

Note: BDSI PhD students register for courses through their primary institution, regardless of where the course is taught. For MUSC students, the BDSI mnemonic is used for all MUSC and Clemson courses. For Clemson students, see the footnotes below.

Area 1 - Biomedical Informatics Foundations and Applications - 15-16 hours			
Research Foundations - Choose 1			
3	CLEM	HLTH 8210	Health Research 1: Design and Measurement
3	MUSC ^{1,2}	HIN 708	Applied Statistical and Research Methods
3	MUSC ¹	DHA 866	Applied Research
Biomedical Informatics Foundations - Both			
3	MUSC ^{1,2}	BDSI 8010	Intro to Biomedical Informatics
3	MUSC ^{1,2}	BDSI 8020	Biomedical Data Standards and Terminologies
Track Specific Course - Choose 1			
3	MUSC ^{1,10}	BDSI 8110	Precision Medicine Informatics
3	MUSC ^{1,11}	BDSI 8120	Clinical and Translational Informatics
3	CLEM	HLTH 8900	Population Health Informatics
BDSI Electives - Choose 1-2 (minimum 3 hours)			
3	CLEM	CPSC 8450	Bioinformatics Algorithms
2	MUSC ²	BMTRY 783	Statistical Methods for Bioinformatics
3	MUSC ²	NEW BMI	Panomics
2	MUSC ²	NEW BMI	Consumer and Quantified Self
2	MUSC ²	BDSI 732	Health Enterprise Analytics
2	MUSC ²	BDSI 731	Microbiome Informatics

Area 2 - Computing, Math, Stats, and Engineering - 18 hours			
Systems and Data Base Management - Choose 2			
3	CLEM	CPSC 6620	Database Management System
3	CLEM	CPSC 8620	Database Management System Design
3	CLEM	CPSC 8470	Introduction to Information Retrieval
3	MUSC ^{1,2}	HIN 700	Database Management
3	CLEM	CPSC 6550	Computational Science: Methods & Software Systems
3	CLEM	ECE 6780	General Purpose Computation on GPUs
3	CLEM	ECE 8780	High-Performance Computing with GPUs
3	CLEM	CPSC 8200	Parallel Architectures
3	CLEM	ECE 6730	Introduction to Parallel Systems
3	CLEM	CPSC 8490	Principles of Scientific Computing
3	CLEM	CPSC 6140	Human and Computer Interaction
3	CLEM	HCC 8310	Fundamentals of Human-Centered Computing
3	CLEM	IE 6880	Human Factors Engineering
3	CLEM	IE 8000	Human Factors Engineering
3	CLEM	CPSC 8710	Foundations of Software Engineering
3	CLEM	CPSC 8700	Software Design

¹ Not all MUSC courses will be found in the Clemson registration portal; for MUSC courses not found under the BDSI prefix, please contact Adam Rollins at rollin7@clemson.edu

² MUSC students taking BDSI 8000 will register with course number BDSI 700

³ Clemson students taking BDSI 970/90 will register with course number CPSC 9910

⁴ Online course with madatory in-person MUSC campus session; dates TBD

⁵ No on campus session dates

⁶ Required for students on the MUSC campus

Area 2 (continued) - Computing, Math, Stats, and Engineering - 18 hours			
Math - Choose 1			
3	CLEM	IMATH 8050	Data Analysis
3	CLEM	STAT 8010	Statistical Methods
4	MUSC ¹	BMTRY 700	Introduction to Clinical Biostatistics
Machine Learning/Data Science - Choose 1			
3	CLEM	CPSC 6420	Artificial Intelligence
3	CLEM	CPSC 6430	Machine Learning: Implementation and Evaluation
3	CLEM	CPSC 8420	Advanced Machine Learning
3	CLEM	CPSC 6300	Applied Data Science
3	MUSC ^{1,12}	BDSI 8210	Applied Machine Learning
Other - Choose 2			
3	CLEM	STAT 8190	Biostatistics
3	CLEM	HLTH 8310	Quantitative Analysis in Health Research I
4	MUSC ²	BMTRY 701	Biostatistical Methods II
3	CLEM	CPSC 8650	Data Mining
3	CLEM	ECE 8560	Pattern Recognition
3	CLEM	CPSC 8480	Network Science
3	CLEM	MATH 8070	Applied Multivariate Statistical Analysis
3	MUSC ¹	BMTRY 719	Bayesian Biostatistics
3	CLEM	CPSC 6030	Data Visualization
3	CLEM	CPSC 8030	Scientific Visualization
3	CLEM	CPSC 8430	Deep Learning
3	CLEM	ECE 6310	Introduction to Computer Vision
3	CLEM	ECE 6670	Introduction to Digital Signal Processing
3	CLEM	ECE 8470	Digital Image Processing
3	CLEM	BIOE 6310/11	Medical Imaging
3	CLEM	MATH 6410	Introduction to Stochastic Models
3	CLEM	ECE 6420	Knowledge Engineering
3	CLEM	IE 8030	Engineering Optimization and Applications
3	CLEM	PADM 8420	GIS for Public Administrators
3	MUSC ¹	DPHS NEW	GIS and Mapping for Public Health
3	CLEM	CPSC 8400	Design & Analysis of Algorithms
3	CLEM	CPSC 8380	Advanced Data Structure
3	MUSC ^{1,3}	BDSI 722	Clinical Natural Language Processing

