KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

2024-25 Academic Catalog/Class of 2026 Graduation Requirements

Master of Science in Applied Life Sciences (MS)

Students in the MS program are required to complete 48.0 credits over two years of study. Of the 48.0 total credits, students must complete 15.0 credits of Core Science/Professional Development courses and 33.0 credits of Elective courses. The MS students can declare a concentration that would provide depth to their degree, but a non-concentration ("a la carte") option is also available.

Eight concentrations are available to MS in Applied Life Sciences students. They are Translational Research (TR), Clinical Research (CR), Public Health Research (PHR), Community Medicine Research (CMR), Infectious Diseases Research (IDR), Bioprocessing Research (BPR), Regulatory Affairs Research (RAR), and Team Master's Project (TMP). Each concentration requires the completion of 15.0 credits comprised of a capstone project (12.0 or 6.0 credits, depending on the concentration option selected) plus concentration-required course(s).

Program Requirements

Core Requirements	Credits
Core Science & Professional Development Courses	15.0
Electives (Including the following intersecting requirements)	33.0
Advanced Technical and General Electives (including Concentration-Required Courses)	
Capstone Project/Research Thesis/TMP	
Subtotal	**48.0**

Core Science and Professional Development Courses

All students must complete the Core Science and Professional Development courses for the MS in Applied Life Sciences. Students who have taken PDEV 5400 as part of their PPC/PPA program are not required to take PDEV 5100.

Core Courses	Credits
SCI 5000 Molecular Biotechnology	1.5
SCI 5100 Molecular Basis of Disease	1.5
SCI 5300 Pharmaceutical Discovery	1.5
SCI 5310 Pharmaceutical Development	1.5
SCI 6000 Advanced Molecular Biotechnology	1.5
SCI 6100 Pharmacogenomics and Precision Medicine	3.0
PDEV 5100 Professional Development	0.0
PDEV 5230 or **PDEV 5240** Healthcare/Life Science Industry Ethics	1.5
MATH 5020 Clinical Biostatistics	3.0
Subtotal	**15.0**

Advanced and General Technical Electives

All MS students are required to complete additional credits of any KGI courses to achieve the required 48.0 credit total. Students are encouraged to consult with the MS program director for course selection. Not all electives are offered every year. Refer to the Henry E. Riggs School of Applied Life Science course list for course designation information.

Concentrations

Below are the concentrations available to Master of Science in Applied Life Sciences students:

- Translational Research (TR)
- Clinical Research (CR)
- Public Health Research (PHR)
- Community Medicine Research (CMR)
- Infectious Diseases Research (IDR)
- Bioprocessing Research (BPR)
- Regulatory Affairs Research (RAR)
- Team Master's Project (TMP)

Concentrations

A total of 15.0 credits comprising all the required courses in the concentration and a selection from the electives are required in partial fulfillment of the 33.0 total elective credits necessary for graduation. Students are encouraged to consult with the MS program director for course selection. To complete the MS degree with a Translational, Clinical, Community Medicine, Infectious Diseases, Public Health, or Bioprocessing Research thesis, students must complete a 12.0-credit RES 6200 or 6.0-credit 6201 Master's Research Thesis capstone, depending on the concentration option available. To complete the MS degree with a Regulatory Affairs capstone project, students must complete a 12.0-credit RES 6260 or 6.0-credit 6261 Master's Capstone Project. Students registered for 6.0 credits as part of their Master's capstone per semester (12 credits total) must dedicate at least 18 hours per week to the project. Those who choose a 3.0-credit research course per semester (6 credits total) must devote at least 9 hours per week to the project.

The students must submit contracts within the first week of the fall semester of the 2nd year of studies. Please refer to the KGI MS webpage and Master's Research Thesis/Capstone syllabi for more information.

Translational Research Concentration

Students planning to pursue the Translational Research Concentration are strongly recommended to enroll in Independent Research / Independent Study during their first year of studies.

Translational Research Concentration Courses	Credits
RES 6200 Master's Research Thesis	12.0
SCI 6401 Fundamental Papers in Molecular Biology and Biotechnology	1.5
SCI 6410 Fundamental Papers in Applied Medicine	1.5

Clinical Research Concentration

Students in the Clinical Research Concentration may apply through the KGI-COPE application website or consult the MS program director to identify a project. The MS program director must approve the projects.

