



University Council

March 10, 2023

UNIVERSITY CURRICULUM COMMITTEE – 2022-2023

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Arts and Sciences – Jonathan Haddad (Arts)

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Business – Jim Carson

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Education – David Jackson

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Environment and Design – Ashley Steffens

Family and Consumer Sciences – Sheri Worthy

Forestry and Natural Resources – Joseph Dahlen

Journalism and Mass Communication – Dodie Cantrell-Bickley

Law – Randy Beck

Pharmacy – Michelle McElhannon

Public and International Affairs – Rongbin Han

Public Health – Pamela Orpinas

Social Work – Harold Briggs

Veterinary Medicine – Shannon Hostetter

Graduate School – Christof Meile

Ex-Officio – Provost S. Jack Hu

Undergraduate Student Representative – Kate Lindgren

Graduate Student Representative – Yehia Abdelsamad

Dear Colleagues:

The attached proposal from the College of Veterinary Medicine for a new Undergraduate Certificate in Infectious Diseases will be an agenda item for the March 17, 2023, Full University Curriculum Committee meeting.

Sincerely,

Susan Sanchez, Chair

cc: Provost S. Jack Hu

Dr. Marisa Pagnattaro

## PROPOSAL FOR A CERTIFICATE PROGRAM

**Date:** September 21, 2022

**College:** College of Veterinary Medicine

**Department:** Infectious Diseases

**Certificate Title:** Undergraduate Certificate in Infectious Diseases

**Effective Term:** Fall 2023

**Which campus(es) will offer this certificate?** Athens

**Level:** Undergraduate

**CIP:** 26130900

### Program Abstract

The proposed undergraduate certificate in Infectious Diseases seeks to provide a focused but multidisciplinary undergraduate experience in an important and expanding area of the biomedical sciences. Infectious diseases pose a major threat to human health and economic development, both directly and indirectly, by impacting food production and the environment. New threats appear as existing pathogens resist current control measures and new agents emerge. Students will be exposed to the science of infectious diseases across the range of biological scales, from molecules and cells to populations, including pathogens and their hosts, which may be unique for programs in the United States. The certificate will require a minimum of 12 credit hours of courses and students must obtain at least a "C" (2.0) in these courses to be successful. Many local and national employers would recruit graduates with expertise in this area, including the Centers for Disease Control and Prevention (CDC), the U.S. Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and biotechnology companies such as Boehringer Ingelheim. Infectious diseases have been a major research focus of excellence at the University of Georgia. This certificate represents the first attempt to leverage that excellence into an innovative undergraduate program.

### 1. Purpose and Educational Objectives

**State the purpose and educational objectives of the program. How does this program complement the mission of the institution?**

The objective of the undergraduate certificate in Infectious Diseases is to provide:

1. Practical and theoretical knowledge of infectious diseases as viewed by multiple disciplines within the biological sciences.
2. Graduates who will be well qualified to satisfy local and regional demand for employees knowledgeable about theoretical and practical aspects of infectious diseases.

These educational objectives support the strategic plans of the Department of Infectious Diseases and the College of Veterinary Medicine.

## 2. Need for the Program

Explain why this program is necessary. In addition, provide the following information:

- a. *Semester/Year of Program Initiation:* Fall 2023
- b. *Semester/Year of Full Implementation of Program:* Fall 2023
- c. *Semester/Year First Certificates will be awarded:* Spring 2024
- d. *Annual Number of Graduates expected (once the program is established):* 20-30
- e. *Projected Future Trends for number of students enrolled in the program:* 20-30

Infectious diseases have re-emerged as a major threat to human health, agriculture, and the environment. Old complacencies centered on the ready availability of effective anti-infective drugs and vaccines, together with a lack of methods to combat new and re-emergent infections, have given way to increased concern about the loss of efficacy of many of these treatments. In parallel, it has become apparent that any sustainable strategy for controlling these diseases will require an appreciation of the wider context in which outbreaks occur and new pathogens emerge. Thus, it is not sufficient to study pathogens and the host response to them solely at the molecular and cellular levels in the laboratory, but also at the population level in the wider environment. The Department of Infectious Diseases has recognized this need and has developed joint faculty appointments with centers of excellence in the Odum School of Ecology and the College of Public Health to increase research collaborations across these multiple levels. This program aims to develop those links further for an exciting and unique venture in undergraduate education.

There is a local and regional demand for graduates trained in infectious diseases. Organizations such as the CDC, USDA, EPA, Boehringer Ingelheim, news agencies, and non-governmental nonprofit organizations are potential employers of these graduates. Biosecurity is also a major concern for local agriculture, including the poultry industry, which has a demonstrated vulnerability to infectious disease.

