7374 or helpdesk@alpenacc.edu . You will no longer be able to change your email address in Web Advisor.

Office 365 is free for all ACC students.

Learn more on the College's website at www.alpenacc.edu .

Americans with Disabilities Act:

It is the policy of Alpena Community College (ACC) to comply with Section 504 of the Rehabilitation Act of 1973, as amended, and with the Americans with Disabilities Act of 1990 (ADA). These acts provide for equal opportunity for students with disabilities in educational activities, programs, and facilities. ACC is committed to affording equal opportunity to persons with disabilities by providing access to its programs, activities, and services. *It is the responsibility of the student to make known, in a timely manner, the need for any accommodation or auxiliary aids. Please contact the Dean of Students, VLH 109.* http://discover.alpenacc.edu/americans_with_disabilities_act.php

Campus Safety Policies and Procedures:

Alpena Community College is committed to enhancing the safety and security of our campus communities. To this end, the College has adopted a series of Board of Trustees policies, designated as Series 7000

(http://discover.alpenacc.edu/safety/policies_and_procedures.php) designed to specifically address issues of safety and security and to comply with federal and state laws, including the following:

1. The Jeanne Clery Disclosures of Campus Security Policy and Campus Crime Statistics Act (The Clery Act)
2. The Violence Against Women Reauthorization Act of 2013, also known as Campus SAVE Act (Sexual Violence Elimination Act)

Alpena Community College is firmly committed to maintaining a campus environment free from sexual harassment and sexual violence, including domestic violence, dating

violence, sexual assault, stalking, and sexual exploitation, which are collectively referred to as ‘Sexual Misconduct.’ All students should refer to the College’s Sexual Misconduct Policy – 7009 for complete definitions, policy provisions, and procedures. Policy 7009 and other important resources can be found on the College website at http://discover.alpenacc.edu/safety/sexual_misconduct.php .

Students who experience or have information regarding Sexual Misconduct are encouraged, but not required, to report it to Carolyn Daoust, Title IX Coordinator, or Nancy Seguin, Dean of Students.

The Drug-Free Schools and Campus Regulations of U.S. Department of Education

More information about these laws are available at www.alpenacc.edu under the Safety Resources & Links tab. ACC has a Safety Policies and Procedures Compliance Committee, appointed by the College President. The Committee meets regularly to review policies, recommend updates and amendments, and to develop procedures and programming in support of implementation of the policies. For questions, or information, contact any committee member.

TOBACCO FREE CAMPUS:

Alpena Community College has adopted a tobacco free environment on the main campus and at the Huron Shores campus. Effective August 24, 2009, all tobacco use is prohibited on any Alpena Community College properties.

Student Work –

Student work such as quizzes and assignments will be returned to the student as soon as possible.

Non-Scheduled Laboratory Work –

Non-scheduled lab work must be coordinated with the instructor.

Withdrawal -

A course may be dropped any time through the 10th week of the semester

Syllabus Revision-

Instructor reserves the right to add to or delete from contents as presented in course syllabus.

ACC TAACCCT Grant

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