CAM TECHNIQUES

Code: 322109

Main Scientific Area: Mechanics and industrial processes

Lecturer: Pedro Miguel Barbosa de Miranda

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 60h Total Workload: 105h

ECTS: 6,0

Objectives

This curricular unit aims to introduce students to machining technologies in CNC milling machines and lathes using CAM software-based programming.

Learning Outcomes

By the end of this unit, the student will be able to:Define CNC technology, its variants, and associated equipment.Understand the axis system of different machines.Recognize the meaning and importance of defining machine setups.Select the appropriate equipment for the job at hand.Choose the ideal tools for each operation.Fully utilize CAM software to program parts on lathes and milling machines up to 4 axes.

Course Contents

- CNC Milling Equipment Knowledge:

- Workpiece Zero Setting:

- Tool and Offset Definition:

- 2D Part Programming:

- 3D Part Programming:

- Multi-Axis Programming:

- CNC Lathe Part Programming:

Recommended Bibliography

Apontamentos do professor

CNC-Programming-Handbook-Third-Edition

Modern Metal Cutting - a practical handbook

Machine Tool Practices, 7th Edition, Richard Kibbe, John Neely, Roland Meyer, Warren White, Prentice Hall,

2001,ISBN 0-13-033447-2

Mechanics of Chip Formation, J.T. Black, Auburn University;ZASMHBA0002117

Learning and Teaching Methods

Considering the contents and objectives of the curricular unit, it is clearly evident that the two are intrinsically linked in order to empower students for the job market. The practical component ends up being the unifying factor of all the other components that serve as a complement.

Assessment Methods

This course will be graded based on two individual assessments submitted on Moodle, as follows:CAM Turning Programming (30%).CAM Milling Programming (70%).

A behavioral and participation component will also be evaluated, which will also correspond to 20% of the final grade.

If a student fails to obtain approval in the previous components, they may take a practical exam that will cover all three components of the continuous assessments. The student may also always take an improvement exam, always assuming this assessment as valid.