Clinical Research Concentration Courses	Credits
RES 6200 Master's Research Thesis	12.0
SCI 5210 Clinical Pharmacology I or **SCI 5240** Medical Terminology	3.0

KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

Public Health Research Concentration

Students planning to pursue the Public Health Concentration should consult the MS program director to identify a project. The MS program director must approve the projects.

Public Health Research Concentration Courses	Credits
RES 6200 Master's Research Thesis	12.0
SCI 6600 Infectious Disease Epidemiology	3.0

Community Medicine Research Concentration

Students planning to pursue the Community Medicine Concentration should consult the MS program director to identify a project. The MS program director must approve the projects.

Community Medicine Research Concentration Courses	Credits
RES 6200 Master's Research Thesis	12.0
MSCM 5103 Health Systems Sciences or **MSCM 5301** Nutrition and Health or **MSCM 5501** Direct to Community Healthcare	3.0

Infectious Diseases Research Concentration

Students enrolled in the Infectious Diseases Concentration must work on a thesis project related to infectious diseases (drug discovery, medical devices, bioinformatics, the molecular basis of a disease, *etc.*). Option A (6.0-credit Master's Research Thesis) and Option B (12.0-credit Master's Research Thesis) are available. The MS program director must approve the projects.

Infectious Diseases Concentration (Option A) Courses	Credits
RES 6201 Master's Research Thesis	6.0
SCI 6300 Advanced Pharmaceutical Discovery	1.5
SCI 6301 Advanced Pharmaceutical Discovery Lab	1.5
SCI 6500 Virology	1.5
SCI 6510 Medical Microbiology and Infectious Diseases	1.5
SCI 6600 Infectious Disease Epidemiology	3.0

Infectious Diseases Concentration (Option B) Courses	Credits
RES 6200 Master's Research Thesis	12.0
SCI 6500 Virology	1.5
SCI 6510 Medical Microbiology and Infectious Diseases	1.5

KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

Bioprocessing Research Concentration

Students enrolled in the Bioprocessing Research Concentration must enroll in the concentration-required courses starting from the 1st year. Option A (6.0-credit Master's Research Thesis) and Option B (12.0-credit Master's Research Thesis) are available. The MS program director must approve the project.

Bioprocessing Research Concentration (Option A) Courses	Credits
RES 6201 Master's Research Thesis	6.0
ENG 5160 Introduction to Bioprocessing	1.5
ENG 5100 Bioprocess Engineering Principles	1.5
ENG 5132 Introduction to Upstream Processing	1.5
ENG 5133 Introduction to Upstream Processing Lab	1.5
ENG 5140 Bioseparations Engineering and Science	1.5
ENG 5141 Introduction to Bioseparations Engineering Lab	1.5

Bioprocessing Research Concentration (Option B) Courses	Credits
RES 6200 Master's Research Thesis	12.0
ENG 5160 Introduction to Bioprocessing	1.5
ENG 5100 Bioprocess Engineering Principles	1.5

Regulatory Affairs Research Concentration

Students planning to pursue the Regulatory Affairs Research Concentration should consult the MS program director to identify a project. Option A (6.0-credit Master's Capstone Project) and Option B (12.0-credit Master's Capstone Project) are available. The MS program director must approve the projects.

Regulatory Affairs Research Concentration (Option A) Courses	Credits
RES 6261 Master's Capstone Project	6.0
REG 5000 Intro to US Food and Drug Law	1.5
ENG 5160 Introduction to Bioprocessing	1.5
REG 5310 Quality Systems and Regulation for Biologics	1.5
REG 6110 Drug and Biologic Regul.	1.5
REG 6120 Medical Device Regulations	1.5
REG 6510 Design of Clinical Trials	1.5

Regulatory Affairs Research Concentration (Option B) Courses	Credits
RES 6260 Master's Capstone Project	12.0
REG 5000 Intro to US Food and Drug Law	1.5
REG 6110 Drug and Biologic Regul.	1.5

KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

Team Master's Project Concentration

Students in the Team Master's Project Concentration should indicate their intent to participate in the TMP by submitting the Concentration Declaration form signed by the MS program director to the Registrar.

TMP Concentration Courses	Credits
PDEV 6000 Team Master's Project	12.0
BUS 6400 Organizational Behavior	3.0