

## **RIME 817: BioRobotics**

### **Textbook**

1. Biorobotics–Methods and Applications, edited by Barbara Webb and Thomas R. Consi.

### **Objective**

3. The objective of this course is to develop expertise of the multidisciplinary field of BioRobotics. The course involves detailed study of Biosignals and the principals of Bio Mechanical Designs.

### **Course Outcome**

4. After studying this course students will be able to use Human Neurological Signals for operations of various kinds of Robots. The course will also enable students to develop Biomatic Robotic systems.

### **Course Outline**

<b>Topics</b>	<b>Allocated Periods</b>
<ul style="list-style-type: none"><li>• Introduction to biomechatronics and biorobotics.</li><li>• Types of biosensors and instruments.</li><li>• Modeling and design of prosthetic devices.</li><li>• Principle of electromyography (EMG).</li><li>• Design of prosthetic devices.</li><li>• Control of prosthetic devices using EMG – preprocessing and pattern recognition.</li><li>• Control of prosthetic devices using EMG – control command generation.</li><li>• Bio-inspired machines.</li><li>• Robotic rehabilitation.</li><li>• Brain-controlled robotics.</li><li>• Functional near-infrared spectroscopy based brain-computer interfaces.</li></ul>	45