University Council

February 6, 2026

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Dear Colleagues:

The attached proposal from the College of Pharmacy to offer an Undergraduate Certificate in Artificial Intelligence – Pharmaceutical Sciences will be an agenda item for the February 13, 2026, Full University Curriculum Committee meeting.

Sincerely,

Susan Sanchez, Chair

cc: Provost Benjamin Ayers
    Dr. Marisa Anne Pagnattaro

PROPOSAL FOR A CERTIFICATE PROGRAM

Date: January 8, 2026

School/College/Unit: College of Pharmacy

Department/Division: Pharmaceutical and Biomedical Sciences

Certificate Title: Undergraduate Certificate in Artificial Intelligence – Pharmaceutical Sciences

CIP: 11010204

Effective Term: Fall 2026

Which campus(es) will offer this certificate? Athens

Level (Undergraduate, Graduate, or Post-Baccalaureate): Undergraduate

Program Abstract:
The proposed Undergraduate Certificate in Artificial Intelligence – Pharmaceutical Sciences will introduce undergraduates to the ways in which artificial intelligence (AI) can support the discovery, testing, and safe use of medicines. Offered by the Department of Pharmaceutical and Biomedical Sciences (PBS) in the College of Pharmacy, in close collaboration with the Institute for Artificial Intelligence (IAI), the program combines basic AI concepts with real examples from drug research and development. Students learn how data from laboratory studies, clinical trials, and patient care can be analyzed with AI tools to help identify promising drug candidates, understand side effects, and improve treatment decisions. The certificate is designed for undergraduates interested in pharmaceutical sciences and related fields who may have limited computing background but want practical, responsible experience with AI that will strengthen their preparation for careers in pharmacy, the pharmaceutical industry, or biomedical research.

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 Artificial Intelligence – Pharmaceutical Sciences will provide undergraduates with a focused introduction to AI, data science, and machine learning as they apply to drug discovery, development, and delivery. The program will give life science, chemistry, engineering, and pre-professional students structured training that connects modern AI tools to real pharmaceutical problems.

   This certificate complements the missions of UGA, the College of Pharmacy, and the Department of Pharmaceutical and Biomedical Sciences by preparing students to engage thoughtfully and responsibly with AI-driven innovations that affect health and healthcare. It

leverages the research strengths of PBS and the AI expertise of the Institute for Artificial Intelligence to create high-impact, research-informed learning experiences.

2. **Need for the Program**
   Explain why this program is necessary.

AI and machine learning are rapidly reshaping pharmaceutical research and development, from target identification and molecule design to clinical trial optimization and post-marketing surveillance. Workforce and industry surveys indicate that demand for AI-enabled skills is accelerating while talent shortages persist: in the Pistoia Alliance's 2025 Lab of the Future survey[1], 77% of life sciences labs are expected to use AI within the next two years, and 34% cited a lack of AI people talent as a barrier to AI adoption[2]. Consistent with these talent constraints, a GlobalData survey of 109 pharmaceutical industry professionals reported that 49% identified a shortage of specific digital skills and talents as a top factor hindering digital transformation (which increasingly includes AI/ML-enabled workflows)[3]. Broader labor-market evidence further suggests that AI skills are increasingly being rewarded amidst rapidly changing job requirements: Price Waterhouse Coopers, a large consulting company, reports an average of 56% wage premium for workers with AI skills and those skills sought by employers are changing 66% faster in occupations most exposed to AI[4]. As a result, employers increasingly seek graduates who combine strong foundations in pharmaceutical and biomedical sciences with the ability to understand and use AI methods. However, most undergraduate life science and pre-professional programs still provide only limited, if any, exposure to AI and data science.

Within UGA, there is currently no undergraduate credential in biomedical sciences, specifically for pharmaceutical sciences, that integrates AI in a systematic and applied way. Existing AI-related certificates focus on computing, business, or other disciplinary perspectives rather than the needs of students preparing for pharmacy, pharmaceutical industry, or biomedical research careers. This certificate is being developed as a formal collaboration between PBS and IAI, combining deep domain expertise in pharmaceutical sciences with campus-leading strength in AI.

The proposed certificate will help meet a documented workforce need, strengthen the talent pipeline for Georgia's biomedical and pharmaceutical sectors, and support UGA's broader institutional emphasis on AI and data literacy by giving undergraduates an accessible, domain-specific pathway into AI.

