



Faculty of Applied Sciences

MECA2491 Physics of welding.

[45h+15h exercises] 5 credits

This course is taught in the 1st and 2nd semester

Teacher(s): Bruno de Meester de Betzenbroeck
Language: French
Level: Second cycle

Aims

Explain the phenomena controlling the weldability of materials from the basic laws and principles of physics and metallurgy.

Main themes

- Elements of weldability.
- Thermal transfer during welding.
- Metallurgy of the fused zone.
- Thermo-mechanical effects in the heat affected zones.
- Cracking problems.

Content and teaching methods

- Definition of weldability.
- The different zones in a welded joint.
- The influence of the heat input.
- The fused zone.
- The metallurgical solid-state transformations in the welded joints.
- Microstructural and properties evolutions in the transverse section of weldments in different types of alloys.
- Thermal transfer during welding.

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

Recommended lectures :

- S. Kou, Welding metallurgy, J. Wiley & Sons, 1987.
- J. F. Lancaster, Metallurgy of welding, George Allen & Unwin, 3rd ed., 1980.