



UNIVERSITY OF
GEORGIA

University of Georgia
Athens, Georgia 30602
univcouncil@uga.edu
www.uga.edu

University Council

August 20, 2021

UNIVERSITY CURRICULUM COMMITTEE – 2021-2022

Susan Sanchez, Chair

Agricultural and Environmental Sciences – Nicholas Fuhrman

Arts and Sciences – Jonathan Haddad (Arts)

Rodney Mauricio (Sciences)

Business – Jim Carson

Ecology – Amanda Rugenski

Education – David Jackson

Engineering – Kun Yao

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 – Leah Carmichael

Public Health – Allan Tate

Social Work – Harold Briggs

Veterinary Medicine – Shannon Hostetter

Graduate School – Wendy Ruona

Ex-Officio – Provost S. Jack Hu

Undergraduate Student Representative – Matthew Jue

Graduate Student Representative – TBD

Dear Colleagues:

The attached proposal from the College of Veterinary Medicine for a new Undergraduate Certificate in One Health will be an agenda item for the August 27, 2021, Full University Curriculum Committee meeting.

Sincerely,

Susan Sanchez, Chair

University Curriculum Committee

cc: Provost S. Jack Hu
Dr. Rahul Shrivastav

PROPOSAL FOR A CERTIFICATE PROGRAM

Date: July 26, 2021

School/College/Unit: College of Veterinary Medicine

Department/Division: Pathology

Certificate Title: Undergraduate Certificate in One Health

Level: Undergraduate

Effective Term: Fall 2022

Which campus(es) will offer this certificate? Athens

CIP: 51000001

Program Abstract: Emerging infectious disease, epidemic outbreaks, and antimicrobial resistance are urgent and critical threats to the health of the planet. One Health recognizes the interdependence of human and animal health, and the well-being of agricultural, industrial, and natural ecosystems. This proposal is for an interdisciplinary undergraduate certificate program that introduces undergraduates to the One Health approach to disease problem solving.

The overarching goals of this certificate are to:

- Provide a common curriculum to connect and educate health professionals early in their undergraduate college careers when they are naturally learning together.
- Enable greater interdisciplinary communication among future health care professionals.

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 Undergraduate Certificate in One Health is intended to enhance the education of students pursuing healthcare-related undergraduate degrees by teaching them integrated approaches to human, animal, and environmental health.
- A further objective is to expand current joint education programs for human, animal, and environmental health specialists at earlier career stages, including training in technical, leadership, and partnership skills.

While many One Health programs currently exist within veterinary and graduate schools, there is a dearth of similar programs within undergraduate pre-health curricula. Current CDC recommendations in addressing One Health education include expanding joint education programs for human, animal, and environmental health specialists at earlier career stages,

including training in technical, leadership, and partnership skills. The University of Georgia will once again be at the leading edge of training opportunities for students.

As colleges of veterinary medicine recognize the value of inroads into undergraduate education, this is a novel and emerging opportunity. In the earlier days of medicine, there was a minimal gap between the medical and veterinary professions. This minimal gap still exists today within undergraduate pre-health programs and is the best time to take advantage of students' receptivity to integrating new ideas. In addition, at this stage, their academic schedules may be more accommodating to allow exploration of a variety of course offerings. Furthermore, presenting One Health concepts to pre-health students at this stage of their education could foster awareness of and change attitudes toward public health practices and zoonotic disease.

This proposed interdisciplinary certificate program is being offered to encourage students of diverse undergraduate disciplines to value the interconnectedness of animals, humans, and the environment and to use that lens to think innovatively and in an interdisciplinary manner about novel approaches to health issues and disease solutions. Additionally, this certificate will strengthen existing collaboration between students, faculty, staff, and alumni from diverse colleges and schools at the University of Georgia.

