

EU objectives**At the end of this course, students will be able to :**

- Demonstrate and use kinematic and static relationships to check the validity of a system against specification criteria,
- Calculate the service life of a rolling element rotary guide,
- Check the mounting conditions for spur gears and planetary gear sets.
- Read a geometric specification on a definition drawing for a mechanical part in accordance with the GPS standard.
- Identify a measuring instrument.
- Describing a machining sequence
- Enter the necessary CAM parameters (type of operation, tool choice, trajectory strategy, cutting parameter calculations)
- Using a simulator and interpreting the results
- Describe the stages involved in implementing a NCM
- Take a measurement on a measuring column, describe a procedure for using a CMM and interpret the associated results
- Incorporate the constraints associated with prototyping processes into the design,
- Choose/pre-select a prototyping process,
- Identify the performance of a process corresponding to the characteristics of a part and characterise the process parameters
- Integrate the performance and parameters of a process with the characteristics of a part and consider economic and time constraints (cost, time, etc.).
deadline).

Description of the ECUEs**DESIGN OF MECHANISMS 2**

In power transmission: Identify the type of tothing on a gear, Calculate a transmission/reduction ratio, Determine the form of the torsor of the actions transmissible through a tothing, Identify a type of epicyclic gear, Demonstrate and use the Willis formula for the 4 existing types of gear, Calculate and check the assembly conditions for epicyclic gears, Calculate and check the assembly conditions for spur gears.

For a rotational guidance system: Analyse / Model a rotational guidance solution using rolling elements, evaluate the service life of a rotational guidance system using rolling elements.

MECHANICAL MANUFACTURING PROCESSES 2

GPS dimensioning of definition drawings: Principle of independence; local sizes; envelope requirement, Notation of a roughness, Shape defect, Defect orientation, position error, beat error, common zone, reference system

Metrology instruments: Presentation of instruments, concept of instrument resolution, concept of choosing an instrument.

Implementing the machining of a mechanical part: Machining operations and ranges, CAM, Simulation, Machining, Measurement

and control. PROTOTYPAGE

Prototyping processes (strato-design, multi-jet printers, 3D printers, stereolithography, high-speed machining in foam, resin, etc.); Performance and associated parameters (material, colour, precision, speed, temperature, etc.); Notion of cost and lead time; Feasibility of a part or assembly

Prerequisites

Reading of definition drawings of a mechanical part, Reading of overall drawings of a mechanism, Common core manufacturing processes course, Kinematic modelling (Architecture / Operation) of simple systems.

Bibliography

Tutorials and technical documents CATIA, MOCN -- Memotech commande numérique programmation, J-P.URSO, Editions CASTEILLA -- Memotech productique, M.BONTE, R.BOURGEOIS, R.COINET, Editions CASTEILLA -- Handout Design of Mechanisms, A. VEYER