**COURSE SYLLABUS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Title**：Bioceramics | | | | |
| **Credits / Hours** | 3/3 | **Course Number** |  | **□Required ■Elective** |
| **Course Description**  This course is an introduction to the field of bioceramics, with a focus on the processing and application of bioceramics used in medical devices and implants. Ceramic biomaterials with higher biocompatibility incorporating the concept of tissue engineering have attracted attention. The contents and volume of this lecture are convenient for students in the fields of science and engineering, medicine, dentistry and pharmacy.  **Course Goals and Objectives:**   1. Material microstructure, properties and manufacturing processes of bioceramics 2. An introduction to the various properties and biomedical applications of bioceramic composite materials 3. Learn about the application of bioceramics in various substitutes for hard tissue and tissue engineering 4. Help students understand the nature of various biomedical materials and various clinical/biological responses   Textbook: Prepared by professors and other references (papers) | | | | |
| **Course Topics** | | | | |
| **Topic** | | **Content** | | |
| Topic 1 | | Introduction of bioceramics | | |
| Topic 2 | | The classification of biomedical ceramics | | |
| Topic 3 | | Properties of bioceramics | | |
| Topic 4 | | Processing of bioceramics | | |
| Topic 5 | | Wet surface modification of bioceramics | | |
| Topic 6 | | Dried surface modification of bioceramics | | |
| Topic 7 | | Biocompatibility of bioceramics | | |
| Topic 8 | | Applications of bioceramics in tissue engineering | | |
| Topic 9 | | Medical device design with bioceramics | | |
| Topic 10 | | Innovative new-generation bioceramics and ceramic-related biomaterials | | |
| Topic 11 | | Future development of bioceramics | | |