



UNIVERSITY OF
GEORGIA

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

University Council

March 19, 2021

UNIVERSITY CURRICULUM COMMITTEE – 2020-2021

John Maerz, Chair

Agricultural and Environmental Sciences – Nicholas Fuhrman

Arts and Sciences – Jonathan Evans (Arts)

Rodney Mauricio (Sciences)

Business – Jim Carson

Ecology – Amanda Rugenski

Education – David Jackson

Engineering – E.W. Tollner

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 – Jeffrey Berejikian

Public Health – Brittani Harmon

Social Work – Harold Briggs

Veterinary Medicine – Susan Sanchez

Graduate School – Wendy Ruona

Ex-Officio – Provost S. Jack Hu

Undergraduate Student Representative – Jeremiah de Sesto

Graduate Student Representative – Gerena Walker

Dear Colleagues:

The attached proposal from the Franklin College of Arts and Sciences to offer a new major in Artificial Intelligence (Ph.D.) will be an agenda item for the March 26, 2021, Full University Curriculum Committee meeting.

Sincerely,

John Maerz, Chair

University Curriculum Committee

cc: Provost S. Jack Hu
Dr. Rahul Shrivastav



UNIVERSITY SYSTEM OF GEORGIA

USG Academic Degree Program Application

Released
December 21, 2020

Point of Contacts

Dr. Martha Venn
Vice Chancellor for Academic Affairs
martha.venn@usg.edu

Dr. Rebecca Corvey
Associate Vice Chancellor for Academic Affairs
rebecca.corvey@usg.edu

Version Control

<i>Date</i>	<i>Changes</i>	<i>USG Approved date</i>	<i>Website update date</i>
12-18-2020	<i>Revised question 34 and 61 for clarity; Revised question 47 to include part b with the tuition comparison table for peer or competitive programs; reworded question 49 to include costs and benefits per fee; Revised question 50 related to additional costs to students; Revised question 51 to clarify the question related to indirect costs.</i>		

NOTE:

Italicization indicates a question or field on the in-take form

^= indicates accreditation related content

USG Routing

- Y *Program was part of the Annual Academic Forecast*
- Y *This proposal can be expedited (Nexus, established concentration with strong enrollment)*
- Y *This proposal requires USG integrated review*

USG ACADEMIC PROGRAM APPLICATION

A. OVERVIEW

To be completed as part of SharePoint Submission

- 1. Request ID: (SharePoint Generated unique ID) 0403**
- 2. Institution Name:** University of Georgia
- 3. USG Sector:** Research University
- 4. School/Division/College:** Franklin College of Arts and Sciences
- 5. Academic Department:** Institute for Artificial Intelligence
- 6. Proposed Program Name:** Doctor of Philosophy with a major in Artificial Intelligence
- 7. Major:** Artificial Intelligence
- 8. CIP Code (6 digit):** 11010200 [11.0102]
- 9. Degree Level:** Doctoral
- 10. Anticipated Implementation Semester and Year^:** Fall 2022
- 11. Was this program listed in the most recent Academic Forecast?**
 - Yes
 - No (If no, explain why below)*
- 12. Program Description (Provide a description of the program to be used in the Board of Regents meeting packet):**

The major in Artificial Intelligence (Ph.D.) – known as AI - will develop Ph.D.-level, research-based expertise in various aspects of artificial intelligence, such as machine learning, data science, machine vision, robotics, logic, cognitive modeling, natural language processing, AI ethics and policy, computational intelligence, and applications of these concepts to real-world problems. The need for expertise in the broad field of artificial intelligence has grown tremendously in recent years. The job market for Bachelor's- and Master's-level jobs in AI has expanded rapidly in recent years, with no signs of slowing. The natural next step for the field is the Ph.D. degree in Artificial Intelligence, which would enhance research in the area, promote coordination between academia, business and government, contribute to supervisory functions, and train

the next generation of AI workers. This proposed program is intended to help provide a well-trained workforce to meet the increasing demand for artificial intelligence experts in the modern economy.

13. Accreditation[^]: Describe disciplinary accreditation requirements associated with the program (if applicable, otherwise indicate not applicable).