The University of Georgia is a recognized center of excellence in infectious diseases, as evidenced not only by the reputation and research income of the Department of Infectious Diseases, but also by groupings such as the Faculty of Infectious Disease, Center for Tropical and Emerging Global Diseases, Center for Vaccines and Immunology, and the Center for the Ecology of Infectious Diseases. This program aims to leverage this research excellence into high-quality undergraduate education.

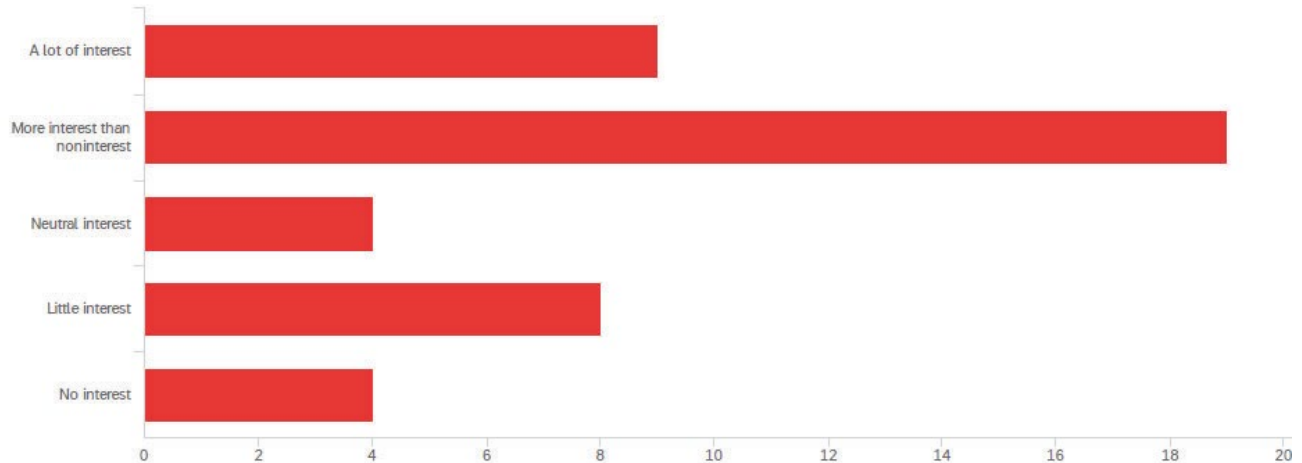
It is anticipated that the certificate will be offered beginning the fall semester of 2023, with full implementation the same semester. The first certificates will be awarded in the spring semester of 2024. The department expects 20-30 students will obtain the certificate each year once the program is established.

## 3. Student Demand

- a. **Provide documentation of evidence of student demand for this program.**
- b. **Provide evidence that demand will be sufficient to sustain reasonable enrollment.**
- c. **To what extent will minority student enrollments be greater than, less than, or equivalent to the proportion of minority students in the total student body?**

As part of a limited survey into student interest in a potential undergraduate program in infectious diseases, students enrolled in ECOL 3530, Conservation Ecology, ECOL 3820, Evolutionary Medicine, FYOS 1001, Epidemics: What They Tell Us About Pathogens and Ourselves, and FYOS 1001, One Health, in Fall 2022 were asked the following question (Q1).

*Q1 - If a Certification in Infectious Diseases program existed, how much interest would you have in obtaining such a certificate to enhance your undergraduate degree in your current or intended major? (Certification programs require approximately 12-18 additional hours and 3-4 courses.)*



#	Answer	Percentage	Count
1	A lot of interest	20.45%	9
2	More interest than noninterest	43.18%	19
3	Neutral interest	9.09%	4
4	Little interest	18.18%	8
5	No interest	9.09%	4
	Total	100%	44

Of the students completing the survey, 63.6% indicated an interest in this certificate. It is expected that enrollment will be greater among students with a pre-medicine or pre-veterinary medicine focus. Minority student enrollment is predicted to be in line with the overall average for the Athens campus of UGA.

#### 4. Program of Study

**Provide a detailed program of study for the certificate program, including:**

- a. Specific course prefixes, numbers, and titles**
- b. Identify any new courses created for this program**

Students must complete two required courses and two elective courses for a minimum of 12 credit hours.

