

Faculty of Applied Sciences



MECA2711 Quality management and control.

[30h+15h exercises] 4 credits

This course is taught in the 1st semester

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Language: French
Level: Second cycle

Aims

- Sensitize students to the concept of quality management in companies (ISO standards and similar)
- Provide the technical basis of the most widely used non-destructive testing methods

Main themes

- Part 1 : Quality Management

Nowadays, most commercial organizations have implemented quality assurance and quality management systems. Such systems are generally developed according to standards, which specify requirements applicable to the organization and to the operation methods. The approach includes quality control, i.e. the verification of the characteristics of the products or services delivered by the organization.

Similar standards have been developed to address and control safety and environment management issues.

The sessions deal with the contents and the typical requirements of all three domains, by means of practical case studies.

- Part 2 : Non-Destructive Testing

NDT methods are techniques that allow to detect and to characterize flaws (such as cracks or corrosion) that may appear in materials as a consequence of the manufacturing process or of the industrial operation of the final component.

The sessions describe the basic principles of the most widely used techniques (ultrasonics, radiography, magnetic techniques,...) and provide a comparative assessment of implementation conditions, limitations and specific advantages.

Content and teaching methods

- Part 1 : Quality Management

- Quality, safety and environment management systems

Definitions, objectives, principles

References : Deming, ISO 9000, ISO 14000, VCA, OHSAS 18001, etc.

Management tools (statistical, Process Control, competence management, document control, etc)

- Self-assessment and certification

- Cost of non-quality

Cost types, impact in commercial organizations

- Maintenance strategies

Curative, preventive and predictive maintenance

- Part 2 : Non-Destructive Testing

- Basic principles, implementation conditions, associated equipment, performance assessment, for the following methods : visual testing, dye-penetrant testing, magnetic testing, eddy current testing, radiography, ultrasonic testing

- Description of the industrial framework (relevant standards, certification, etc)

- Review of typical industrial applications

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

None.

Other credits in programs

ELME23/M	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(4 credits)
MECA22	Deuxième année du programme conduisant au grade d'ingénieur civil mécanicien	(4 credits)
MECA23	Troisième année du programme conduisant au grade d'ingénieur civil mécanicien	(4 credits)