CIBM CURRICULUM

Bioinformatics/Clinical Informatics/Biostatistics 3 required

The introductory course in bioinformatics is required:

- BMI/CS 576 Introduction to Bioinformatics

One of the following four courses in health/clinical informatics is required:

- BMI 573 Foundations of Data-driven Healthcare
- Med/BMI 918 Health Informatics for Medical Students
- BMI 773 Clinical Research Informatics
- Nursing 764 Nursing and Health Informatics

One of the following two courses in biostatistics is required:

- BMI/Stat 541 Introduction to Biostatistics
- Stat 571 Statistical Methods for Bioscience I

Biomedical Science 2 required

There are many options in this category. Specific biomedical sciences courses are selected for each trainee depending on his/her research focus. Some of the more commonly used classes are listed below.

- Gen 466 General Genetics
- Pop Hlth 471 Introduction to Environmental Health
- Biochem 501 Introduction to Biochemistry
- Microbiol 528 Immunology
- Gen 565 Human Genetics
- Bioch 601 Protein and Enzyme Structure and Function
- Bioch 630 Cellular Signal Transduction Mechanisms
- Gen 626 Genomic Science
- Pop Hlth 794 Biological Basis of Population Health

Advanced Computer Sciences 1 required

There are many options in this category. Specific computer sciences courses are selected for each trainee depending on his/her research focus. Some of the more commonly used classes are listed below.

- CS 524 Introduction to Optimization
- CS 540 Introduction to Artificial Intelligence
- CS 559 Computer Graphics
- CS 564 Database Management Systems
- CS 570 Introduction to Human-Computer Interaction
- CS 577 Introduction to Algorithms
- CS 635 Tools and Environments for Optimization
- CS 642 Introduction to Information Security
- CS 760 Machine Learning
- CS 766 Computer Vision

Advanced Electives in Biomedical Informatics 1 required
Trainees take an additional elective in biomedical informatics. Some of the more commonly used courses are listed below.

- ISyE 517 Decision Making in Health Care
- ISyE/BMI 617 Health Information Systems (Note: last taught S2016)
- BMI 567 Medical Image Analysis
- Biochem/BMI 606 Mathematical Methods for Structural Biology
- Biochem/BMI 609 Mathematical Methods for Systems Biology
- BMI 767 Computational Methods for Medical Image Analysis
- BMI / CS 776 Advanced Bioinformatics
- Bioch 570 Computational Modeling Biological Systems
- BMI 826 Computational Network Biology

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<thead>
<tr>
<th>Computation and Informatics in Biology and Medicine Seminars</th>
<th>Required each semester</th>
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<tbody>
<tr>
<td>BMI 915 CIBM Seminars (cross-listed with CS, Bioch, Gen, CBE, BME)</td>
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<tr>
<th>Responsible and Ethical Conduct of Research</th>
<th>1 required</th>
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<tr>
<td>BMI 826/Sect 38 Ethics for Data Scientists (Note – recommended course)</td>
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<tr>
<td>Bioch 701 Professional Responsibility</td>
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<td>Nursing 802 Ethics and the Responsible Conduct of Research</td>
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<tr>
<td>Bioch 729 Responsible Conduct of Research</td>
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