N/A

14. Specify SACSCOC or other accreditation organization requirements[^]. Mark all that apply.

- Substantive change requiring notification only ¹
- Substantive change requiring approval prior to implementation ²
- Level Change ³
- None

B. STRATEGIC PLAN

15. How does the program align with your institutional mission and function[^]? If the program does not align, provide a compelling rationale for the institution to offer the program.

The Ph.D. in Artificial Intelligence will fit the mission of the University of Georgia as it provides the necessary expertise for graduates in the high demand area of AI. One of the missions of UGA is its commitment to excellence in public service, economic development, and technical assistance activities designed to address the strategic needs of the state of Georgia. This Ph.D. program will complement this mission of UGA by providing a well-trained workforce in artificial intelligence.

This Ph.D. program will support the mission of the UGA Institute for Artificial Intelligence, which is housed in the Franklin College of Arts and Sciences, to advance research with implications for economic vitality. It also enhances the mission of the UGA Institute for Cyber Security and Privacy, Institute of Bioinformatics, and the Georgia Informatics Institute (GII) for Research and Education, which were designed to enhance the university's ability to prepare students for careers involving Artificial Intelligence that are of critical importance to the state and nation.

The proposed doctoral program has the support of the AI Institute's faculty fellows as well as the support of cognate departments and other Institutes at the University of Georgia. The Master of Science in Artificial Intelligence has successfully existed at UGA for 35 years. However, the short 2-year span of the Master's degree places a limit on what can effectively be done during the graduate student's time in the program. One of the arguments put forth by faculty fellows in support of the doctoral program is that the presence of doctoral students would foster continuity and growth of research projects, ultimately increasing the research productivity of the Institute, its faculty, and its students. The doctoral program would be a good use of resources and allow the Institute to better fulfill its mission.

16. How does the program align with your institution's strategic plan and academic program portfolio? Identify the number of existing and new courses to be included in the program.

¹ See page 22 (Requiring Notification Only) of [SACSCOC Substantive Change Policy and Procedures document](#).

² See page 17 (Requiring Approval Prior to Implementation) of [SACSCOC Substantive Change Policy and Procedures document](#).

³ See page 3 (Level Change Application) of [SACSCOC Seeking Accreditation at a Higher or Lower Degree Level document](#) for level change requirements.

The proposed program is in good alignment with UGA's strategic plan of investment in Artificial Intelligence, which is part of a movement in the Southeastern Conference universities to emerge as a hub for Artificial Intelligence research and Workforce development. UGA has recently announced an initiative to hire 50 new faculty members over with expertise in data science and artificial intelligence.

This program includes six required courses and at least seven elective courses chosen from an extensive list. Two new courses have been created for this major.

C. NEED

17. Was this proposal and the design of the curriculum informed by talking with alumni, employers, and community representatives?

No

Yes (If yes, use the space below to explain how their input informed this proposal)

The design of this Ph.D. degree and its curriculum was informed by many factors including feedback from the M.S. in AI and Ph.D. in Computer Science alumni, many of whom are employed in local and national companies, as well as prominent AI academics. A significant percentage of the M.S. in AI graduates find jobs in companies employing UGA graduates, and some alumni regularly recruit other UGA graduates, including for example ManChon U, Vice President of Engineering, Data, & AI with American Express. ManChon has visited UGA recently and gave students considerable advice and perspective regarding the current industrial demands and curricular expectations.

18. Does the program align with any local, regional, or state workforce strategies or plans?

No

Yes (If yes, please explain below)

As noted above, there is an initiative among SEC universities to make the Southeast emerge as a hub for AI innovation, training, and workforce development. With UGA being a major participant in the initiative, the proposed Ph.D. program will help prepare AI researchers who could become leaders of the field in academia and industry.

Beyond the region, there has been a concerted effort at the national level to foster research in Artificial Intelligence technologies. In 2017, AI was identified as a research priority for funding agencies, and subsequently there have been a number of activities which could potentially lead to AI investments in the state of the Georgia.⁴

19. Provide any additional evidence of regional demand for the program ^ (e.g. prospective student interest survey data, community needs, letters of support from employers).

All AI-related courses at UGA have recently experienced increasing enrollments. Over the past two semesters, a formal survey was conducted in upper-level undergraduate and graduate-level AI-related courses to determine interest in a Ph.D. in an AI program. The students were asked "If a Ph.D. degree in Artificial Intelligence will be available in the Institute for Artificial Intelligence at UGA next year, please indicate your level of interest in pursuing such degree. Please circle only one choice."

