

# BIOINFORMATICS: BIOENGINEERING, MS

for the Master of Science in Bioinformatics, Bioengineering Concentration

## This program is not currently accepting applications.

### Other Graduate Programs in Bioengineering

degrees:

Bioengineering, MEng (<http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/>)

**concentrations:**

Bioinstrumentation (<http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/bioinstrumentation/>)|Computational Genomics (<http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/computational-genomics/>)|General Bioengineering (<http://catalog.illinois.edu/graduate/engineering/bioengineering-meng/general-bioengineering/>)

Bioengineering, MS (<http://catalog.illinois.edu/graduate/engineering/bioengineering-ms/>)

**optional concentrations:**

Biomechanics (<http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/>)|Cancer Nanotechnology (<http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/>)

Bioengineering, PhD (<http://catalog.illinois.edu/graduate/engineering/bioengineering-phd/>)

**optional concentrations:**

Biomechanics (<http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/>)|Cancer Nanotechnology (<http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/>)|Computational Science & Engineering (<http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/>)

concentrations:

Biomechanics (<http://catalog.illinois.edu/graduate/engineering/concentration/biomechanics/>)

**available for:**

Electrical & Computer Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-ms/>)|Electrical & Computer Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-phd/>)|Materials Engineering, MEng|Materials Science & Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-ms/>)|Materials Science & Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-phd/>)|Mechanical Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-ms/>)|Mechanical Engineering, MEng (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-meng/>)|Mechanical Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-phd/>)|Theoretical & Applied Mechanics, MS (<http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-ms/>)|Theoretical & Applied Mechanics, PhD (<http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-phd/>)

Cancer Nanotechnology (<http://catalog.illinois.edu/graduate/engineering/concentration/cancer-nanotechnology/>)

**available for:**

Electrical & Computer Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-ms/>)|Electrical & Computer Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/electrical-computer-engineering-phd/>)|Materials Engineering, MEng|Materials Science & Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-ms/>)|Materials Science & Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/materials-science-engineering-phd/>)|Mechanical Engineering, MS (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-ms/>)|Mechanical Engineering, MEng (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-meng/>)|Mechanical Engineering, PhD (<http://catalog.illinois.edu/graduate/engineering/mechanical-engineering-phd/>)|Theoretical & Applied Mechanics, MS (<http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-ms/>)|Theoretical & Applied Mechanics, PhD (<http://catalog.illinois.edu/graduate/engineering/theoretical-applied-mechanics-phd/>)

for the Master of Science in Bioinformatics, Bioengineering Concentration

For additional details and requirements for all degrees, please refer to the department's Graduate Studies Web site (<https://bioengineering.illinois.edu/academics/graduate/>) and the Graduate College Handbook (<http://grad.illinois.edu/gradhandbook/>).

### Thesis Option

Code	Title	Hours
BIOE 599	Thesis Research (min applied toward degree)	4
BIOE 504 or BIOE 505	Analytical Methods in Bioeng Computational Bioengineering	4

Computer Science and Informatics (choose one)		4
CS 411	Database Systems	
CS 466	Introduction to Bioinformatics	
CS 473	Algorithms	
CPSC 565	Perl & UNIX for Bioinformatics	
IS 455	Database Design and Prototyping	
IS 542	Research and Inquiry for Youth	
STAT 428	Statistical Computing	
STAT 440	Statistical Data Management	
STAT 448	Advanced Data Analysis	
STAT 480	Big Data Analytics	
STAT 525	Computational Statistics	
Fundamental Bioinformatics (choose one)		4
ANSC 542	Applied Bioinformatics	
ANSC 545	Statistical Genomics	
CHBE 571	Bioinformatics	
CPSC 567	Bioinformatics & Systems Biol	
CS 466	Introduction to Bioinformatics	
IB 467	Principles of Systematics	
MCB 432	Computing in Molecular Biology	
Biology (choose one)		4
ANSC 441	Human Genetics	
ANSC 444	Applied Animal Genetics	
ANSC 446	Population Genetics	
BIOP 401	Introduction to Biophysics	
BIOP 550	Biomolecular Physics	
CPSC 452	Advanced Plant Genetics	
CPSC 466	Genomics for Plant Improvement	
CPSC 563	Chromosomes	
CPSC 564		
CPSC 566	Plant Gene Regulation	
MCB 400	Cancer Cell Biology	
MCB 450	Introductory Biochemistry	
MCB 501	Advanced Biochemistry	
MCB 502	Advanced Molecular and Cell Biology	
One course in systems biology from departmental list ( <a href="http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives">http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives</a> )		3
Elective Courses ( <a href="http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives">http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives</a> )		9
<b>Total Hours</b>		<b>32</b>

## Non-Thesis Option

Code	Title	Hours
BIOE 504 or BIOE 505	Analytical Methods in Bioeng Computational Bioengineering	4
Computer Science and Informatics (choose one)		4
CS 411	Database Systems	
CS 466	Introduction to Bioinformatics	
CS 473	Algorithms	
CPSC 565	Perl & UNIX for Bioinformatics	
IS 455	Database Design and Prototyping	
IS 542	Research and Inquiry for Youth	
STAT 428	Statistical Computing	

STAT 440	Statistical Data Management	
STAT 448	Advanced Data Analysis	
STAT 480	Big Data Analytics	
STAT 525	Computational Statistics	
Fundamental Bioinformatics (choose one)		4
ANSC 542	Applied Bioinformatics	
ANSC 545	Statistical Genomics	
CHBE 571	Bioinformatics	
CPSC 567	Bioinformatics & Systems Biol	
CS 466	Introduction to Bioinformatics	
IB 467	Principles of Systematics	
MCB 432	Computing in Molecular Biology	
Biology (choose one)		4
ANSC 441	Human Genetics	
ANSC 444	Applied Animal Genetics	
ANSC 446	Population Genetics	
BIOP 401	Introduction to Biophysics	
BIOP 550	Biomolecular Physics	
CPSC 452	Advanced Plant Genetics	
CPSC 466	Genomics for Plant Improvement	
CPSC 563	Chromosomes	
CPSC 564		
CPSC 566	Plant Gene Regulation	
MCB 400	Cancer Cell Biology	
MCB 450	Introductory Biochemistry	
MCB 501	Advanced Biochemistry	
MCB 502	Advanced Molecular and Cell Biology	
One course in systems biology from departmental list ( <a href="http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives">http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives</a> )		3
Elective Courses ( <a href="http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives">http://bioengineering.illinois.edu/graduate-programs/prospective-graduate-students/bioengineering-courses-illinois/#electives</a> )		17
<b>Total Hours</b>		<b>36</b>

## Other Requirements

Requirement	Description
Other Requirements and Conditions may overlap	
A concentration is required.	
A minimum of 12 500-level credit hours overall applied toward the degree, with 8 hours being Bioengineering courses; a maximum of 2 hours of seminar courses can be counted to towards these 12 hours.	
The non-thesis option is only available with permission of the advisor. Requirements include an additional 8 hours of elective courses which, with the approval of an advisor, may include supervised research experiences including internships and projects.	
Minimum GPA:	3.0