##### ***Required Courses (6-8 hours)***

- IDIS 3100, People, Parasites, and Plagues (3 credit hours) **OR** ECOL(BIOL) 4150/6150-4150L/6150L, Population Biology of Infectious Diseases (4 credit hours)

- CBIO(MIBO)(IDIS) 4100/6100-4100D/6100D, Immunology (4 credit hours) **OR** MIBO 3500, Introductory Microbiology (3 credit hours) **OR** CBIO 4500/6500, Medical Parasitology (3 credit hours) **OR** POPH(MIBO)(IDIS) 4650/6650, Introduction to Virology (3 credit hours) **OR** MIBO(POPH) 4220, Pathogenic Bacteriology (3 credit hours)

***Elective Courses (6-8 hours)***

***Choose two courses not taken above:***

- CBIO(MIBO)(IDIS) 4100/6100-4100D/6100D, Immunology (4 credit hours)
- CBIO 4500/6500, Medical Parasitology (3 credit hours)
- ECOL 3820, Evolutionary Medicine (3 credit hours)
- EPID 4070, Fundamentals of Epidemiology (3 credit hours)
- IDIS(POPH) 3110, Food Animal Infectious Diseases (3 credit hours)
- IDIS(NUTR) 4200/6200, We are What We Eat! How Your Gut Influences Your Overall Health (3 credit hours)
- IDIS 4960R, Faculty-Mentored Undergraduate Research I (3-4 credit hours)
- MIBO(POPH) 4220/6220, Pathogenic Bacteriology (3 credit hours)
- POPH(MIBO)(IDIS) 4650/6650, Introduction to Virology (3 credit hours)

## **5. Model Program and Accreditation**

- Identify any model programs, accepted disciplinary standards, and accepted curricular practices against which the proposed program could be judged. Evaluate the extent to which the proposed curriculum is consistent with these external points of reference and provide a rationale for significant inconsistencies and differences that may exist.**
- If program accreditation is available, provide an analysis of the ability of the program to satisfy the curricular standards of such specialized accreditation.**

There are very few undergraduate programs in Infectious Diseases in the United States. As a result, there are no model programs against which any proposal in this area can be judged. Some programs of note include:

- Pennsylvania State University (Aspirational)
  - Major in Immunology and Infectious Diseases
- University of California-Berkeley (Aspirational)
  - Major in Immunology and Pathogenesis
- University of Texas-Austin (Aspirational)
  - Area of Emphasis under Biology major in Microbiology and Infectious Diseases
- University of California-Irvine (not listed)
  - Major in Microbiology and Immunology
- University of California-Davis (Comparator):
  - Major in Global Disease Biology

Four of the programs are based on immunology and microbiology, with the fifth, that at the University of California-Davis, being a joint major between three colleges: College of Agriculture and Environmental Sciences, College of Veterinary Medicine, and the School of Medicine.

Certificates in Infectious Diseases tend to be epidemiological in nature, associated with medical schools and not offered to undergraduates. No specific accreditation is available.

## **6. Student Learning Outcomes**

**Describe the proposed learning outcomes for the certificate program.**

- 1) Students will gain an appreciation of the diversity of organisms that can cause disease and the mechanisms by which they do this.
- 2) Students will understand current approaches to the control of infectious diseases and their limitations.
- 3) Students will recognize the importance of the evolutionary biology and ecology of infectious agents.
- 4) Students will learn modern research techniques for the study of pathogens.

## **7. Assessment**

**Describe how the learning outcomes for the program will be assessed. Describe the process and criteria for how students will be admitted to and retained in the program.**

Assessment of student learning outcomes will be addressed through the following:

- 1) The required courses in the program of study ensure that students are exposed to the learning objectives. The elective courses in the program of study provide students added breadth and depth based on student interests. Learning outcomes are assessed through the grading of individual courses. Students must receive a passing grade of “C” (2.0) or better in all courses counted toward the certificate.
- 2) Review of student major, certificate courses, grades earned, and a final assessment of learning outcomes through completion of an exit questionnaire. The exit questionnaire will be composed by the Department of Infectious Diseases Undergraduate Program Committee and results reviewed annually.

The certificate is open to any students who wish to complete the program. To complete the certificate, students must enroll in the certificate via Athena, earn a “C” (2.0) or better in all certificate courses, and complete a final learning outcomes exit questionnaire.

## Documentation of Approval and Notification

**Proposal:** Undergraduate Certificate in Infectious Diseases

**College:** College of Veterinary Medicine

**Department:** Infectious Diseases

**Proposed Effective Term:** Fall 2023

### Approvals:

- Infectious Diseases Department Head, Dr. Frederick Quinn, 12/21/22
- College of Veterinary Medicine Interim Associate Dean, Dr. Gaylen Edwards, 1/10/23

### Use of Course Approvals:

- Cellular Biology Department Head, Dr. Dennis Kyle, 2/2/23
- Director of Biological Sciences, Dr. Kristen Miller, 12/21/22
- Epidemiology and Biostatistics Department Head, Dr. Jose Cordero, 1/20/23
- Microbiology Department Head, Dr. Aaron Mitchell, 1/8/23
- Odum School of Ecology Interim Dean, Dr. Sonia Altizer, 1/12/23
- Population Health Department Head, Dr. Roy Berghaus, 1/7/23