

TECHNOLOGIES AND MILLING OPERATIONS AND ELECTROEROSION (WORKSHOP)

Code: 322116

Main Scientific Area: Mechanics and industrial processes

Lecturer: Fernando Daniel Ferreira Machado

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 60h Total Workload: 105h

ECTS: 6,0

Objectives

This course aims to introduce students to CNC milling technologies (manual programming, CAD/CAM programming and machine use) and EDM technologies in both the electrode and strand strands. The machine utilization component is important and takes up half the time of this unit

Learning Outcomes

It is intended that the student demonstrate at the end of this units the following competencies:- To know what is the CNC technology, its variants, and equipment that are associated with it;- Know the system of axes of the various machines;- Know the meaning and importance of setting machine's setup;- Know how to choose the equipment according to the work to be performed;- Know how to define the ideal tools for each operation;- Know the important aspects in the maintenance of equipment;- Know how to optimize the work in order to monetize the equipment;- Know how to program the equipment and put it into operation;- Know what tools and accessories exist, and how they can be used;- Know how to use computer tools to program equipment to multi-axes.- Know what EDM technologies exist as well as their variants and perform the piece technology association;- Know the consumables in EDM technologies

Course Contents

- Know the CNC milling equipment;- Define Zero Piece; - Define tools and offset's; - Programming of simple cycles of manual form and machining;- CAM programming and machining of parts;- Optimization of setup (costs versus return);- Multi-axis machining- Know the technologies of electroerosion;- Definition of properties depending on the shape and material of parts in EDM technologies;- Process variants

Recommended Bibliography

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

- Know the CNC milling equipment;- Define Zero Piece; - Define tools and offset's; - Programming of simple cycles of manual form and machining;- CAM programming and machining of parts;- Optimization of setup (costs versus return);- Multi-axis machining- Know the technologies of electroerosion;- Definition of properties depending on the shape and material of parts in EDM technologies;- Process variants

Assessment Methods

This CU will be evaluated using a group work that presupposes project (50%), programming, machining and optimization of production processes and two exercises using the Moodle platform (25% +25%)