The Undergraduate Certificate in One Health curriculum emphasizes the linkages between and integration of human, animal, and environmental health. Specific areas in the curriculum include:

1. interdisciplinary communication and collaboration
2. pathogenesis of zoonotic diseases
3. the science and sociology of the human animal-bond and disease
4. medical communication
5. clinical, comparative medicine and translational research
6. biodiversity and environmental health
7. the impact of human activity on the environment

2. Need for the Program

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

- a. **Semester/Year of Program Initiation:** Fall 2022
- b. **Semester/Year of Full Implementation of Program:** Fall 2022
- c. **Semester/Year First Certificates will be awarded:** Spring 2023
- d. **Annual Number of Graduates expected (once the program is established)** 10-12
- e. **Projected Future Trends for number of students enrolled in the program** 30

One Health refers to the interdisciplinary, inter-institutional, and inter-professional collaboration locally, nationally, and globally to advance the well-being and health outcomes of people, animals, and the environment. It is based on the internationally recognized doctrine that the health of people, animals, and the environment are inextricably intertwined.

The Centers for Disease Control and Prevention (CDC) has named One Health an essential focus area for higher education. In 2007, the American Medical Association House of Delegates accepted a One Health resolution and the American Veterinary Medical Association established a task force to implement One Health. In 2011, the North American Veterinary Medication Education Consortium (NAVMEC) listed One Health as a core requirement for all graduating veterinarians. As of January 2019, over 105 organizations from around the world support the

One Health initiative. Funding for One Health-based research projects and publications skyrocketed in the early 2000s to a level only previously seen in apoptosis and HIV/AIDS research (Spencer, McRobie et al. 2019). Currently, the number of scientists (physicians, pharmacists, researchers, veterinarians, public health doctors, etc.) that are trained in collaboration across fields of expertise is insufficient to meet societies' health challenges.

As recent pandemic events have highlighted, better communication between veterinary, human, and public health care professionals is necessary to track and respond effectively to diseases that make the transition from affecting animals to affecting humans: zoonotic threats. The COVID-19 pandemic also has shown the importance of health and science communication, including understanding the public and news media, in preventing and stemming zoonotic threats. This certificate program fosters interdisciplinary education, expands interactive learning opportunities for undergraduate students, and prepares program participants for careers in all health-related sciences. Currently, a substantial number of UGA students interested in this interdisciplinary approach to health care double-major or triple-major in two or more disciplines to achieve this outcome. Alumni of the College of Veterinary Medicine (CVM) have strongly suggested that graduates are more likely to find employment in government agencies, industry, NGOs, and research entities if they have participated in an educational program that links substantive knowledge across multiple health disciplines. (*Personal Communication*).

Presently, there is isolation of the training and education within each health care profession. This approach contributes to a paucity of zoonotic disease training in human medical curricula as well as a lack of environmental health education and public health communication training in both human and veterinary medicine curricula. Since collaboration between all of these sectors is essential to solving complex societal problems such as climate change, water pollution, food safety, and food security, it is important that students interested in going into these fields are educated on the links between these areas and health.

To date, most One Health programs are offered at the graduate or professional level. Despite multiple recommendations, only a few schools currently offer a One Health undergraduate major. A sizable opportunity for instilling One Health credentials in students when they are excited about implementing new ideas is being lost. Experiential and distance learning opportunities are being squandered. Just as with any kind of recruiting effort, early influence yields better goals.

The current goal is to begin offering the One Health certificate to students starting fall 2022. Students who have already fulfilled all the requirements except the core courses would be eligible to apply, and the first certificates could be awarded as early as spring 2023. Based on expected student demand and similar undergraduate certificate programs at UGA, a maximum of 10-12 students are expected to be enrolled per year.

3. Student Demand

- a. Provide documentation of evidence of student demand for this program, which may include a student survey.**
- 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?

Currently, a substantial number of UGA students interested in this integrative approach to health care have to double-major or triple-major in two or more disciplines to obtain this interdisciplinary content. Not only have studies supported the positive effect of training students for interdisciplinary collaborations, but also alumni of the CVM have strongly indicated that graduates are more likely to find satisfaction in employment after exposure to knowledge that spans health discipline areas.

