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

Rice University

See this link to the course catalog; the form and deadlines for inter-institutional course registration for non-Rice PhD students (See under Graduate Students); and the form for Visiting Auditor Registration for postdocs here (under Visiting Students): https://registrar.rice.edu/online_forms#VS.

Rice does not post course schedules for the entire academic year, but rather posts the following semester's course schedule 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. Course catalog (Note that not all courses in the catalog are currently offered.): https://courses.rice.edu/admweb/ISWKSCAT.cat?p_action=cata. Course schedule: https://courses.rice.edu/courses/ISWKSCAT.cat.

Academic calendar for deadlines and course dates: https://registrar.rice.edu/calendars.

Bioengineering
BIOE 548 Neural Signal Processing (Cross-list ELEC 548)
BIOE 552 Intro to Computational Systems Biology: Modeling & Design Principles of Biochemical Networks
BIOE 564 Bioinformatics: Network Analysis (Cross-list COMP 572)
BIOE 589 Computational Molecular Bioengineering/Biophysics
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 Graduate 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 (Cross-list ELEC 550)
COMP 556 Introduction to Computer Networks (Cross-list ELEC 556)
COMP 557 Artificial Intelligence (Cross-list ELEC 557)
COMP 571 Bioinformatics: Sequence Analysis
COMP 572 Bioinformatics: Network Analysis (Cross-list BIOE 564)
COMP 576 Introduction to Deep Learning (Cross-list ELEC 576)
COMP 602 Neural Machine Learning II (Cross-list ELEC 602, STAT 602)
COMP 665 Visualization

Electrical and Computer Engineering
ELEC 502 Neural Machine Learning I (Cross-list COMP 502, STAT 502)
ELEC 520 Distributed Systems (Cross-list COMP 520)
ELEC 524 Mobile and Wireless Networking (Cross-list COMP 524)
ELEC 531 Statistical Signal Processing
ELEC 546  Computer Vision
ELEC 548  Neural Signal Processing (Cross-list BIOE 548)
ELEC 550  Algorithmic Robotics (Cross-list COMP 550)
ELEC 556  Introduction to Computer Networks (Cross-list COMP 556)
ELEC 557  Artificial Intelligence (Cross-list COMP 557)
ELEC 559  Mobile Health
ELEC 573  Network Science and Analytics
ELEC 576  Introduction to Deep Learning (Cross-list COMP 576)
ELEC 577  Optimization for Data Science
ELEC 585  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 648  Graphical Models and Networks

To request that a course may be added as an approved elective, please provide a syllabus and course description to the NLM Training Program administrator Melissa at glueck@rice.edu.

Baylor College of Medicine
See links to the academic calendar and course schedule, and course descriptions under Graduate School Bulletin here: https://www.bcm.edu/education/graduate-school-of-biomedical-sciences/curriculum.

GS-CP-6602  Computational Molecular Biophysics and Structural Biology (formerly GS-SB-402)
GS-GG-6301  Bioinformatics and Genome Analysis (formerly GS-GE-459)
GS-GS-6203  Data Mining (formerly Intro to Data Mining GS-GE-402)
GS-GS-6400  Foundations B: Biostatistics (formerly Biostatistics for Biomed. and Transl. Researchers GS-GS-532)
GS-NE-6201  Neural Systems
GS-QC-6201  Applications to Biology of Computation (formerly GS-GS-527)
GS-QC-6301  Practical Introduction to Programming for Scientists (formerly GS-SB-406)
GS-QC-6302  Computer-Aided Discovery Methods (formerly GS-SB-405)
GS-QC-6801  Computational Mathematics for Quantitative Biomedicine (formerly GS-SB-401)

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University of Houston
Graduate course catalog.
UH offers a wide range of equivalent classes to the ones listed under Rice University that can be considered, particularly at the Colleges of Natural Sciences and Mathematics, and the College of Pharmacy.
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**MD Anderson / UT Health Science Center at Houston - Graduate School of Biomedical Sciences**

[Link to GSBS courses](#).

- GS01-1033 Introduction to Biostatistics and Clinical Trials
- GS01-1143 Introduction to Bioinformatics
- GS02-1104 Introduction to Medical Physics II; Medical Imaging

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

[Link to SBMI courses](#); see the link on the left side of that page for 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 Training Program administrator Melissa at glueck@rice.edu.

- BMI 5004 Introduction to Clinical Healthcare
- BMI 5301 The U.S. Healthcare System
- BMI 5302 Human Factors in Healthcare
- 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 Foundations of Electronic Health Records and Clinical Information Systems
- BMI 5315 Quality and Outcome Improvement in Healthcare
- BMI 5331 Foundations of Pharmacogenomics
- BMI 5332 Statistical Analysis of Genomic Data
- BMI 5351 Research Design and Evaluation in Biomedical Informatics
- BMI 5353 Biomedical 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 6319 Data Analysis for Sci Research in BMI (formerly Advanced Data Structures in Biomedical Informatics)
- BMI 6322 Distributional Semantics: Methods and Biomedical Applications
- BMI 6323 Machine Learning in Biomedical Informatics
- BMI 6330 Health Care Delivery in an EHR Enabled Environment: Biomedical NLP
- BMI 6331 Medical Imaging and Signal Pattern Recognition
- BMI 6334 Deep Learning in Biomedical Informatics
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**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](https://gsbs.utmb.edu/course-descriptions/biochemistry-molecular-biology-(bmb)), 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 Training Program administrator Melissa at glueck@rice.edu.

Biochemistry and Molecular Biology (BMB)

- BMB 6216 Practical Algorithms for Bioinformatics and Systems Biology; offered in Spring semester
- BMB 6240 Probabilistic and Statistical Methods in Bioinformatics; offered in Fall semester

Population Health Sciences (PHS)
[https://www.utmb.edu/gsbs/course-descriptions/population-health-sciences-(phs)](https://www.utmb.edu/gsbs/course-descriptions/population-health-sciences-(phs))

- PHS 6313 Longitudinal Data Analysis; offered in Summer semester
- PHS 6341 Categorical Data Analysis; offered in Summer semester
- PHS 6343 Biostatistics; offered in Fall semester
- PHS 6344 Introduction to Linear Models; offered in Spring semester
- PHS 6345 Introduction to Bioinformatics; offered in Fall semester
- PHS 6354 Linear Models; offered in Fall semester

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*Updated 11/8/2022*