

# QUANTITATIVE AND COMPUTATIONAL TRAINING OPPORTUNITIES

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The major focus in quantitative science is distributed across the University of Chicago, and our enrichment in the Biological Sciences Division includes the Grossman Institute for Neuroscience, Quantitative Biology and Human Behavior, the Computation Institute (CI), the Center for Data Intensive Science (CDIS), Center for Research Informatics (CRI). Classes listed here are taken from across the University.

This page provides information regarding classes taught at the University relating to

- GENERAL QUANTITATIVE BACKGROUND
- COMPUTATION/PROGRAMMING
- DYNAMICAL AND STOCHASTIC SYSTEMS
- INFERENCE (MODELS AND DATA)
- COMPLEX SYSTEMS AND SYSTEMS BIOLOGY
- SCIENTIFIC COMPUTING
- THEORY, COMPUTATION AND STATISTICAL INFERENCE

## CLASSES IN GENERAL QUANTITATIVE BACKGROUND

|            |                                                            |     |
|------------|------------------------------------------------------------|-----|
| HGEN 47400 | Introduction to Probability and Statistics for Geneticists | 100 |
| MPHY 34900 | Mathematics for Medical Physics                            | 100 |
| PBHS 32100 | Introduction to Biostatistics                              | 100 |
| PBHS 32400 | Applied Regression Analysis                                | 100 |
| PBHS 32700 | Biostatistical Methods                                     | 100 |
| PBHS 33500 | Statistical Applications                                   | 100 |
| STAT 24400 | Statistical Theory and Methods I                           | 100 |

## CLASSES IN COMPUTATION/PROGRAMMING

|                            |                                                        |     |
|----------------------------|--------------------------------------------------------|-----|
| ECEV 32000                 | Computing Skills for Biologists                        | 100 |
| STAT 37810<br>& STAT 37820 | Statistical Computing A<br>and Statistical Computing B | 100 |

## CLASSES IN DYNAMICAL AND STOCHASTIC SYSTEMS

|            |                                                 |     |
|------------|-------------------------------------------------|-----|
| CPNS 31000 | Mathematical Methods for Biological Sciences I  | 100 |
| CPNS 31100 | Mathematical Methods for Biological Sciences II | 100 |
| MPHY 39600 | Image Processing/Computer Vision                | 100 |

## CLASSES IN INFERENCE (MODELS AND DATA)

|            |                                                             |     |
|------------|-------------------------------------------------------------|-----|
| GEOS 26100 | Phylogenetics and the Fossil Record                         | 100 |
| GEOS 35100 | Data Analysis for the Geophysical Sciences                  | 100 |
| GEOS 36000 | Morphometrics                                               | 100 |
| GEOS 36100 | Phylogenetics and the Fossil Record                         | 100 |
| HGEN 48600 | Fundamentals of Computational Biology: Models and Inference | 100 |
| PBHS 32600 | Analysis of Categorical Data                                | 100 |
| PBHS 33300 | Applied Longitudinal Data Analysis                          | 100 |
| PBHS 33400 | Multilevel Modeling                                         | 100 |
| PBHS 43010 | Applied Bayesian Modeling and Inference                     | 100 |
| PBHS 43201 | Introduction to Causal Inference                            | 100 |

## COURSES IN COMPLEX SYSTEMS AND SYSTEMS BIOLOGY

|            |                              |     |
|------------|------------------------------|-----|
| HGEN 47300 | Genomics and Systems Biology | 100 |
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COURSES IN SCIENTIFIC COMPUTING

|            |                                                |     |
|------------|------------------------------------------------|-----|
| ECEV 32000 | Computing Skills for Biologists                | 100 |
| STAT 37601 | Machine Learning and Large-Scale Data Analysis | 100 |

COURSES IN THEORY, COMPUTATION AND STATISTICAL INFERENCE IN SPECIFIC FIELDS

|            |                                                                  |     |
|------------|------------------------------------------------------------------|-----|
| CPNS 35510 | Theoretical Neuroscience: Single Neuron Dynamics and Computation | 100 |
| CPNS 35520 | Theoretical Neuroscience: Network Dynamics and Computation       | 100 |
| CPNS 35600 | Theoretical Neuroscience: Statistics and Information Theory      | 100 |
| ECEV 35600 | Principles of Population Genetics-1                              | 100 |
| ECEV 42800 | Population Ecology                                               | 100 |
| ECEV 42900 | Theoretical Ecology                                              | 100 |
| GEOG 38201 | Intro to Geographic Information Systems                          | 100 |
| GEOG 38400 | Intermediate GIS/Cartography                                     | 100 |
| HGEN 46900 | Human Variation and Disease                                      | 100 |
| HGEN 47100 | Introduction to Statistical Genetics                             | 100 |
| PBHS 32901 | Introduction to Clinical Trials                                  | 100 |
| PBHS 35100 | Health Services Research Methods                                 | 100 |
| STAT 35800 | Statistical Applications                                         | 100 |
| STAT 35500 | Statistical Genetics                                             | 100 |
| STAT 35700 | Epidemiologic Methods                                            | 100 |