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[1]Pistoia Alliance. https://pistoiaalliance.org/news/survey-ai-adoption-life-sciences-labs-skills-gap/
[2]Taylor, H. (2025a, September 25). *Pistoia Alliance survey finds more than three quarters of life sciences labs expect to use AI within two years, but lack of skills is a growing barrier.*
[3]Taylor, N. P. (2024, November 18). *Skills shortage still holding back pharma's digital transformation: Survey.* Fierce Pharma. https://www.fiercepharma.com/marketing/skills-shortage-still-holding-back-pharmas-digital-transformation-survey
[4]PwC. (2025). *The fearless future: PwC's 2025 global AI jobs barometer* (Report). https://www.pwc.com/gx/en/issues/artificial-intelligence/job-barometer/2025/report.pdf

Professional and scientific organizations, including the American Association of Pharmaceutical Scientists (AAPS), note the increasing use of AI across drug discovery, development, and manufacturing and its implications for workforce preparation. AAPS has indicated that this adoption is influencing the skillsets expected of pharmaceutical scientists, particularly in data analysis and computational approaches[5].

In addition, provide the following information:

a. Semester/Year of Program Initiation: Fall 2026
b. Semester/Year of Full Implementation of Program: Fall 2026
c. Semester/Year First Certificates will be awarded: Spring 2027
d. Annual Number of Graduates expected (once the program is established): 10
e. Projected Future Trends for number of students enrolled in the program: 20

The projected enrollment of approximately 20 students is based on multiple indicators of student interest. Enrollment in the graduate pilot course PHRM 7210, Special Topics in Pharmacy, which informed the development of the required undergraduate course PMCY 4250/6250, Biomedical Data Literacy and Applications in R, was 20 students in Fall 2024 and 16 students in Fall 2025, indicating consistent interest in biomedical data literacy and computational approaches within pharmaceutical sciences. In addition, faculty and staff advising interactions with undergraduate students in the Pharmaceutical and Biomedical Sciences program indicate strong interest in applied AI training. This aligns with the undergraduate student survey results reported in the Student Demand section, where 71% of respondents expressed interest in an Undergraduate Certificate in Artificial Intelligence – Pharmaceutical Sciences. Together, these indicators support the projection of approximately 20 students enrolled in the certificate once the program is established.

3. **Student Demand**
   a. Provide documentation of evidence of student demand for this program, including a student survey.

To gauge undergraduate student interest in the proposed certificate, an anonymous Qualtrics survey was administered to undergraduate students in pharmaceutical and biomedical sciences. A total of 111 responses were received. Seventy-one percent (71%) of respondents indicated that they would be interested in an Undergraduate Certificate in Artificial Intelligence in Pharmaceutical Sciences if one were offered.

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[5]Mirasol, F. (2025, November 14). *AI adoption in biopharma causes industry-wide ripple: An AAPS PharmSci 360 recap*. BioPharm International. https://www.biopharminternational.com/view/ai-adoption-in-biopharma-causes-industry-wide-ripple-an-aaps-pharmsci-360-recap
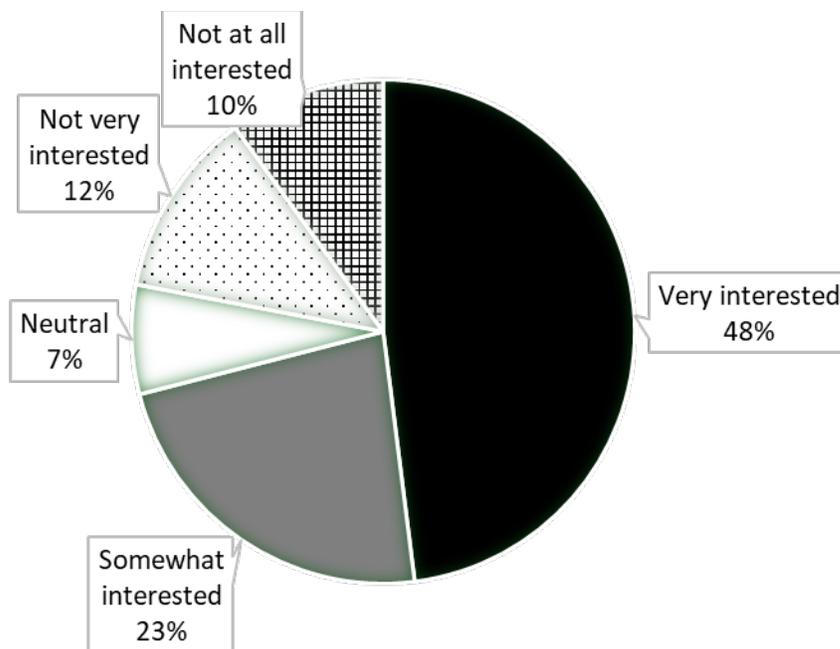
Figure: Student Interest in a Certificate in Artificial Intelligence in Pharmaceutical Sciences

