**INTERDISCIPLINARY DOCTOR OF PHILOSOPHY IN STATISTICS**

Interdisciplinary Doctoral Program in Statistics (http://catalog.mit.edu/interdisciplinary/graduate-programs/phd-statistics)

**Common Core**
All students in the Interdisciplinary Doctoral Program in Statistics are required to complete the common core for a total of 27 units.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>or 18.675</td>
<td>Theory of Probability</td>
<td></td>
</tr>
<tr>
<td>IDS.190</td>
<td>Doctoral Seminar in Statistics and Data Science</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>18.6501</td>
<td>Fundamentals of Statistics</td>
<td></td>
</tr>
<tr>
<td>18.655</td>
<td>Mathematical Statistics</td>
<td></td>
</tr>
</tbody>
</table>

Total Units: 27


**Program-specific Requirements**
Each student must complete the requirements specified by their home department in the lists below by taking one subject from the Computation and Statistics category and one subject from the Data Analysis category.

**Aeronautics and Astronautics**

**Computation and Statistics**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.438</td>
<td>Algorithms for Inference</td>
</tr>
<tr>
<td>6.867</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>9.520[J]</td>
<td>Statistical Learning Theory and Applications</td>
</tr>
<tr>
<td>16.391[J]</td>
<td>Statistics for Engineers and Scientists</td>
</tr>
<tr>
<td>16.940</td>
<td>Numerical Methods for Stochastic Modeling and Inference</td>
</tr>
</tbody>
</table>

**Data Analysis**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.393</td>
<td>Statistical Communication and Localization Theory</td>
</tr>
<tr>
<td>16.470</td>
<td>Statistical Methods in Experimental Design</td>
</tr>
</tbody>
</table>

Total Units: 24

**Brain and Cognitive Sciences**

**Computation and Statistics**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.555[J]</td>
<td>Biomedical Signal and Image Processing</td>
</tr>
<tr>
<td>6.867</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>9.190</td>
<td>Computational Psycholinguistics</td>
</tr>
<tr>
<td>9.520[J]</td>
<td>Statistical Learning Theory and Applications</td>
</tr>
<tr>
<td>9.660</td>
<td>Computational Cognitive Science</td>
</tr>
</tbody>
</table>

**Data Analysis**
Select one of the following: 12-15

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.57</td>
<td></td>
</tr>
<tr>
<td>9.272[J]</td>
<td>Topics in Neural Signal Processing</td>
</tr>
<tr>
<td>9.583[J]</td>
<td>Functional Magnetic Resonance Imaging: Data Acquisition and Analysis</td>
</tr>
</tbody>
</table>

Total Units: 24-27

**Economics**

**Computation and Statistics**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.520[J]</td>
<td>Statistical Learning Theory and Applications</td>
</tr>
<tr>
<td>6.867</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>

**Data Analysis**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.192</td>
<td>Advanced Research and Communication</td>
</tr>
<tr>
<td>14.386</td>
<td>New Econometric Methods</td>
</tr>
<tr>
<td>or 14.387</td>
<td>Applied Econometrics</td>
</tr>
</tbody>
</table>

Total Units: 36

Footnote: Students may substitute a more advanced subject with permission of the program director.

**Mathematics**

**Computation and Statistics**
Select one of the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.252[J]</td>
<td>Nonlinear Optimization</td>
</tr>
<tr>
<td>6.256[J]</td>
<td>Algebraic Techniques and Semidefinite Optimization</td>
</tr>
<tr>
<td>6.438</td>
<td>Algorithms for Inference</td>
</tr>
<tr>
<td>6.867</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>
### Interdisciplinary Doctor of Philosophy in Statistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.520</td>
<td>Statistical Learning Theory and Applications</td>
</tr>
<tr>
<td>18.337</td>
<td>Parallel Computing and Scientific Machine Learning</td>
</tr>
<tr>
<td>18.338</td>
<td>Eigenvalues of Random Matrices</td>
</tr>
<tr>
<td>18.415</td>
<td>Advanced Algorithms</td>
</tr>
<tr>
<td>18.416</td>
<td>Randomized Algorithms</td>
</tr>
<tr>
<td>18.657</td>
<td>Topics in Statistics</td>
</tr>
</tbody>
</table>

### Data Analysis

Select one of the following:

- 6.555 | Biomedical Signal and Image Processing |
- 6.869 | Advances in Computer Vision |
- 9.073 | Statistics for Neuroscience Research |
- 9.272 | Topics in Neural Signal Processing |
- 18.367 | Waves and Imaging |
- IDS.131 | Statistics, Computation and Applications |

Total Units: 24

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2 Students may petition to use IDS.160 to fulfill the Computation and Statistics requirement, if not elected as part of the Common Core.

### Mechanical Engineering

#### Computation and Statistics

- 2.168 | Learning Machines |
- or 6.860 | Statistical Learning Theory and Applications |

#### Data Analysis

- 2.122 | Stochastic Systems |
- or 2.29 | Numerical Fluid Mechanics |

Total Units: 24

### Political Science

#### Computation and Statistics

Select one of the following:

- 6.867 | Machine Learning |
- 9.520 | Statistical Learning Theory and Applications |
- 14.381 | Applied Econometrics |

#### Data Analysis

Select one of the following:

- 17.802 | Quantitative Research Methods II: Causal Inference |
- 17.804 | Quantitative Research Methods III: Generalized Linear Models and Extensions |

Total Units: 24-27