This interdisciplinary approach leads to (1) increased understanding of the professional roles of other disciplines; (2) better awareness of professional role overlap; (3) an appreciation for the importance of collaboration; (4) understanding that conflict can arise within interdisciplinary teams; (5) realizing the importance of leadership; and (6) the development of increased confidence in one's ability to collaborate.

In a recent survey of 121 UGA professional, graduate, and undergraduate students, students were asked if they would consider (undergraduates) or would have considered (graduate and professional students) certain One Health undergraduate options at UGA. Of the respondents, consisting of 42% undergraduate, 44% professional, and 24% graduate students, only 35% had ever taken a One Health course before and only 10% said they took the course at UGA. For those students who had taken a One Health course previously, 90% would take another. 85% of all respondents would like to or would have enrolled in a One Health certificate. A full third of the students would like to or would have considered a One Health major if it were offered and 70% would like to or would have considered a One Health minor.

Based on the results of this survey, faculty believe that demand will be sufficient to sustain reasonable enrollment. Students under-represented in health careers (URHC) will be a specific target for recruitment into this certificate program. Recent studies have shown that programs such as certificate programs in large universities increase the retention of URHC students due the value of individual mentoring and small cohort and peer-to-peer learning opportunities.

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

To complete the certificate, students must take at least 15 credits of course work, attend a required number of seminars, and complete a capstone project. The capstone project will be unique to the individual student and could consist of either a research project or an externship on a relevant One Health topic. The student will identify a faculty mentor from certificate faculty to help them select the best experience for both their interest and anticipated career path.

a. Courses

To complete the certificate, students must take at least 15 credit hours comprised of seven credit hours of required courses, a capstone course, and eight credit hours of elective courses from a diverse list of options.

Required Courses (7-9 hours)

All *required* courses must be taken for a grade, and a minimal grade of C (2.0) is mandatory for all required classes taken in fulfillment of the certificate.

VPAT 3700, Introduction to One Health* (3 hours)

This course examines the key concepts of the One Health Initiative and the benefits of utilizing an interdisciplinary approach to disease prevention and elimination. The course will utilize a collaborative, case-based approach to cover relevant topics such as emerging infectious diseases, human-animal bond, antibiotic usage and antimicrobial resistance, and impact of public policy/global economy on human, environmental, and animal health.

VPAT 3900, Current Topics in One Health* (1 hour)

This seminar course will introduce students to substantive issues and knowledge needed to pursue a career in health-related science. Course content will include guest lectures by practitioners from multiple disciplines both at UGA and in the community.

VPAT 3960, One Health Capstone* (3-5 hours)

All participants must complete a culminating capstone project. Students will identify their own project with guidance from the certificate program coordinators and participating faculty. All students completing the certificate are required to present an overview of their capstone project.

(*course submitted in CAPA)

Elective Courses (6-8 hours)

- The remaining six to eight credits must be taken from the following list of undergraduate courses, although alternative courses may be suggested and accepted as satisfying the certificate requirements on a case-by-case basis.
- Elective courses can be taken for a grade or pass/fail (if the option is available). A “Pass” grade or a minimum grade of “C” (2.0) will be required in all elective classes taken in fulfillment of the certificate.
- It is strongly recommended that students take elective courses outside of their degree field.
- Elective courses must include at least one course outside the College of Veterinary Medicine.
- The remaining elective credits can be taken in one of eight different colleges across campus. These courses will give the student more in-depth knowledge in different areas of health within several tracks and allow students to explore different viewpoints, increase their understanding of interdisciplinary convergence, and enhance their awareness of how the intersection of different disciplines can affect health.

