

# NLM Training Program in Biomedical Informatics and Data Science: Approved electives

## Rice University

See [this link](#) to the course catalog, and the form and deadlines for inter-institutional course registration for non-Rice students.

Rice does not post course schedules for the entire academic year, but rather posts the following semester's courses towards the end of the prior semester (~in late March for Fall semester courses, late October for Spring courses). Therefore, look at past semesters/years to learn whether a course is offered in the Fall or Spring semester so you can plan your curriculum timeline.

### BioSciences

BIOC 571 Bioinformatics: Sequence Analysis (Cross-list COMP 571)

BIOC 572 Bioinformatics: Network Analysis (Cross-list COMP 572, BIOE 564)

BIOC 589 Computational Molecular Bioengineering/Biophysics (Cross-list BIOE 589)

### Bioengineering

BIOE 507 Systems Biology of Blood Vessels

BIOE 548 Neural Signal Processing (Full title: Machine Learning and Signal Processing for Neuro Engineering; Cross-list ELEC 548)

BIOE 552 Intro to Computational Systems Biology: Modeling & Design Principles of Biochem Networks

BIOE 564 Bioinformatics: Network Analysis (Cross-list BIOC 572, COMP 572)

BIOE 589 Computational Molecular Bioengineering/Biophysics (Cross-list BIOC 589)

BIOE 591 Fundamentals of Medical Imaging I (Cross-list ELEC 585)

BIOE 682 Systems Biology of Human Diseases (Cross-list CHBE 682)

### Chemical & Biomolecular Engineering

CHBE 682 Systems Biology of Human Diseases (Cross-list BIOE 682)

### Computer Science

COMP 502 Neural Machine Learning I (Cross-list ELEC 502, STAT 502)

COMP 503 Reasoning about Software

COMP 504 Gr Object-Oriented Programming and Design

COMP 505 Advanced Topics in Object-Oriented Design

COMP 520 Distributed Systems (Cross-list ELEC 520)

COMP 522 Multi-core Computing

COMP 524 Mobile and Wireless Networking (Cross-list ELEC 524)

COMP 527 Computer Systems Security

COMP 530 Database System Implementation

COMP 534 Parallel Computing

COMP 539 Software Engineering Methodology

COMP 540 Statistical Machine Learning

COMP 541 Introduction to Computer Security

COMP 542 Large-Scale Machine Learning

COMP 550 Algorithmic Robotics

COMP 556 Introduction to Computer Networks

COMP 557 Artificial Intelligence

COMP 571 Bioinformatics: Sequence Analysis (Cross-list BIOC 571)

COMP 572 Bioinformatics: Network Analysis (Cross-list BIOC 572, BIOE 564)

COMP 602 Neural Machine Learning II (Cross-list ELEC 602, STAT 602)

### Electrical and Computer Engineering

ELEC 502 Neural Machine Learning I (Cross-list COMP 502, STAT 502)

ELEC 517 Architecting Modern Learning Algorithms

ELEC 520 Distributed Systems (Cross-list COMP 520)

ELEC 524 Mobile and Wireless Networking (Cross-list COMP 524)

ELEC 531 Statistical Signal Processing  
ELEC 548 Neural Signal Processing / Machine Learning for Neuro Engineering (Cross-list BIOE 548)  
ELEC 591 Fundamentals of Medical Imaging I (Cross-list BIOE 585)  
ELEC 602 Neural Machine Learning II (Cross-list COMP 602, STAT 602)

#### Statistics

STAT 502 Neural Machine Learning I (Cross-list COMP 502, ELEC 502)  
STAT 525 Bayesian Statistics (formerly STAT 622 Bayesian Data Analysis)  
STAT 541 Multivariate Analysis  
STAT 545 Generalized Linear Models (GLM) & Categorical Data Analysis  
STAT 549 Functional Data Analysis  
STAT 550 Nonparametric Function Estimation  
STAT 552 Applied Stochastic Processes  
STAT 553 Biostatistics  
STAT 581 Mathematical Probability I  
STAT 602 Neural Machine Learning II (Cross-list COMP 602, ELEC 602)  
STAT 605 R for Data Science  
STAT 606 SAS Statistical Programming  
STAT 615 Regression and Linear Models  
STAT 616 Advanced Statistical Methods  
STAT 623 Probability in Bioinformatics and Genetics  
STAT 640 Data Mining and Statistical Learning  
STAT 648 Graphical Models and Networks  
STAT 655 Nonparametric Bayesian Data Analysis  
STAT 673 Probability and Statistics for Systems Biology

### **Baylor College of Medicine**

See the link to the academic calendar [here](#), class schedule [here](#), and course descriptions [here](#).

