

HTI 5124 Biomaterial and Tissue Engineerings Credit Value: 3

Originating Staff & Department: Dr. Mo YANG (HTI) **Pre-requisites:** Nil

Recommended Background Knowledge: knowledge in biomaterials science and engineering

Learning Approach:

Students are required to attend the class and research seminars. They are exposed to various facets of biomaterials research and development. They are also provided with the latest development in the recently emerged field of tissue engineering. Students are given assignments and need to make presentations.

Learning Outcomes:

At the end of the subject, students will be able to:

- appreciate biomaterials that have been successfully developed and used in human bodies
- understand the most recent developments in biomaterials and tissue engineering
- be aware of interconnecting issues in biomaterials research and development
- use, through case studies, the appropriate techniques and right strategies in the successful development of new biomaterials for medical applications

Syllabus:

1. Biomaterials Surfaces Physics
2. Protein-Surface Interactions
3. Cell-surface Interaction
4. Surface Modification Methods Purposes Plasma Treatments Polymer/Organic Coatings Patterned Surfaces
5. Surface Characterization in Vacuum XPS/ESCA, AES, SIMS
6. Surface Characterization in Situ (Aqueous Solution) Contact Angle, AFM
7. Biosensors and Diagnostic Devices
8. Tissue engineering: principles
9. Tissue engineering: applications