- 0: No interest
- 1: Not sure
- 2: Would consider
- 3: Will probably pursue

⁴ <https://trumpwhitehouse.archives.gov/briefings-statements/white-house-launches-national-artificial-intelligence-initiative-office/>

4: Will definitely pursue

Any student who took the survey in another course was asked not to take it again to ensure uniqueness of responses. Of the 250 students responding, 170 indicated interest in pursuing the proposed Ph.D. in AI degree. More specifically, 19 students selected “4: Will definitely pursue”, 46 selected “3: Will probably pursue” and 105 selected “2: Would consider”. Therefore, a strong demand for the proposed degree is expected.

20. Identify the partners you are working with to create a career pipeline with this program⁵.[^]

Mark all that apply

- High School CTAE
- High School STEM
- Career academies
- TCSG programs
- Other USG institutions
- Other universities
- Employers
- Community partnerships
- Professional associations
- Other (specify below)

Click or tap here to enter text.

- None

⁵ Provide letters of support and explain the collaboration and how partners will share or contribute resources. (Consider internal pipeline programs – “off-ramp program” Nursing to integrated health or MOUs for pathways with other USG institutions (pipelines – keep them in state for grad school if we can)

21. Are there any competing programs at your own institution?

No

Yes (If yes, provide additional information about the competing program(s) below).

22. The program service area is used as the basis for labor market supply and demand analysis. What is the program's service area (local, regional, state, national)? If outside of the institution's traditional service area, provide a compelling rationale for the institution to offer the program. If the program's service area is a region within the state, include a map showing the counties in the defined region.

The program is intended for students from the state of Georgia as well as students from other states. The program is expected to attract students with B.S. or M.S. degrees in AI, Computer Science, and Engineering as well as other fields. Based on observations in recent years, many M.S. in AI or Ph.D. in Computer Science graduates with emphases on AI remained in Georgia, holding industrial research and academic positions. Others opted to join top national companies or, in the case of M.S. graduates, prestigious Ph.D. programs.

23. Do any other higher education institutions in close proximity offer a similar program?

No

Yes (If yes, provide a rationale for the institution to offer the program)

The Machine Learning Ph.D. program at Georgia Tech is an interdisciplinary program which first admitted students in 2017. Currently, there appear to be over 100 associated faculty taken from 8 participating schools: Aerospace Engineering (College of Engineering); Biomedical Engineering (CoE); Computational Science and Engineering (College of Computing); Computer Science (CoC); Electrical and Computer Engineering (CoE); Industrial and Systems Engineering (CoE); Interactive Computing (CoC); and Mathematics (College of Sciences)

The program involves 4 core and 5 elective courses, as well as a doctoral minor of 3 courses outside the area of machine learning, a qualifying exam and a dissertation. A 1-credit hour responsible research course is also required. Apart from the minor, the courses appear predominantly taken from the following disciplines: Computer Science (CS), Mathematics (MATH), Industrial & Systems Engr (ISYE), Electrical & Computer Engr (ECE), Computational Science & Engr (CSE), and Biomedical Engineering (BMED). The minor must form a coherent whole and must be approved by the student's academic advisors, but it appears that the courses can be taken from non-STEM fields.

UGA's proposed Ph.D. is also interdisciplinary and involves the participation of multiple academic units. In terms of the number of courses needed, the two programs are roughly similar; the ML Ph.D. requires a few additional courses, but many courses in the UGA degree program are 4 credit-hours rather than 3. The most significant difference between the two programs is that of focus. As its name suggests, the GA Tech Ph.D. is focused on Machine Learning, and its participating units are taken from mathematics, computer science, and engineering. This is reflected in the degree program's curriculum. This proposed Ph.D. program would be administered by the Institute for Artificial Intelligence, a unit under the Franklin College of Arts and Sciences, and participating units span the sciences, engineering, and humanities. This is mirrored in the courses offered through the degree. This program offers a choice from six areas of depth, of which Machine Learning is one. The two degree programs cater to very different students.

