



FACULTY-LED
STUDY ABROAD

KIIS Argentina Program, Summer 2027

AGRI 475-2: Microbes to Molecules: Antibiotic Resistance and Discovery in Argentina

Instructor: Dr. Kendall Corbin

Email: krcorb3@uky.edu

Instructor's office hours: on site and by appointment

Syllabus subject to change

1. Course Description: Antibiotics are among the most important discoveries in modern medicine, yet the growing threat of antibiotic resistance is making many existing treatments less effective. At the same time, microorganisms remain one of the most promising sources for discovering new antimicrobial compounds. This course explores both sides of this challenge: how we discover antibiotics from microbes and why those antibiotics eventually stop working.

Students will be introduced to the process of scientific discovery and experimental design and how to evaluate evidence and communicate scientific findings. Through interactive activities, case studies, primary research articles, and hands-on experiences, students will investigate how antibiotics are discovered, why antibiotic resistance has become a global challenge, and how innovative approaches are being developed to address this growing problem.

Argentina will serve as an important context for examining these topics from a One Health perspective, connecting human health with agriculture, food systems, and the environment. Students will explore how antimicrobial resistance is monitored and addressed in Argentina and compare these approaches with those used in the United States.

This course is designed for students with diverse academic backgrounds. Previous coursework in microbiology is not required. Foundational concepts in microbiology, scientific reasoning, experimental design, and interpretation of scientific evidence will be introduced during the course and reinforced through hands-on activities and discussion.

2. Overall KIIS Program Student Learning Outcomes:

KIIS Study Abroad Mission Statement:

KIIS provides high-quality education abroad programs for students from all diverse backgrounds that promote deep international learning, are integrated into the curriculum, and encourage critical and creative thinking. Our goal is to help students understand the wider world and develop personal and professional skills for lifelong enrichment. We strive to go beyond generalizations and cultural stereotypes to help foster a nuanced appreciation of the world in which we live.

Students participating on KIIS study abroad programs aim to:

- 1) Understand contemporary issues of their host country/countries (i.e. KIIS program location).
- 2) Develop skills to interact comfortably in a global setting.
- 3) Understand other cultures.

Prior to your KIIS study abroad program, and again at the conclusion of your program, KIIS will ask each student to a) answer a few multiple-choice questions, and b) write a short reflective essay (two paragraphs in length) related to the elements detailed above. There is no right or wrong answer, and your responses will not affect your grade in any way. The purpose of the exercise is to help KIIS measure the effectiveness of its study abroad programs.

3. Course Objectives and Specific Learning Outcomes:

By the end of the course, students will be able to:

1. Apply the scientific method by developing research questions and hypotheses, designing basic experiments, identifying appropriate controls, and interpreting scientific data and evidence.
2. Explain how microorganisms contribute to antibiotic discovery, including environmental sampling, antimicrobial screening, and the process of moving from a microbial isolate to a potential antimicrobial compound.
3. Describe why antibiotics become less effective, including antibiotic mechanisms of action, bacterial responses to antibiotics, and the role of evolution and selection in antibiotic resistance.
4. Apply a One Health perspective to antimicrobial resistance by examining connections among human health, agriculture, animal health, food systems, water, and the environment, including comparisons between Argentina and the United States.
5. Evaluate and communicate scientific research by reading and discussing primary literature, assessing the strengths and limitations of scientific evidence, and developing and presenting a proposed strategy for discovering a new antimicrobial compound.

4. Major Topics covered in the Course: The course will cover the scientific method and experimental design, the history and process of antibiotic discovery, antimicrobial screening and susceptibility testing, and global and local challenges associated with antibiotic resistance and strategies for addressing them. Additional topics will include One Health and the connections among human health, agriculture, animal health, food systems, water, sanitation, and the environment; antimicrobial resistance in Argentina and the United States; scientific literature and research communication; and emerging approaches to antibiotic discovery and development.

5. Fulfillment of General Education Requirement: N/A

6. Required Readings and Materials: A traditional textbook is not required. Required pre-departure reading materials will be communicated with students, and a course packet will be provided electronically and/or in printed form by the instructor.

7. Graded Assignments:

Journal Club – 20%:

Students will lead discussions of primary research articles, including one article focused on antimicrobial resistance in Argentina.

Scientific Method and Field Notebook – 20%:

Students will document observations, questions, reflections, and connections to course concepts during class activities and excursions. Students will also complete a focused investigation connecting a field experience to microbiology, antimicrobial resistance, and One Health.

Spotlight: Microbe, Molecule, Scientist- 10%:

Students will select a bacterium, antibiotic/molecule, or scientist/discovery and give a brief presentation exploring its significance to antibiotic discovery or antimicrobial resistance.

Antibiotic Discovery Challenge – 20%:

Students will develop and present a proposed strategy for discovering and evaluating a novel antimicrobial compound, applying concepts from throughout the course.

Participation in Course Activities & Excursions – 15%:

Active participation in class discussions, group activities, guest presentations, journal clubs, and course excursions.

Final Scientific Communication Project – 15%:

Students will communicate a course-related scientific topic to a general audience through a poster, presentation, infographic, or other approved format.

Work will be graded on this scale:

90 – 100 A

80 – 89 B

70 – 79 C

60 – 69 D

Below 60 E (F)

This course will be graded on this basis, without regard to other scales (i.e., plus-and-minus) which may apply at your college or university. Note KIS/WKU does not award +/- grades, only full letter grades.