Additionally, PMCY 4250/6250, Biomedical Data Literacy and Applications in R, which is a required course in the proposed certificate, will be offered to undergraduate students for the first time in Fall 2026. To pilot the course content and assess interest, the course was previously offered to graduate pharmaceutical and biomedical sciences students as PHRM 7210, Special Topics in Pharmacy, in Fall 2024 and Fall 2025. Enrollment in the course was 20 students in Fall 2024 and 16 students in Fall 2025, indicating good student interest in biomedical data literacy and applications of computational tools and statistical analysis relevant to pharmaceutical and biomedical sciences.

b. Provide evidence that demand will be sufficient to sustain reasonable enrollment.

Taken together, survey results indicating student interest, along with enrollment in the pilot data literacy course, suggest that demand will be sufficient to support ongoing enrollment in the certificate.

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

The program of study requires 15 credit hours, including 9 required credit hours and 6 elective credit hours. Some courses may have prerequisites that must be completed. All courses must be completed with a grade of "C" (2.0) or higher to satisfy the requirements of the certificate.

Required Courses (9 hours)

Data Literacy and Coding
   PMCY 4250/6250, Biomedical Data Literacy and Applications in R (3 hours)

AI Fundamentals
Choose one course from the following:
   ARTI 4555/6555, Foundations of Machine Learning (3 hours)
   CSCI(PHIL) 4550/6550, Artificial Intelligence (3 hours)

AI Ethics
Choose one course from the following:
   ARTI(PHIL) 2130, AI for Humans: Learning to Live with AI (3 hours)
   ARTI(PHIL) 4340/6340, Ethics and Artificial Intelligence (3 hours)

Electives Courses (6 hours)
Students must complete at least two elective courses. Choose a minimum of two courses from the following:
   PHAR(PMCY) 4010E, Introduction to Drugs, Biologics, and Devices Regulated by the Food and Drug Administration (3 hours)
   PHRM(PMCY) 5530, Ethics in Health Care (2 hours)
   PMCY 2020, Pills, Potions, and Drugs in Modern Medicine (3 hours)
   PMCY 3200, Introduction to the Pharmaceutical Sciences (3 hours)
   PMCY 3500, Pharmaceutical Analysis (3 hours)
   PMCY 3600E, Making Sense of the U.S. Healthcare System and Medications People Take (3 hours)
   PMCY 4200/6200, Pharmacokinetics and Pharmacodynamics (3 hours)
   PMCY 4300/6300, Medicinal Chemistry (3 hours)
   PMCY 4410E, Robotic Technology in Drug Discovery and Toxicology (2 hours)
   PMCY 4430E, Biopharmaceutics and Pharmacokinetics (2 hours)
   PMCY 4500/6500, Pharmaceutical Drug Development (3 hours)
   PMCY 4510/6510, Advanced Topics in Pharmaceutical Manufacturing and Regulatory Submissions (3 hours)
   PMCY 4950, Pharmaceutical Sciences Internship (2-12 hours)
   PMCY 4960, Pharmaceutical Sciences Research I (1-4 hours)
   PMCY 4970, Pharmaceutical Sciences Research II (1-4 hours)
   VPHY(PHRM) 4360/6360, Artificial Intelligence in Healthcare: Applications Across Disciplines (3 hours)
   VPHY(PHRM) 4370/6370, Advanced AI and Behavioral Analytics in Healthcare (3 hours)
   VPHY(PHRM) 4380/6380, Human-Centered Design and Technology in Healthcare (3 hours)
   VPHY(PHRM) 4390/6390, Ethics, Policy, and Leadership in AI and Health Technology (3 hours)
   Other courses chosen in consultation with advisor

Courses listed under AI Fundamentals or AI Ethics qualify as electives if not counted toward a required course.

