MANAGEMENT ENGINEERING (LM54)

(Lecce - Università degli Studi)

Teaching ROBOTIZED MANUFACTURING AND FMS

GenCod A004631

Owner professor Francesco NUCCI

Teaching in italian ROBOTIZED MANUFACTURING AND FMS

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SSD code ING-IND/16

Reference course MANAGEMENT ENGINEERING

Course type Laurea Magistrale

Credits 9.0

Teaching hours Front activity hours: 81.0

For enrolled in 2020/2021

Taught in 2021/2022

Course year 2

Language ENGLISH

Curriculum Advanced Manufacturing and Operations Management

Location Lecce

Semester First Semester

Exam type Oral

Assessment Final grade

Course timetable https://easyroom.unisalento.it/Orario

BRIEF COURSE DESCRIPTION	The aim of the course is the study of Robotized and Flexible Manufacturing systems. The first part addresses the production systems and their configuration. The second part of the course is oriented to Computer Aided Production
REQUIREMENTS	Office automation, Elements of Mechanics

COURSE AIMS

Knowledge and understanding

After the course the student should understand the following aspects

- Flexible manufacturing system: configuration and management
- Robots in manufacturing environment: selection, configuration and management.
- Computer Aided Production: use of computer aided techniques to manage production

Applying knowledge and understanding

After the course the student should be able to

- formulate and solve problems concerning configuration and management of flexible production systems.
- select and program robotics in order to support CNC machines in production environment.
- assess the performance parameters and discuss issues related with different solutions.
- describe different approaches of production layout.
- formulate and solve production system configuration problems
- manage state-of-the-art techniques to represent part program

Making judgments

Students should obtain the skill to compare pros and cons of different methods to the solution of a specific problem through examples and problems.

Communication

The aptitude to communicate on technical issues should be obtained by discussing in a rigorous method both concepts and the accepted solution to a specific problem.

Learning skills

Selected problems will be recommended that involve developing on presented theories and techniques. Identifying solutions to case study problems will be acquired for professional career.

TEACHING METHODOLOGY

The course is based on: a) frontal lessons, based on slides; b) practical group exercises, based on worksheets; c) individual laboratory experiences supported by the teacher. The teaching material is available to the students through the dedicated website http://nucci.dii.unisalento.it/rmfms. Lessons aim at achieving the educational objectives through the parallel presentation of theory and practice of the manufacturing field.

ASSESSMENT TYPE

The exam is divided into two parts.

In the first part a project report related to a workgroup is developed. This refers to a generic industrial case study that is customized for each group of students. For attending students, the project is assigned in the final part of the course to allow the first phase to be carried out during laboratory hours with the support of the teacher.

In the second part there is an oral interview consisting in the discussion of the developed project and the topics of the entire course.

FULL SYLLABUS

Manufacturing robots: classification and programming.

Production system configuration: analysis of production paradigms, production lines, flexible systems, and performance analysis of production systems.

Part Program concept: state-of-the-art techniques to represent part program, analysis of possible extensions of the part program concept using the STEP methodology (network part program).

Project work on a real case study of Robotized Manufacturing and FMS.

Use and application of packages for part program modeling and production system analysis.

REFERENCE TEXT BOOKS	[1] Handouts [2] Luggen W.W., "Flexible Manufacturing Cells and Systems", Prentice Hall, ISBN: 0-13-321977-1. [3] Groover M.P., "Automation, Production Systems, and Computer-Integrated Manufacturing", 2nd edition, Prentice-Hall, 2001, ISBN 0-13-088978-4. * [4] Rembold U, Nnaji, B.O, Storr, A., "Computer Integrated Manufacturing and Engineering", Addison-Wesley, ISBN 0-201-56541-2. *