8. Generative AI Policy:

Generative AI is permitted/encouraged in some ways, with proper attribution, but prohibited in other ways.

Students are allowed, encouraged, and even required to use Generative AI in some ways but are prohibited from using it in other ways. Keep in mind that any content produced by generative AI can “hallucinate” (produce false information), so students are responsible for ensuring the accuracy of any AI-generated content. Examples of citing AI are available at: <https://libguides.wku.edu/stylewrite/ai>.

Students are permitted and encouraged to use generative AI in the following ways:

- Brainstorming: You may use generative AI to stimulate creativity, generate ideas, or brainstorm topics for papers, presentations, and discussions. The generated content must serve as a steppingstone, not a final product.
- Citation Assistance: AI tools can be used to manage, format, and organize citations and references, promoting adherence to academic writing standards and specific style guides required for individual assignments.
- Grammar and Style Checking: AI-powered writing enhancement tools may be used to help with spelling, grammar, syntax, and stylistic errors.
- Concept Understanding: Generative AI can be used to explain or simulate concepts taught in class, aiding in a deeper understanding.
- Research Assistance: AI can be used to conduct initial research, compile data, and summarize articles, books, or papers. It should not replace traditional research methods but rather enhance them.

You may not use generative AI in coursework in the following ways:

- Plagiarism: Using AI-generated content as your original work without attribution. This includes essays, papers, presentations, and exam answers.
- Data Manipulation: Using AI tools to alter data or create misleading information.
- Misrepresentation of Skills: Using generative AI to complete tasks that are meant to assess your knowledge and skills.
- Confidentiality Breach: Using AI tools that might violate KUIS/university policies or laws related to data privacy and confidentiality.

Metacognitive Reflection. In addition to a proper citation, the student should include the following statement with any assignment where generative AI is used for assistance.

“I used generative AI [INSERT NAME OF PLATFORM] for assistance in the following ways on this assignment: [INSERT WAYS USED, such as brainstorming, citation assistance, grammar and style checking, concept understanding, and research assistance, etc.]”

9. Attendance Policy:

KUIS program participants are expected to be punctual to and in attendance at all classes, presentations, meetings and required excursions, and to remain with the program for the full academic period. Unexcused absences from classes and/or mandatory meetings will result in a lowering of the student's final grade, as will excessive tardiness. Multiple unexcused absences could result in expulsion from the program. Any absence from an academic class session must be excused for medical reasons.

10. Disability Accommodation:

KUIS will make every reasonable effort to provide accommodations for program participants with special needs or disabilities, but we cannot guarantee that we will be able to do so. Be aware that many foreign countries do not have comprehensive legislation comparable to

the Americans with Disabilities Act (ADA). As a result, businesses and other establishments operating in foreign countries may not be able to provide accommodations.

If you have a disability accommodation need, we recommend you contact your KIIS Campus Representative, <https://www.kiis.org/about-kiis/contact-us/campus-representatives/> early in your program selection process so that s/he has time to discuss any specific needs, including which KIIS programs may be best suited. You also are welcome to contact KIIS Assistant Director, Maria Canning, maria.canning@wku.edu, to discuss your disability accommodation needs (e.g. housing, transportation, excursions, class schedule, etc.).

Immediately after acceptance, notify KIIS Admissions and Enrollment Specialist, Haley McTaggart, haley.mctaggart@wku.edu, if you have a special need or disability that might require any form of accommodation abroad. Failure to notify KIIS may prevent you from participating on your KIIS program.

If you require any accommodations abroad, you must provide KIIS Admissions and Enrollment Specialist, Haley McTaggart, an accommodation letter from your home campus' disability accommodation office that lists the accommodations you are eligible to receive. Please do not request accommodations directly from your KIIS Program Director or other KIIS Faculty; the KIIS Office will notify your KIIS Program Director and/or Faculty after we have received your above accommodation letter.

In some cases, you may need to make arrangements for a caregiver to join you on your KIIS program, should your physician, campus disability accommodation office, or KIIS make such a recommendation or require it.

11. Title IX / Discrimination & Harassment:

Recent attention to gender discrimination and sexual harassment at colleges and universities reminds us of the importance of adhering to standards of ethical and professional behavior. KIIS Study Abroad is committed to supporting and encouraging safe and equitable educational environments for our students, faculty, and program directors. Students, faculty, and program directors are required to be civil and treat each other with dignity and respect. As such, harassment and/or discrimination of any kind will not be permitted or tolerated.

Sexual misconduct (sexual harassment, sexual assault, and sexual/dating/domestic violence) and sex discrimination are violations of KIIS policies. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to a) KIIS Assistant Director, Maria Canning (+1-859-200-1000) or KIIS Executive Director, John Dizgun (+1-270-227-2288), b) WKU's Title IX Coordinator, Ena Demir (270-745-6867 / ena.demir@wku.edu) or WKU's Title IX Investigator, Michael Crowe (270-745-5429 / michael.crowe@wku.edu). Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a KIIS program director and/or faculty member, KIIS program directors and faculty are considered "Responsible Employees" of Western Kentucky University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator.

If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center, <https://www.wku.edu/heretohelp/> at 270-745-3159.

For more information on KIIS Title IX, see <https://www.kiis.org/students/health-safety/title-ix-clery/>.

Everyone should be able to participate on a KIIS program, attend a KIIS event, or work in a KIIS environment (e.g. KIIS office) without fear of sexual harassment or discrimination of any kind. Be respectful of each other.