Elective Courses (additional courses may be eligible and will be reviewed on a case-by-case basis)

College of Agricultural and Environmental Sciences

AAEC 2710, Food Fights: Analysis of Global Food Policy Issues (3 hours)

AAEC(AFST)(ENVM) 4720, Applied International Development Economics (3 hours)

AGCM 2200, Communicating in Agricultural and Environmental Sciences (3 hours)

AGCM 3200, History and Philosophy of Communication in Agricultural and Environmental Sciences (3 hours)
 AGCM 3400W, Writing for Agricultural and Environmental Sciences (3 hours)
 FDST 2010, Food Issues and Choices (3 hours)
 FDST 3000, Introduction to Food Science and Technology (3 hours)

Franklin College of Arts and Sciences

SOCI 1101, Introductory Sociology (3 hours)
 SOCI 3100, Medical Sociology ((3 hours)
 SOCI 4XXX**, Special Topics in Sociology: The Science of Happiness (3 hours)

Odum School of Ecology

ECOL 2100, Global Climate Change: Past, Present, and Future (3 hours)
 ECOL 2200, Water Sustainability in the Anthropocene (3 hours)
 ECOL 3220, Biology and Conservation of Marine Mammals (3 hours)
 ECOL 3530, Conservation Biology (3 hours)
 ECOL 3820, Evolutionary Medicine (3 hours)
 ECOL(BIOL) 4150/6150-4150L/6150L, Population Biology of Infectious Diseases (4 hours)
 ECOL 4240-4240L, Physiological Ecology (4 hours)

Warnell School of Forestry and Natural Resources

FANR(MARS) 1100, Natural Resources Conservation (3 hours)
 FANR 1500, Fundamentals of Sustainable Development (3 hours)
 FANR(ANTH)(ECOL)(GEOG)(INTL) 4271, People, Planet and Profit (1-9 hours, up to 3 credits may be counted towards certificate requirements)
 WILD(ECOL)(POPH) 4575/6575, Conservation Medicine (6 hours)
 WILD(POPH) 5100/7100, Principles and Management of Wildlife Diseases (3 hours)

Grady College of Journalism and Mass Communication

ADPR 5110, Advertising, Public Relations, and Health (3 hours)
 ADPR 5120, Crisis Communication (3 hours)
 JOUR 3030, Media, News, and Consumers (3 hours)

School of Law

JURI 2990, Law, Justice, and the State (3 hours)
 JURI 3200S, Law and Social Justice: Strategic Advocacy (3 hours)
 JURI 3400, Introduction to Global Governance (3 hours)

College of Pharmacy

PMCY 2020, Pill, Potions, and Drugs in Modern Medicine (3 hours)
 PMCY 3200, Introduction to the Pharmaceutical Sciences (3 hours)

College of Public Health

EHSC 3060, Introduction to Environmental Health Science (3 hours)
 GLOB 3100, Introduction to Global Health (3 hours)
 GLOB 3150, Culture and Global Health (3 hours)
 GLOB 3200, Global Health and the Links Among Food, Culture, and Disease (3 hours)
 HPRB 5310, Introduction to Public Health Communication (3 hours)

College of Veterinary Medicine

IDIS 3100, People, Parasites, and Plagues (3 hours)

IDIS(POPH) 3110, Food Animal Infectious Diseases (3 hours)

VPAT 3100H, Introduction to Disease (Honors) (3 hours)

VPAT 4000/6000, On the Origins of Disease (3 hours)

VPAT 4100, Common Diseases of Production Animals (3 hours)

VPHY 3100, Elements of Physiology (3 hours)

(**to be submitted)

b. Seminar Attendance (pass/fail)

Students will be expected to attend at least one selected One Health-related seminar of their own choosing in addition to VPAT 3700 for each semester enrolled in the certificate program.

Students will be required to post the title of the seminar and a brief discussion of how they anticipate the topic will tie into the principals of One Health on eLC prior to attendance. Student attendance at seminars will be documented by having students post a reflection of each presentation on eLC that will be reviewed by certificate coordinators. A student can use a presentation they have given of a One Health-related topic in lieu of this requirement.

