| **Course title: Welding technology, Welding Processes** | **Neptun code: GEMTT513-a** |
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**Course coordinator: Dr. Ákos Meilinger, associate professor, PhD**

type and number of lessons: 2 lectures/semester

method of accountability: colloquium

curriculum location of the subject: autumn

pre-study conditions: Theory of welding (GEMTT511-a)

**The task and purpose of the subject:**

Providing comprehensive knowledge in the field of the most common welding procedures. Getting to know the conditions and technological parameters of typical welding processes, and their effect on the quality of the welded joint.

**Course description:**

Grouping of welding processes. Modern trends in welding equipment, filler materials, and technologies.
Gas metal arc welding and flux-cored arc welding: the effect of shielding gases, slag, and its combination to the technology and weld quality. Variations of modulation procedures: pulse technologies and synergy.
Welding with high energy density: laser beam and electron beam welding.
Liquid phase pressure welding: resistance spot welding, resistance seam welding, resistance projection welding. Effect of technological parameters.
Solid phase pressure welding: friction welding, ultrasonic welding, stud welding, explosion welding. The effect of technological parameters, optimization.

**Required literature:**


1. ASM Metals Handbook, Volume 6: Welding, Brazing and Soldering, American Society for Metals. Metals Park Ohio, 2010.
2. A. C. Davies: The Science and Practice of Welding, Volume 2: The practice of welding, Cambridge University Press, UK, 1993.
3. AWS: Welding Handbook, 9th edition, Volume 3: Welding Processes Part 2, US, 2007


**Recommended literature:**


1. AWS: Welding Handbook, 9th edition, Volume 3: Welding Processes Part 1, US, 2004
2. John Norris: Advanced Welding Processes, Technologies and Process Control, Woodhead Publishing, Cambridge, UK, 2006
3. Mel Schwartz: Innovations in Materials Manufacturing, Fabrication, and Environmental Safety, CRC Press, 2011