**COURSE SYLLABUS**

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| **Course Title**： Biophotonics |
| **Credits / Hours** | 3/3 | **Course Number** |  | **□Required ■Elective** |
| **Course Description**This course is an introduction to the field of biophotonics, which involves the use of light-based technologies to study biological systems. Students will learn about the fundamental principles of optics and how they are applied to study living organisms at the cellular and molecular level. Topics covered include microscopy, spectroscopy, laser-based diagnostics, and phototherapy. **Course Goals and Objectives:**1. To understand the basic principles of optics and their application to biophotonics.
2. To learn about the different imaging techniques used in biophotonics, including fluorescence microscopy, confocal microscopy, and multiphoton microscopy.
3. To understand the principles of spectroscopy and its applications in biophotonics.
4. To learn about laser-based diagnostics and their use in medical imaging and diagnosis.
5. To understand the principles of phototherapy and its applications in medicine.

Textbook: Prepared by professors and other references (papers) |
| **Course Topics** |
| **Topic** | **Content** |
| Topic 1 | Introduction to Biophotonics |
| Topic 2 | Basic Principles of Optics |
| Topic 3 | Imaging Techniques in Biophotonics |
| Topic 4 | Fluorescence Microscopy |
| Topic 5 | Confocal Microscopy |
| Topic 6 | Spectroscopy in Biophotonics |
| Topic 7 | Absorption Spectroscopy, Fluorescence Spectroscopy |
| Topic 8 | Raman Spectroscopy |
| Topic 9 | Phototherapy and Photodynamic Therapy |
| Topic 10 | Applications of Biophotonics |
| Topic 11 | Diagnosis and Treatment of Disease |