

Course: Special Topics in Materials Engineering and Science III – Biomaterials		
Lecturer: Gabriel Goetten de Lima		
Code: ECMA7043	Type: Optative	Modality: Presence required
Course Hours: 60 h		Credits: 04
Main Topics: 1) Introduction to biomaterials, basic concepts, classification, structure. 2) Synthesis and properties of biomaterials: Metallic Materials, Ceramic Materials, Polymeric Materials and Surface Treatments. 3) Key concepts in the use of biomaterials in medical devices; host reaction and evaluation; biological testing and biodegradation. 4) Applications of biomaterials in orthopaedics, dentistry and as drug release.		
References: 1) Ratner, B.D. & Hoffman, Allan & Schoen, F.J. & Lemons, J.E.. (2013). Biomaterials Science: An Introduction to Materials: Third Edition. doi: 10.1016/B978-0-08-087780-8.00148-0. 2) Park, Joon, and Roderic S. Lakes. Biomaterials: an introduction. Springer Science & Business Media, 2007. doi: 10.1007/978-0-387-37880-0. 3) Oréfice, Rodrigo Lambert; Pereira, Marivalda de Magalhães; Mansur, Herman Sander. Biomateriais: fundamentos e aplicações. Rio de Janeiro: Cultura Médica, 2006. 538 p. 4) Park, Haesun, Kinam Park, and Waleed SW Shalaby. Biodegradable hydrogels for drug delivery. CRC Press, 2011. 5) Niinomi, Mitsuo, ed. Metals for biomedical devices. Elsevier, 2010.		