Area 3 - Population Health, Health Systems, and Policy - 5-6 hours			
Choose 2 - Course Titles Must Be Different			
3	CLEM	HLTH 8110	Health Care Delivery Systems
3	CLEM	HLTH 8020	Health Economics
3	MUSC ¹	DHA 807	Managing Healthcare Information
3	MUSC ^{1,4}	HAP 704-02	Health Policy
3	CLEM	HLTH 8100	Health Policy
2	CLEM	HLTH 8140	Health Systems Quality Improvement
3	MUSC ¹	HAP 632-02	Quality Management of Health Services
3	MUSC ^{1,5}	HAP 735-02	Health Law and Risk Management
3	MUSC ^{1,4}	HIN 716	Ethical, Legal, and Regulatory Issues in Health Informatics
2	CLEM	HLTH 8130	Population Health and Research
3	CLEM	HLTH 8090	Epidemiology
3	MUSC ²	BMTRY 736	Foundations of Epidemiology I
3	MUSC ²	BMTRY 747	Foundations of Epidemiology II
3	MUSC ^{1,4}	DHA 850	Population Health Management

Area 4 - Domain Biology/Medicine - 3-4 hours			
Choose 1 (minimum 3 hours)			
3	CLEM	BIOE 8460	Biomedical Basis for Engineered Replacement
3	MUSC ²	CGS 765	Proteins: Dynamic Structure and Functions
4	MUSC ²	CGS 766	Genes: Inheritance and Expression
3	MUSC ²	CGS 767	Cells: Organization and Communication
2	MUSC ²	CGS 770	Principles Practices & Professionalism
2	MUSC ²	CGS 772	Learning From the Literature
3	CLEM	BCHM 6360	Molecular Biology: Genes to Proteins
3	CLEM	BCHM 6430	Molecular Basis for Disease
3	CLEM	GEN 6700	Human Genetics
3	CLEM	BIDL 6030	Introduction to Applied Genomics

Area 5 - Seminars/Lab Rotations/Research Hours - 24 hours			
Seminars (BDSI 700) - 4 hours			
1		BDSI 8000 ²	Seminar
1		BDSI 8000 ²	Seminar
1		BDSI 8000 ²	Seminar
1		BDSI 8000 ²	Seminar
Lab Rotations (CGS 720/721) - 4 hours			
1			Lab Rotation ⁵
1			Lab Rotation ⁵
1			Lab Rotation ⁵
1			Lab Rotation ⁵
Research Hours - 18 hours			
3		BDSI 970/90 ⁴	Dissertation Research
3		BDSI 970/90 ⁴	Dissertation Research
3		BDSI 970/90 ⁴	Dissertation Research
3		BDSI 970/90 ⁴	Dissertation Research
3		BDSI 970/90 ⁴	Dissertation Research
3		BDSI 970/90 ⁴	Dissertation Research

This course will take place Aug 19 to Dec 4, using an asynchronous delivery model with weekly conference calls

⁴ MUSC students taking BDSI 8010 will register with course number BDSI 701

⁵ MUSC students taking BDSI 8020 will register with course number BDSI 702

⁶ MUSC students taking BDSI 8110 will register with course number BDSI 711

⁷ MUSC students taking BDSI 8120 will register with course number BDSI 712

⁸ MUSC students taking BDSI 8210 will register with course number BDSI 721