Students select electives in consultation with an academic advisor to tailor the certificate to their academic and career interests.

The list of approved electives may be expanded as additional AI-related courses from the College of Pharmacy are approved for inclusion. The elective courses, particularly those with PMCY prefixes, allow students to apply analytical and data-informed approaches introduced in the required courses to applications in pharmaceutical sciences, healthcare, regulation, and research. While the required courses provide a foundation in AI, the electives offer domain-specific contexts in which students interpret data, evaluate evidence-based decisions, consider regulatory and ethical implications, and communicate findings relevant to pharmaceutical and biomedical applications.

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.

   Pharmaceutical sciences is a specialized, interdisciplinary field, with approximately 45 undergraduate programs nationwide, the majority of which are housed within Schools and Colleges of Pharmacy. A review of peer Schools and Colleges of Pharmacy (ranked 10-20 by U.S. News & World Report, with UGA ranked #15) indicates that only a subset offers a Bachelor of Science in Pharmaceutical Sciences, and none currently offer an undergraduate minor or certificate in artificial intelligence aligned with pharmaceutical sciences, drug discovery, or drug development. While some peer institutions may offer stand-alone coursework related to data science or artificial intelligence, these offerings are not systematically integrated into undergraduate pharmaceutical sciences curricula. Within Georgia, UGA is the only institution offering an undergraduate pharmaceutical sciences degree, and no in-state comparator provides formal AI training targeted to pharmaceutical sciences or related biomedical applications.

   Professional and scientific organizations, including the American Association of Pharmaceutical Scientists (AAPS), have noted the increasing use of artificial intelligence across drug discovery, development, and manufacturing and its implications for workforce preparation. AAPS has indicated that AI adoption is influencing the skillsets expected of pharmaceutical scientists, particularly in data analysis and computational approaches. In this context, the absence of formal undergraduate AI credentials among peer programs presents an opportunity for UGA to enhance undergraduate preparation through structured exposure to AI concepts relevant to pharmaceutical sciences, consistent with emerging industry practices and workforce needs.

Peer Schools and Colleges of Pharmacy*	Undergraduate Degree in Pharmaceutical Sciences Offered	Artificial Intelligence Certificate or Minor Offered
Ranked 10-20 by US News & World Report		
University at Buffalo, State University of New York (SUNY)	Yes	No
University of California, San Diego	No	No
University of Colorado Denver	No	No
University of Georgia	Yes	Proposed
University of Illinois Chicago	Yes	No
University of Kansas	No	No
University of Maryland, Baltimore	No	No
University of Nebraska	Yes	No
University of Southern California	Yes	No
University of Tennessee	No	No
University of Washington	No	No
Virginia Commonwealth University	Yes	No
Georgia Schools and Colleges of Pharmacy	Undergraduate Degree in Pharmaceutical Sciences Offered	Artificial Intelligence Certificate or Minor Offered
Mercer University	No	No
Philadelphia College of Osteopathic Medicine (PCOM)	No	No
South University	No	No
University of Georgia	Yes	Proposed

Offerings at UGA

IAI offers an Undergraduate Certificate in Artificial Intelligence – Computing, with the undergraduate certificate in Artificial Intelligence – Language, Minds, and Machines under review. Additionally, the Terry College of Business offers an undergraduate certificate in Artificial Intelligence – Business.

At UGA, there are no existing undergraduate minors or certificates in the pharmaceutical sciences that systematically integrate artificial intelligence. The proposed certificate is being developed as a formal collaboration between PBS and IAI, with several foundational AI courses provided by the Institute.

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 are no specialized accreditation bodies currently available for artificial intelligence certificate programs.

6. **Student Learning Outcomes**
   Describe the proposed learning outcomes for the certificate program.

   Students completing the certificate will be able to:
   a. Describe core AI and data-science concepts and methods relevant to pharmaceutical sciences.
   b. Use AI tools to analyze datasets and solve problems, including problems in the pharmaceutical and biomedical sciences.
   c. Critically evaluate AI models and datasets, including their bias and limitations.
   d. Communicate AI-based findings in interdisciplinary contexts.
   e. Apply ethical and regulatory principles to AI in drug development and patient care.