Capstone Course (3-5 hours)

Students must complete a capstone project highlighting a One Health approach to solving a problem. The capstone for the certificate should be separate from any other capstone project and the student may not use any portion of another capstone project to satisfy this requirement. However, if there are aspects of their projects that have not been used, they may use these components for their One Health capstone. The capstone project must directly relate to issues relevant to One Health.

Examples of possible capstone projects include:

- Organize a workshop that brings human, veterinary, and environmental specialists together around a pandemic simulation.
- Conduct a media campaign on an aspect of an emerging zoonotic disease.
- Develop an online site on the human animal bond for high school students.
- Complete an internship at a public health office, CDC, NIH etc.

Students will register for VPAT 3960, a 3-5 credit course depending on the chosen experience. Students will identify a topic and project or practice site, and submit a brief proposal.

Certificate faculty and currently enrolled peers are both resources that should be used to help students in choosing their topics, although students will be expected to be self-driven and will be responsible for choosing their own courses and choosing their own capstone project.

Projects may be conducted either within the U.S. or internationally, are expected to use an interdisciplinary approach, and should not be concurrent research projects unless the capstone is a unique offshoot. Projects must be finished for successful completion of the certificate.

Students will share their capstone projects during a special capstone presentation session. The projects will be evaluated by certificate faculty and other faculty with expertise in One Health.

5. Model Program and Accreditation.

- a. **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.**

At the time of this proposal, there are few undergraduate One Health programs in existence. Texas A&M University provides students the opportunity to pursue an interdisciplinary major with an emphasis in Oceans and One Health. The Pennsylvania State University offers an undergraduate minor in One Health through the College of Agricultural Sciences.

Additionally, Fontbonne University, a small private Midwest University, has both a One Health major and minor. Berry College in Georgia has a One Health minor. Finally, The University of Saskatchewan in Canada has the only other One Health Undergraduate certificate program currently offered in North America.

- b. **If program accreditation is available, provide an analysis of the ability of the program to satisfy the curricular standards of such specialized accreditation.**

There is currently no program accrediting body for One Health programs, although it is anticipated that there soon will be.

6. Student Learning Outcomes

Describe the proposed learning outcomes for the certificate program.

The educational goals of the One Health certificate will reflect many of the proposed core competencies in One Health Education (Frankson, Hueston et al. 2016, Rabinowitz, Natterson-Horowitz et al. 2017, Togami 2018). Specifically, this certificate will help students:

1. Work together as a member of a problem-solving team to research, evaluate, and communicate assigned One Health topics and consider the roles of human health providers, veterinarians, and environmental health professionals in approaching solutions to these issues.
2. Describe the basic tenants of disease transmission and epidemiology.
3. Examine the relationship between human activity and the emergence of novel pathogens causing disease in humans and animals.
4. Identify how non-infectious environmental factors, such as pesticides and climate change, affect both humans and animals.
5. Recognize basic sentinel events in both humans and animals and formulate methods on how to use these events to detect and prevent disease.
6. Determine how veterinarians, physicians, and public health officials work to control zoonotic diseases.

7. Examine the role that culture and cultural competency plays in approaches to disease detection, diagnosis, and prevention.
8. Assess the importance of farmers, veterinarians, public health officials, and environmental health researchers in ensuring food security and food safety.
9. Identify the role of the human-animal bond in promoting health and well-being.
10. Gain experience with effectively communicating One Health concepts to a lay audience.

7. Assessment of Student Learning Outcomes

Describe how the learning outcomes for the program will be assessed.

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

Student learning outcomes:

1. Pre- and post-testing of students enrolled in the program will be done to gauge attitudes and aptitudes towards interdisciplinary approaches to disease. Specifically, their understanding of the professional roles of other disciplines and how they overlap, as well as their appreciation for the role of collaboration in addressing large-scale problems will be measured.
2. Performance in the required courses, specifically VPAT 3700.
3. Capstone portfolio evaluation.
4. Construction of a curriculum map to identify where the ten identified learning outcomes are taught within the three required courses.

