KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

Class of 2027 Graduation Requirements

Master of Science in Applied Life Sciences (MS)

The Master of Science (MS) in Applied Life Sciences program requires students to complete 48.0 credits over two years. The program is designed to offer flexibility and depth through both core and elective courses, along with opportunities to specialize in a chosen field. Students must complete 15.0 credits of Core Science and Professional Development courses and 33.0 credits of elective courses.

Based on their post-graduation goals, students can follow one of three career-oriented tracks—Pre-health, Research, or Industry. Each track offers concentration options that allow students to specialize further in their field of interest: Translational Research, Infectious Diseases, Clinical Research, Public Health, Community Medicine, and Biotechnology. Each concentration requires a Thesis/Capstone project, which provides a hands-on opportunity to apply the knowledge and skills gained throughout the program. A non-concentration "a la carte" option is available for students who prefer a broader approach to their studies and does not require a culminating project.

Program Requirements

Core Requirements	Credits
Core Science & Professional Development Courses	15.0
Electives (Including the following intersecting requirements)	
— Advanced Technical and General Electives (including Concentration-Required Courses and a Thesis/Capstone project)	33.0

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Core Science and Professional Development Courses (15.0 credits)

All students pursuing the MS in Applied Life Sciences must complete the Core Science and Professional Development courses.

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 Healthcare Ethics OR **PDEV 5240** Life Science Industry Ethics	1.5
MATH 5020 Clinical Biostatistics	3.0

**Students enrolled in PDEV 5400 are exempt from the PDEV 5100 requirement.*

Elective Courses (33.0 Credits)

In addition to the core courses, students must complete 33.0 credits of elective courses, which may include concentration-specific courses or other KGI course offerings. Students are encouraged to work closely with the MS program director to select electives aligned with their academic and professional objectives. It is important to note that elective offerings vary by academic year, so students should plan their course selections carefully.

Students can refer to the Henry E. Riggs School of Applied Life Sciences course list for more information on course availability and designations.

Tracks and Concentrations

Students can select a track and concentration within each track that fits their post-graduation path, but a non-concentration ("a la carte") option is also available.

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Career Track	Concentrations
Pre-health Designed to prepare students for admission into graduate healthcare programs. *Note:* Students may be eligible to enroll in the PDEV 5400 Premedicine Professional Development course. PDEV 5400 prerequisites: — Instructor's permission. — Available to domestic students only. — Completion of medical school or PA prerequisite courses. — A cumulative and/or science GPA of 3.0 or higher. — Demonstrated clinical and/or volunteer experience.	— Clinical Research — Public Health — Community Medicine — Translational Research — Infectious Diseases — Biotechnology
Research For students aiming to pursue PhDs in biomedical, healthcare, or other scientific research fields. *Note:* Students are recommended to enroll in Independent Research/Study during their first year to gain hands-on experience and a strong foundation in research skills.	— Translational Research — Infectious Diseases — Clinical Research
Industry Focused on preparing students for research and development (R&D) careers within the biotechnology, pharmaceutical, device, or clinical sectors. *Note:* Students are encouraged to work with Career Services to secure an optional summer internship during their studies.	— Biotechnology — Translational Research — Infectious Diseases — Clinical Research

Culminating Projects and Concentration Requirements

Each concentration requires students to complete 15.0 credits, including the culminating project. Depending on the concentration, students must complete one of the following options:

— 12.0-credit Master's Thesis/Capstone (RES 6200)
— 6.0-credit Master's Thesis/Capstone (RES 6201)
— 12.0-credit Team Master's Project (PDEV 6000)

Culminating projects are critical to the MS program, allowing students to engage in in-depth research or applied industry projects. Students enrolled in a 6.0-credit project per semester (12.0 credits total) must dedicate at least 18 hours per week to their project. Those enrolled in a 3.0-credit project per semester (6.0 credits total) must commit at least 9 hours per week.

- Students must declare a concentration and identify a culminating project by May 1 of their first year.
- All Thesis/Capstone projects require approval from the MS program director.
- Thesis/Capstone contracts should be submitted by the first week of the fall semester in the second year of study.
- Students in the Biotechnology Concentration should indicate their intent to participate in the concentration by submitting the Concentration Declaration form by the May 1 deadline.

Translational Research Concentration

Translational Research, which involves wet lab-based or bioinformatic projects, aims to translate discoveries into practical therapies, devices, or treatments that can improve patient outcomes.

Courses	Credits
RES 6200 Master's Thesis/Capstone	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

Clinical Research projects focus on improving disease prevention, diagnosis, treatment, and understanding. Projects with COPE Health Scholars focus on enhancing the operational aspects of healthcare delivery. Students interested in COPE projects may apply through the KGI-COPE application website by May 1 of their first year of studies.

Courses	Credits
RES 6200 Master's Thesis/Capstone	12.0
SCI 5240 Medical Terminology	3.0

Public Health Concentration

Public Health projects involve studies aimed at protecting and improving the health of populations through education, policy-making, and research for disease prevention and control.

Courses	Credits
RES 6200 Master's Thesis/Capstone	12.0
SCI 6600 Infectious Disease Epidemiology	3.0

Community Medicine Concentration

Community Medicine projects address health needs and issues specific to local communities and frequently involve working with underserved populations and implementing preventative healthcare measures.

Courses	Credits
RES 6200 Master's Thesis/Capstone	12.0
MSCM 5105 Health Systems Sciences OR **MSCM 5302** Community Health Challenges OR **MSCM 5501** Direct to Community Healthcare	3.0

Infectious Diseases Concentration

Infectious disease projects can take both laboratory and clinical directions, each contributing to the broader goal of understanding, preventing, and treating infectious diseases.

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

Option A Courses	Credits
RES 6201 Master's Thesis/Capstone	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

Option B Courses	Credits
RES 6200 Master's Thesis/Capstone	12.0
SCI 6500 Virology	1.5
SCI 6510 Medical Microbiology and Infectious Diseases	1.5

Biotechnology Concentration

Biotechnology projects (TMP) are real-life group-based projects that allow students to apply their academic knowledge and skills to a real-world problem or challenge in collaboration with biotechnology and pharma industry partners.

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