

Title: Principles of Tissue Engineering [3-0-0-3]**Content :**

This course will cover introductory concepts in tissue engineering including basic cell culture techniques, methodology for preparation of scaffolds, natural and artificial biomaterials used for scaffolds, mechanisms of cell biomaterial interaction, cellular communication, biocompatibility and foreign body response, basic concepts governing cell survival and tissue organization, influence of environmental factors including mechanical loading and culture conditions (e.g. static versus dynamic), differentiated cell types and stem cells, regeneration of tissues and organs in vitro and in vivo. This knowledge will be applied to engineering of various body systems. Examples of tissue engineering based procedures employed clinically will be analyzed as case studies.

Texts / References:

- Blitterswijk CV, Tissue Engineering, Academic Press (2008).
- Saltzman WM, Tissue Engineering, Oxford University Press (2004).
- Lanza RP, Langer R, Vacanti JP, Principles of Tissue Engineering, Academic Press, 3rd Edition (2007).
- Palsson B and Bhatia SN, Tissue Engineering, Pearson Prentice Hall (2004).