

Biomechanical and Medical Applications of Laser Beam Technologies

(online short course)

Lecturer: Prof. Dr. Lajos Borbás

E-mail: borbas.lajos@edutus.hu

Topics:

1. Introduction of the Teacher/Lecturer (workplace, position, scientific activity, teaching skills, publication, acknowledgement)
2. Connection of the design procedure with the material properties/laws, especially in case of materials manufactured by laser beam technologies. (Determination of material properties, static, dynamic behavior. Constraints (Boundary Conditions), material laws. Orthotropic material law of 3D produced/printed materials).
3. Residual stresses caused by laser-beam technology. (Classification of residual stresses, possible methods for determination them).
4. Place and role of laser-beam technologies in the field of biomechanical application (Introduction of Biomechanics, laser-beam technologies in the field of biomechanics,
5. Medical devices produced by additive manufacturing (3D printed laser beam technologies)
6. Individual implantation in medical sciences using laser-beam technologies (method of replacement bones, Arthritic destruction using based on individual human material properties: from CT, point-cloud to the individually produced implant produced by laser beam technology)