7. **Assessment and Admissions**
   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.

   Admissions
   Admission to the certificate is open to undergraduate students. Students interested in the certificate are encouraged to meet with their academic advisor to develop an appropriate plan of study before submitting an enrollment request through Athena. Admissions will be overseen by a Program Coordinator appointed by PBS. To earn the certificate, students must complete all coursework with a minimum cumulative GPA of 2.0. If demand for the certificate exceeds available instructional capacity, the Departments and College will manage enrollment through course planning and, as appropriate, by offering additional sections taught by qualified faculty. The Program Coordinator will work with PBS and the Institute for Artificial Intelligence to monitor enrollment and ensure the continued quality of instruction.

   The Program Coordinator will oversee the overall operation of the certificate, including admissions and assessment activities, and will monitor the program on an ongoing basis. The PBS undergraduate academic advisor will serve as the primary advising resource for students enrolled in the certificate and will assist with course selection, degree planning, and general student support.

   Assessment
   Student learning outcomes will be assessed within the courses that make up the certificate through exams, written assignments, projects, presentations, and other graded work.

   The required courses provide a foundation in data literacy, artificial intelligence, and ethical considerations and are the main courses in which foundational learning outcomes are assessed. Elective courses allow students to apply these skills in more specific contexts, including pharmaceutical sciences, healthcare, and regulatory environments. Together, the required and elective courses ensure that all student learning outcomes are assessed for students who complete the certificate.

Mapping of Student Learning Outcomes to Required Courses

Student Learning Outcome (SLO)	Data Literacy and Coding	AI Fundamentals Course	AI Ethics Course
SLO 1. Describe core AI and data-science concepts and methods relevant to pharmaceutical sciences	●	●	
SLO 2. Use AI tools to analyze datasets and solve problems	●	●	
SLO 3. Critically evaluate AI models and datasets, including bias and limitations	●	●	●
SLO 4. Communicate AI-based findings in interdisciplinary contexts	●	●	●
SLO 5. Apply ethical and regulatory principles to AI in drug development and patient care			●

Mapping of Student Learning Outcomes to Elective Courses

Course	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
PHAR(PMCY) 4010E			●	●	●
PHRM(PMCY) 5530			●	●	●
PMCY 2020			●	●	
PMCY 3200			●		
PMCY 3500		●	●		
PMCY 3600E			●	●	
PMCY 4200/6200		●	●		
PMCY 4300/6300			●	●	
PMCY 4410E		●	●		
PMCY 4430E		●	●		
PMCY 4500/6500			●	●	●
PMCY 4510/6510			●	●	●
PMCY 4950		●	●	●	
PMCY 4960		●	●	●	
PMCY 4970		●	●	●	
VPHY(PHRM) 4360/6360	●	●	●	●	
VPHY(PHRM) 4370/6370	●	●	●	●	
VPHY(PHRM) 4380/6380	●		●	●	
VPHY(PHRM) 4390/6390			●	●	●

While the AI Fundamentals and AI Ethics courses provide general, cross-disciplinary foundations, students apply these concepts to pharmaceutical sciences through the required biomedical data literacy course, with additional reinforcement through elective coursework.

Assessment results will be reviewed annually by the Program Coordinator as part of the program's regular evaluation process. This review will include student feedback, course evaluations, and an exit survey completed by graduating students. Findings from these reviews will be used to guide ongoing improvement of the certificate.

Documentation of Approval and Notification

Proposal: Undergraduate Certificate in Artificial Intelligence – Pharmaceutical Sciences

College: College of Pharmacy

Department: Pharmaceutical and Biomedical Sciences

Proposed Effective Term: Fall 2026

School/College:

- Head of the Department of Pharmaceutical and Biomedical Sciences, Dr. Yaguang Xi, 1/12/2026
- Executive Director of the Institute for Artificial Intelligence, Dr. Prashant Doshi, 1/12/2026
- College of Pharmacy Associate Dean, Dr. Duc Do, 1/15/2026
- Franklin College of Arts and Sciences Associate Dean, Dr. Paula Lemons, 1/19/2026