KGI School of Pharmacy and Health Sciences Graduation Requirements

# Class of 2020 Master of Science in Human Genetics and Genomic Data Analytics (MSDGA)

Students in the MSGDA program are required to take a minimum of 67 units during the course of two years of study. The coursework is comprised of required courses, elective courses and a capstone project.

Students are required to declare a concentration by May 1st and will begin taking electives in their 2nd year.

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| |  |  | | --- | --- | | **1st Year SPRING Core Courses** | **Units** | | **Units** |
| **GENE360** Human Genomics | 3 |
| **GENE362** Human Genomics NGS Lab | 1 |
| **GENE370** Clinical Cancer Genomics | 3 |
| **GENE 380** Medical Genetics | 3 |
| **GENE390** Biochemical Genetics | 1.5 |
| **ALS 341** Healthcare& Life Science Industry Ethics | 1.5 |
| **ALS 411** Biomedical Data Systems & Informatics | 1.5 |
| **ALS 436** Clinical Trial Design & Literature  Evaluation | 3 |
| **GENE 349** Colloquium/Journal Club /Case Conference | 0 |
|  |  |
| **Subtotal** | **17 .5** |

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| **1st Year FALL Core Courses** | **Units** |
| **GENE 310** Human Molecular Genetics | 3 |
| **GENE312** Programming for the Biosciences | 3 |
| **GENE340** Genetic Disease Mechanisms | 1.5 |
| **ALS320** Medical Diagnostics | 3 |
| **ALS 359** Introduction to Bioscience Industries | 3 |
| **ALS434** Clinical Biostatistics | 3 |
| **GENE349** Colloquium/Journal Club  /Case Conference | 0 |
|  |  |
| **Subtotal** | **16.5** |

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| **2nd Year FALL Core Courses** | **Units** |
| **GENE 340** DNA Sequencing & Variant Analysis | 3 |
| **GENE 440** Functional Genomics | 3 |
| **GENE 490** Capstone Project | 6 |
| **GENE 349** Colloquium /Journal Club  / Case Conference | 0 |
|  |  |
| *Students will also begin to develop either an industry sponsored capstone project or a research* |  |
| *select an elective within their chosen concentration.* |  |
| *(16.5 to 18 units)* |  |
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|  |  |
| **Subtotal 16.5-18** | |
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| **2nd Year SPRING Core Courses** | **Units** |
| **GENE435** Genomic Knowledge Translation | 3 |
| **GENE 445** Genomic Data Visualization &  Management | 3 |
| **ALS 407** Pharmacogenomics & Precision Medicine | 1 |
| **GENE491** Capstone Project | 6 |
| **GENE349** Colloquium /Journal Club  / Case Conference | 0 |
|  |  |
| *Students will select an elective in their chosen concentration. Students will present the results of their industry capstone project or research thesis in written and oral form. (16.5 units total)* |  |
| **Subtotal** | **16 .5** |

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Students are required to declare a concentration by May 1st and will begin taking electives in their 2nd year.

\*Students are required to take 6 credits of electives.

|  |  |
| --- | --- |
| **Assay Development** | **Units** |
| **ALS 362** Introduction to US Food & Drug Law | 1.5 |
| **ALS 380** Medical Terminology | 3 |
| **ALS 408**  Advanced In Vitro Diagnostics | 3 |
| **ALS 413**  Machine Learning in the Life Sciences | 1.5 |
| **ALS 424** Business Operations | 3 |
| **ALS 425** Device & Diagnostic Produce  Development | 3 |
| **ALS 448** Organizational Analytics | 1.5 |
| **ALS 481A** Fundamental Papers in Applied  Medicine | 1.5 |
| **ALS 481B** Fundamental Papers in Applied  Medicine II | 1.5 |

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| **Clinical Decision Support** | **Units** |
| **GENE 320** Human Embryology & Prenatal Diagnosis | 3 |
| **GENE 447** Microbiomics & Pathogen Genomics | 1.5 |
| **ALS 402**  Molecular Basis of Disease | 3 |
| **ALS 408**  Advanced In Vitro Diagnostics | 3 |
| **ALS 460**  Advance Writing & Editing for  Professional Publications | 1.5 |
| **ALS 462** Policy & Advocacy within Rare Diseases | 1.5 |
| **ALS 380** Medical Terminology | 3 |
| **ALS 413** Machine Learning in the Life Sciences | 1.5 |
| **ALS 481A** Fundamental Papers in Applied  Medicine | 1.5 |
| **ALS 481B** Fundamental Papers in Applied  Medicine II | 1.5 |

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| **Clinical Trial Design** | **Units** |
| **ALS 362** Introduction to US Food & Drug Law | 1.5 |
| **ALS 330** Pharmaceutical Discovery | 1.5 |
| **ALS 333** Pharmaceutical Development | 1.5 |
| **ALS 401** Biotechnology-based Therapeutics | 3 |
| **ALS 409** Technologies for Biomarker & Drug  Discovery | 1.5 |
| **ALS 413** Machine Learning in the Life Sciences | 1.5 |
| **ALS 433** Design of Clinical Trials | 1.5 |