**COURSE SYLLABUS**

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| **Course Title**：Biosensors | | | | |
| **Credits / Hours** | 3/3 | **Course Number** |  | **□Required ■Elective** |
| **Course Description**  Biosensors based on biological materials are commonly used and essential tools to a wide variety of researchers working in a broad range of applications. This course will give a systematic and comprehensive introduction to the principles of biosensors. Detailed performance characteristics of biosensors and sensing materials are discussed. Details of the most important types of biosensors currently will also be presented.  \*Text Book: Self-edited lecture notes  \*Prerequisites: General Chemistry, General Physics, Introduction to Materials Science | | | | |
| **Course Topics** | | | | |
| **Topic** | | **Content** | | |
| 1. Introduction to Biosensors | | 1. Overview of biosensors 2. Principles of biosensors 3. Component of biosensors | | |
| 1. Nanomaterials for Biosensors | | 1. Classification of nanomaterials 2. Revolution of nanomaterials 3. Characterization of nanomaterials | | |
| 1. Biological Elements | | 1. Enzymes 2. Antibodies 3. Nucleic acid 4. Receptors | | |
| 1. Immobilization of Biological Elements | | 1. adsorption 2. Microencapsulation 3. Entrapment 4. Cross-linking 5. Covalent bonding | | |
| 1. Transducer | | 1. Electrochemistry 2. Optical Methods 3. Electronics | | |
| 1. Performance Factors | | 1. Selectivity 2. Sensitivity 3. Stability 4. Recovery | | |