

Syllabus

Multi-axis Machining Operations

45 hours

Introduction

This course is competency-based, allowing you to progress at your own pace, while continually demonstrating competency through a variety of assignments and assessments. Specific requirements to successfully complete this course will be outlined in this syllabus.

Course Description

Students will learn setup and operation of a 5-axis milling machine. Topics will include fundamentals of setup, basic probing routines, simple fixturing, setting tool & fixture offsets, dialing in a fixture, dialing in a part, and how to load a program. Student will study 3+2 as well as 5-axis function, fundamentals, and programming.

Course Objectives

Upon completion of this course, you will be able to:

- Identify important features of 3-axis mill set-up.
- Practice machine offset programming in Mastercam.
- Creating solids in Mastercam.
- Utilize appropriate surfacing toolpaths for the project as instructed.
- Distinguish important features of the HAAS UMC-500 5-axis vertical milling machine.
- Evaluate correct machine set-up and identify problems.
- Evaluate probe usage and identify problems.

Instructor Information

Required Materials

The following texts and/or supplies are required for this course:

- Flash drive
- Supplies*: Project materials (varies per student and is specific to each project)

*This item is provided by the department.

Classroom Hours

Classroom hours begin at 5:00 pm and end at 10:00 pm, Tuesday through Thursday except for school holidays and closures. Information for the school event calendar is located on the college website.

Course Activities

Begin the course at the Modules page and work your way down to the bottom, in order. The activities listed include videos, assignments, quizzes, projects, demonstrations, and exams. Read each assignment description carefully. Follow the individual instructions on each graded assignment to know how to submit them. Usually, you should submit activities through Canvas directly.

Employment Skills

This program strives to prepare students for employment upon completion. Therefore, students are rated on the following ten employment skills while progressing through the program:

- **Communication with Instructors & Peers:** Actively listens. Accepts feedback.
- **Critical Thinking & Problem Solving:** Prioritizes work. Generates solutions. Considers alternatives based on evidence.
- **Demonstrates Confidence:** Succeeds under pressure. Perseveres through challenges. Seeks guidance appropriately.
- **Dress, Hygiene & Appearance:** Excellent hygiene and clean, suitable apparel.
- **Ethical Behavior:** Shows integrity in all facets of work. Willingly accepts accountability for performance.
- **Positive Attitude:** Maintains an optimistic outlook. Encourages others.
- **Professionalism:** Excellent attendance and punctuality. Proper use of electronic devices. Consistently engaged in learning.
- **Quality of Work:** Work is accurate and done safely.
- **Uses Time Productively:** Quickly self-starts. Stays on task until completion.

- **Works Cooperatively:** Accepts and collaborates well with others.

Employment Skill Ratings:

- 4 = Excellent
- 3 = Good
- 2 = Fair
- 1 = Poor
- 0 = Unsatisfactory

Satisfactory Academic Progress

In order to remain in good standing, students are required to maintain satisfactory academic progress. The calculation to determine progress is enrolled-contracted hours divided by graded hours. At the end of each month, you will earn a progress grade for each course you are enrolled in. This grade will be 25, 50, or 75 percent, based on the coursework you have completed to date. To remain in good standing, your overall progress in the **program** needs to remain under 150%. Written notification and a remediation plan will result should you exceed 150%.

Example:

You are currently registered and working in 2 courses that are 60 hours each. You are enrolled to attend 4 hours a day, which is 80 hours at the end of the month. You have completed 50% of one course and 75% of the other course.

80 enrolled-contracted hours / 75 completed hours = 107% progress

You will meet with your instructor monthly to engage in progress monitoring discussions. This will include going over past work, evaluating your mastery of objectives, and setting goals for your progress in the course.

Course Grading

Grades will be tracked through Canvas. Below is a breakdown of what each letter grade and numerical rating means and how they will be awarded.



Your overall grade will be weighted as follows:

This will be replaced by a table populated with the course Assignment Groups.

Student Standards & Conduct

A grade of B- or better is required to pass for all courses. If a student earns below a B- in any course, they must meet with their instructor and the department head to discuss different options available for the student to improve their rating in that course. A grade of a B- is required in a course before a student can proceed on to other courses. The student is encouraged to routinely check their rating in Canvas for their current percentage in the course.

To learn more about the rules, expectations, and the rights associated with being a student of the college, please visit the college website.

Among these expectations is a high level of academic integrity. Cheating, plagiarizing, infringing on copyright laws, and giving, selling, or receiving unauthorized course or test information is unacceptable.

Technical Support

If you have technical difficulties with the Canvas course, first contact your instructor and make them aware of the issue. If the problem persists or your instructor(s) is unavailable, you can chat with a Canvas representative by clicking here:

[Canvas Live Chat](https://cases.canvaslms.com/liveagentchat?sfid=001A000000jePmGIAU) [_\(https://cases.canvaslms.com/liveagentchat?sfid=001A000000jePmGIAU\)](https://cases.canvaslms.com/liveagentchat?sfid=001A000000jePmGIAU)

Americans with Disabilities Act

For more information on the ADA or how to contact the College's ADA coordinator, see the college website.



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