GS-SB-401	Computational Mathematics for Quantitative Biomedicine
GS-SB-402	Computational Molecular Biophysics and Structural Biology
GS-SB-405	Computer-Aided Discovery Methods
GS-GE-459	Bioinformatics and Genome Analysis
GS-GE-402	Introduction to Data Mining
GS-GS-527	ABC: Applications to Biology of Computation
GS-GS-532	Biostatistics for Biomedical and Translational Researchers

### **University of Houston**

[Graduate course catalog](#).

The University of Houston offers a wide range of courses of similar nature such as the ones listed under Rice University. In particular the Colleges of Natural Sciences and Mathematics, and the College of Pharmacy offer a variety of equivalent classes that can be considered.

To request that a course may be added as an approved elective, please provide a syllabus and course description to the NLM program administrator Melissa at [glueck@rice.edu](mailto:glueck@rice.edu).

### **UT Health Science Center at Houston / MD Anderson - Graduate School of Biomedical Sciences**

[Link to GSBS courses](#). To request that a course may be added as an approved elective, please provide a syllabus and course description to the NLM program administrator Melissa at [glueck@rice.edu](mailto:glueck@rice.edu).

GS02-1104 Introduction to Medical Physics II; Medical Imaging

## UT Health Science Center at Houston - School of Biomedical Informatics (SBMI)

[Link to SBMI courses](#); a link on the left of that page has the current Semester Schedule.

To request that a course may be added as an approved elective, please provide a syllabus and course description to the NLM program administrator Melissa at [glueck@rice.edu](mailto:glueck@rice.edu).

BMI 5004 Introduction to Clinical Healthcare  
BMI 5301 The U.S. Healthcare System  
BMI 5302 Cognitive Science in Biomedical Informatics  
BMI 5304 Advanced Database Concepts in Biomedical Informatics  
BMI 5306 Security for Health Information Systems  
BMI 5311 Foundations of Biomedical Information Sciences II  
BMI 5313 Introduction to Electronic Health Records  
BMI 5314 Technology Assessment in Healthcare  
BMI 5315 Quality and Outcome Improvement in Healthcare  
BMI 5351 Research Design and Evaluation in Biomedical Informatics  
BMI 5353 Biomedical Informatics Data Analysis  
BMI 5354 Cognitive Engineering in Biomedical Informatics  
BMI 5360 Clinical Decision Support Systems  
BMI 6300 Advanced Health Information Technology  
BMI 6301 Health Data Display  
BMI 6303 Introduction to Telehealth  
BMI 6306 Information and Knowledge Representation in Biomedical Informatics  
BMI 6309 Healthcare Interface Design  
BMI 6311 Advanced Decision Analysis  
BMI 6315 Advanced Electronic Health Records  
BMI 6322 Distributional Semantics: Methods and Biomedical Applications  
BMI 6323 Machine Learning in Biomedical Informatics  
BMI 6331 Medical Imaging and Signal Pattern Recognition

## UT Medical Branch at Galveston

UTMB's Graduate School of Biomedical Sciences does not have an open course search; search under [GSBS Courses by Program](#), then under [Degree Programs](#) for contact information, e.g. contact Population Health Sciences (PHS) for bioinformatics-type courses. To request that a course may be added as an approved elective, please provide a syllabus and course description to the NLM program administrator Melissa at [glueck@rice.edu](mailto:glueck@rice.edu).

### Biochemistry and Molecular Biology (BMB)

BMB 6216 Practical Algorithms for Bioinformatics and Systems Biology  
BMB 6326 Probabilistic and Statistical Methods in Bioinformatics  
BMB 6338 Computer Modeling of Macromolecular Structure and Function  
BMB 6360 Thermodynamics of Macromolecular Assembly

### Population Health Sciences (PHS)

PHS 6345 Introduction to Bioinformatics  
PHS 6313 Longitudinal Data Analysis  
PHS 6341 Categorical Data Analysis  
PHS 6343 Biostatistics  
PHS 6344 Introduction to Linear Models  
PHS 6354 Linear Models

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