

**HTI 5115      Applied Biosignal Processing      Credit Value: 3**

---

**Responsible Staff and Department:** Dr. Yongping Zheng (HTI)    **Pre-requisites:** Nil

**Recommended Background Knowledge:** Basic knowledge of calculus, biomedical signals, and programming

**Learning Outcomes:**

- To learn application-oriented signal processing techniques for biomedical signals.
- To apply biosignal processing techniques for real biomedical signals.
- To practise biomedical signal processing using Matlab software

**Syllabus:**

1. Signals and systems for understanding biosignal processing;
2. Considerations for biosignal processing during data collection and experimental design
3. Use Median filter and moving average for smoothing biosignals.
4. Use cross-correlation for biosignal registration
5. Use adaptive filters for separation of mixed signals
6. Use wavelet to enhance signal
7. Matlab programming
8. Automatic tracking of ultrasound echoes
9. Spectrum analysis for EMG signal during muscle fatigue
10. Enhancement of EEG signal using averaging
11. Adaptive filtering for fetus ECG