# **Biomedical Information Processing**

**Instructor Name: Jun Albert Pardillo**

**Credit Units: 3**

**Target Students: 4th Year Computer Science and Information Engineering Students**

**Total Hours: 54**

**Class Hours per Week: 3**

Biomedical Information Processing is a course designed for 4th Year Computer Science and Information Engineering students who are interested in exploring the intersection of computer science and biomedical engineering. This course will provide students with an in-depth understanding of the principles and techniques used in processing and analyzing biomedical data.  
  
The course will cover a range of topics, including the basics of biomedical signal processing, image processing, and machine learning techniques. Students will learn how to apply these techniques to various biomedical applications, such as medical imaging, electroencephalography (EEG), electrocardiography (ECG), and more.  
  
Throughout the course, students will also be introduced to various biomedical databases and tools used in the field. They will learn how to access and analyze data from these sources, and how to use this information to develop new biomedical applications.  
  
By the end of the course, students will have gained a comprehensive understanding of the principles and techniques used in biomedical information processing. They will be able to apply this knowledge to real-world problems in the field, and will be well-prepared for further study or work in the biomedical engineering industry.  
  
The course will also focus on the practical applications of digital image processing in various fields, such as medical imaging, remote sensing, and computer vision. Students will learn how to use various software tools and programming languages, such as MATLAB, Python, and OpenCV, to implement digital image processing algorithms and analyze the results.  
  
Throughout the course, students will work on several projects that involve real-world applications of digital image processing. These projects will help students develop their problem-solving skills and gain hands-on experience in applying digital image processing techniques to solve real-world problems.  
  
By the end of the course, students will have a solid understanding of the principles of digital image processing and its applications. They will be able to apply their knowledge to solve complex problems in various fields and will be well-prepared for careers in industries such as medical imaging, robotics, and computer vision.

## Course Outline

### **Week 1 - Week 3: Introduction to Biomedical Information Processing**

* Topic Introduction and Objectives
* Lectures and Readings
* Hands-on Labs and Software Tools
* Weekly Assignments and Projects
* Summary and Review Session

### **Week 4 - Week 6: Biomedical Signal Processing**

* Topic Introduction and Objectives
* Lectures and Readings
* Hands-on Labs and Software Tools
* Weekly Assignments and Projects
* Summary and Review Session

### **Week 7 - Week 9: Digital Image Processing in Biomedical Engineering**

* Topic Introduction and Objectives
* Lectures and Readings
* Hands-on Labs and Software Tools
* Weekly Assignments and Projects
* Summary and Review Session

### **Week 10 - Week 12: Machine Learning Applications in Biomedical Data Analysis**

* Topic Introduction and Objectives
* Lectures and Readings
* Hands-on Labs and Software Tools
* Weekly Assignments and Projects
* Summary and Review Session

### **Week 13 - Week 15: Capstone Project: Real-world Application**

* Topic Introduction and Objectives
* Lectures and Readings
* Hands-on Labs and Software Tools
* Weekly Assignments and Projects
* Summary and Review Session