

Class of 2024 Graduation Requirements

Master of Science in Human Genetics and Genomic Data Analytics (MSGDA)

Students in the MSGDA program are required to take a minimum of **63.5 units** over the course of two years of study. The coursework is comprised of required courses, elective courses, and a capstone project.

Students will also complete a 400-hour internship.

Program Requirements

Fall 1 Courses	Credits
GENE 5110 Programming for the Biosciences	3.0
GENE 5190 MSGDA Journal Club	0.0
GENE 5200 Human Molecular Genetics	3.0
GENE 5240 Genetic Disease Mechanisms	1.5
BUS 5000 Introduction to Bioscience Industries	3.0
MATH 5020 Clinical Biostatistics	3.0
SCI 6400 Fundamental Papers in Applied Medicine	1.5
Subtotal	15.0

Spring 1 Courses	Credits
GENE 5150 Human Genomics NGS Lab	2.0
GENE 5191 MSGDA Journal Club	0.0
GENE 5250 Human Genomics	3.0
GENE 5260 Clinical Cancer Genomics	3.0
GENE 5270 Medical Genetics	3.0
GENE 5280 Biochemical Genetics	1.5
MATH 5140 Bioinformatics in R	1.5
PDEV 5220 Healthcare and Life Science Industry Ethics	1.5
REG 6520 Clinical Trial Design and Literature Evaluation	3.0
Subtotal	18.5



Fall 2 Courses	Credits
GENE 6130 DNA Sequencing and Variant Analysis	3.0
GENE 6140 Functional Genomics	3.0
GENE 6190 MSGDA Journal Club	0.0
GENE 6900 MSGDA Capstone Project I	6.0
Subtotal	12.0

Spring 2 Courses	Credits
GENE 5290 Pharmacogenomics	1.5
GENE 6135 Genomic Knowledge Translation	1.5
GENE 6145 Genomic Data Visualization and Management	3.0
GENE 6191 MSGDA Journal Club	0.0
GENE 6901 MSGDA Capstone Project II	6.0
Subtotal	12.0

In addition to the above required courses, students will select 6 units of electives to satisfy their concentration requirement. Students are required to declare their concentration by May 15 of their first year and will begin taking electives in their 2nd year.

Up to 3 units may be counted from courses taken at CGU with permission of the program director.

Clinical Decision Support	Credits
GENE 5020 Human Embryology and Prenatal Diagnosis	3.0
GENE 6447 Microbiomics and Pathogen Genomics	1.5
GENE 6446 Genetic Engineering	1.5
SCI 5100 Molecular Basis of Disease	1.5
SCI 6700 Advanced In Vitro Diagnostics	3.0
SCI 5240 Medical Terminology	3.0
MATH 5120 Machine Learning in the Life Sciences	1.5
SCI 6410 Fundamental Papers in Applied Medicine	1.5

Clinical Trial Design	Credits
GENE 6446 Genetic Engineering	1.5
REG 5000 Introduction to US Food and Drug Law	1.5
MATH 5020 Clinical Trials Design, Conduct and Strategy	1.5
MATH 5120 Machine Learning in the Life Sciences	1.5
SCI 5300 Pharmaceutical Discovery	1.5
SCI 5310 Pharmaceutical Development	1.5
SCI 6310 Biotechnology-based Therapeutics	3.0
SCI 6710 Technologies for Biomarker and Drug Discovery	1.5

Assay Development	Credits
GENE 6446 Genetic Engineering	1.5
BUS 6600 Business Operations	3.0
MATH 5120 Machine Learning in the Life Sciences	1.5
REG 5000 Introduction to US Food and Drug Law	1.5
SCI 5000 Molecular Biotechnology	1.5
SCI 5240 Medical Terminology	3.0
SCI 5700 Medical Diagnostics	3.0
SCI 6410 Fundamental Papers in Applied Medicine	1.5
SCI 6700 Advanced In Vitro Diagnostics	3.0
SCI 6710 Technologies for Biomarker and Drug Discovery	1.5