Program evaluation:

1. Annual surveys of enrolled students to assess student satisfaction with the program and to solicit suggestions for improvement.
2. Monitoring of participating student demographics to measure the success of recruitment and retention of URHC students.

8. Admissions and Mentoring

Admission is open to students in all majors who have completed the following pre-requisite courses:

BIOL 1107, Principles of Biology I
 BIOL 1108, Principles of Biology II

Applicants must have an overall GPA of 3.2 or higher to apply. Applicants must submit a formal essay explaining their interest in One Health. Application cycles are at the start of each spring semester.

Initially, 3-5 students per year are expected to enroll in the One Health certificate with annual increases anticipated as the program becomes better known. Student enrollment is expected to be between 10 and 12 per year.

Mentoring will be provided by certificate faculty who will be required to enroll in at least one UGA-based mentoring training program such as those offered by the University of Georgia's Office of Institutional Diversity, Office of Faculty Affairs, or UGA HR Training and

Development. Program Coordinator staff support, provided by the department, will be responsible for maintaining training records, checking student eligibility, and coordinating admissions and the capstone projects.

References:

- Frankson, R., W. Hueston, K. Christian, D. Olson, M. Lee, L. Valeri, R. Hyatt, J. Anelli and C. Rubin (2016). "One Health Core Competency Domains." Frontiers in Public Health **4**: 192-192.
- Rabinowitz, P. M., B. J. Natterson-Horowitz, L. H. Kahn, R. Kock and M. Pappaioanou (2017). "Incorporating one health into medical education." BMC Medical Education **17**(1): 45-45
- Barr DA, Gonzalez ME, Wanat SF. The Leaky Pipeline: Factors Associated with Early Decline in Interest in Premedical Studies Among Underrepresented Minority Undergraduate Students. Acad Med. 2018;83(5):503-511.
- Spencer, J., E. McRobie, O. Dar, A. Rahman-Shepherd, N. Hasan, J. Hanefeld and M. Khan (2019). "Is the current surge in political and financial attention to One Health solidifying or splintering the movement?" BMJ Global Health **4**(1): e001102.
- Togami, E., J. L. Gardy, G. R. Hansen, G. H. Poste, D. M. Rizzo, M. E. Wilson, and J. A. K. Mazet. . (2018). "Core Competencies in One Health Education: What Are We Missing?" NAM Perspectives. Discussion Paper, National Academy of Medicine, Washington, DC.

Documentation of Approval and Notification

Proposal: Undergraduate Certificate in One Health

College: College of Veterinary Medicine

Department: Pathology

Proposed Effective Term: Fall 2022

Department:

- Pathology Department Head, Dr. Jesse Hostetter, 7/8/21

School/College:

- College of Veterinary Medicine, Dr. Lisa Nolan, 7/26/21

Use of Course Notification:

- College of Pharmacy Associate Dean, Dr. Erin Lipp, 8/19/21
- College of Public Health Assistant Dean of Students, Dr. Duc Do, 8/19/21

Additional Support:

- College of Agricultural and Environmental Sciences Associate Dean, Dr. Josef Broder, 7/21/21
- Odum School of Ecology Interim Dean, Dr. Sonia Altizer, 8/30/21
- Warnell School of Forestry and Natural Resources Dean, Dr. Dale Greene, 7/27/21
- Grady College of Journalism and Mass Communication Dean, Dr. Charles Davis, 7/19/21
- School of Law Dean, Mr. Peter "Bo" Rutledge, 8/16/21
- Health Promotion and Behavior Interim Department Head, Dr. Timothy Heckman, 7/26/21
- Pharmaceutical and Biomedical Sciences Interim Department Head, Dr. Shelley Hooks, 7/19/21
- Sociology Department Head, Dr. James Coverdill, 7/23/21