### PhD Elective Courses

#### Topics Areas & Courses

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Term Credits</th>
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<td>140.645</td>
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#### Rotating Topics

- Advanced Special Topics in Biostatistics
- Foundations of Statistical Inference
- Foundations of Statistics II
- Causal Inference
- Survival Analysis
- Advanced Survival Analysis
- Risk Prediction and Precision Medicine
- Bayesian Methods
- Bayesian Methods II
- Statistical Computing & Machine Learning
- Applied Statistics
- Analysis of Biological Sequences
- Principles and Methods of Functional Neuroimaging I
- Principles and Methods of Functional Neuroimaging II
- Epidemiology
- Introduction to Clinical Trials

#### Biomedical Engineering

- NEURO DATA DESIGN I

#### Data Science & Computer Science

- INTERMEDIATE PROGRAMMING
- DATA STRUCTURES
- DATABASES
- PARALLEL PROGRAMMING
- THEORY OF COMPUTATION
- WEB PROGRAMMING
- AUGMENTED REALITY
- COMPUTER GRAPHICS
- COMPUTER VISION
- ARTIFICIAL INTELLIGENCE
- NATURAL LANGUAGE PROCESSING
- MACHINE LEARNING
- DEEP LEARNING
- MACHINE LEARNING: OPTIMIZATION
- MACHINE LEARNING: DEEP LEARNING
- COHESIONS OF COMPUTATIONAL BIOLOGY AND BIOPHYSICS
- HYBRID ARTIFICIAL INTELLIGENCE/MACHINE LEARNING
- COMPARATIVE MEDICINE & APPLIED COMPARATIVE BIOLOGY
- MACHINE LEARNING AND SEQUENCE MODELING
- MACHINE LEARNING: ADVANCED TOPICS

#### Notes:

1. Some biostatistics courses are offered every other year.
2. These courses are offered by departments at the Homewood campus. They are semester-long courses. Credits from these semester courses will be converted to biostatistics credits by multiplying 2.