**Teaching MANUFACTURING QUALITY**

*Owner professor* Massimo PACELLA

**BRIEF COURSE DESCRIPTION**

This course provides students with the analytical and management tools necessary to solve manufacturing quality problems and implement effective quality systems. Topics include quality systems and standards, the Six Sigma problem solving methodology, process capability analysis, measurement system analysis, gauge R & R, ANOVA, statistical process control, and geometric tolerances. Sufficiency probability theory and statistics.

**REQUIREMENTS**

- Introduce the basic definitions of quality, quality improvement, and other quality engineering terminology
- Understand the need for and gain an overview of EN 9100 certification
- Understand the international vocabulary of metrology
- Know the fundamentals of metrology devices
- Understand chance and assignable causes of variability in a process
- Calculate and properly interpret process capability ratios
- Understand some key aspects related to geometric requirements

**ASSESSMENT TYPE**

**Examination:** oral. The exam consists in the presentation and discussion of the case-study assignment results by project groups. Case Study assignments should be completed in teams of 1 or 2. Teams of 3 may be allowed provided a request is made in advance to the instructor.

**OTHER USEFUL INFORMATION**

**Office Hours:** By appointment; contact the instructor by email or at the end of class meetings.
FULL SYLLABUS

1. Quality Management System (4 hours)

2. EN 9100 – Quality System for Aerospace Manufactures (5 hours)
   How to identify and interpret the requirements of EN 9100. The structure of EN 9100. The sequence of a certification audit. Quality management system implementation issues.

3. Metrology principles (27 hours)

4. Statistical Process Control (SPC) (18 hours)

5. Measuring Methods and Gauges (18 hours)

6. Geometric tolerances (9 hours)

REFERENCE TEXT BOOKS

All lecture notes, data sets, solutions, and tutorials are available on the course web page.