The Computer Science Ph.D. program at Georgia State is a flexible program which allows students a choice from 19 different areas of research which include Artificial Intelligence, Machine Learning and Deep learning. The program consists of 48 credit hours. The main difference between this and UGA's proposed program is that all the required foundational courses are in core areas of Computer Science such as Computer Architecture, Compilers, Algorithms, Operating Systems, etc. None of the required

foundational courses are strongly related to AI. Therefore, the program is only feasible for a student whose undergraduate course work was in Computer Science or a strongly related field. This proposed Ph.D. program can attract students from a variety of backgrounds, just like our current MSAI program has done since 1987. We have had successful students with undergraduate degrees in many areas including Computer Science, Engineering, Statistics, Mathematics, Psychology and Linguistics.

24. Based on the program’s study area, what is the employment outlook for occupations related to the program, according to the CIP to SOC crosswalk in the Qlik IPEDS Application[^]. An Excel version of the CIP to SOC crosswalk is also available from [NCES](#). If data for the study area is not available, then use state- or national-level data.

- a. Click [here](#) for US and Georgia occupation projections
- b. Click [here](#) for 2026 Georgia Department of Labor data projections for the State or Georgia Workforce Board Regions in Qlik (link to GDOL Projections); data is also available through the [GDOL Labor Market Explore Website](#)
- c. For a custom Georgia geography – request a Jobs EQ report from **USG Academic Affairs office**.

Related Occupation	SOC code	Current Employment [2019 US]	Projected Employment [2029 US]	# Change	% Change	Average Annual Openings
Computer and information research scientists	15-1221	32700	37700	5000	15.40	3000
Software Developers	15-1252					
Data Scientists	15-2051					
Computer science teachers, postsecondary	25-1021	38500	39500	1000	2.60	3000

25. Using IPEDS data, list the supply of graduates in the program and related programs in the service area.[^]

Similar or Related Programs	CIP Code	Supply ¹	Competitor Institutions ²

¹ Supply = Number of program graduates last year within the study area

² Competitors = List other institutions that offer this program or a similar program in the area (see [Question 23](#))

26. Based on the data provided in questions 24 and 25, discuss how this program will help address a need or gap in the labor market?

It is widely acknowledged that artificial intelligence will become an increasingly important field, and skilled workers with training in artificial intelligence techniques will be needed. Given investments by both public and private sector entities, there can be little debate of this. However, because the field is interdisciplinary and very rapidly evolving, it is difficult to precisely gauge its occupational outlook. For instance, there is not a specific category for artificial intelligence researcher.

Current, future, and potential students majoring in Computer Science, as well as related Mathematical and Engineering disciplines, would benefit from the proposed program as new courses will be designed and existing courses will be restructured to include material that will support the program. Faculty and students at UGA are enthusiastic about the possibility, and the exploding workforce in AI can surely benefit from having the first available US-trained Ph.D.-level workers in the field.

The design of this Ph.D. degree and its curriculum was informed by many factors including feedback from the M.S. in AI and Ph.D. in Computer Science alumni, many of whom are employed in local and national companies, as well as prominent AI academics. A significant percentage of the M.S. in AI graduates find jobs in companies that employ alumni and some alumni regularly recruit UGA graduates, including for example ManChon U, Vice President of Engineering, Data, & AI with American Express. ManChon has visited UGA recently and gave students considerable advice and perspective regarding the current industrial demands and curricular expectations.

27. Using data from O*-Net, identify the average salary for the related occupations identified in question 24. Then list at least three technical skills and three Knowledge, Skills and Abilities (KSAs) associated with the related occupations. This information can be found using at onetonline.org. (Standard Occupation Code = SOC)

SOC Code (6 digit)	Average Salary (O-Net data)	Occupation specific technology skills & KSAs
15-1221	\$60.97 hourly, \$126,830 annual	https://www.onetonline.org/link/summary/15-1221.00
15-1252	\$52.95 hourly, \$110,140 annual	https://www.onetonline.org/link/summary/15-1252.00
15-2051	\$47.23 hourly, \$98,230 annual	https://www.onetonline.org/link/summary/15-2051.00

25-1021	\$85,540 annual	https://www.onetonline.org/link/summary/25-1021.00
---------	-----------------	---

Notes: The following Table provides additional useful information.

SOC Code (6 digit)	Knowledge	Skills	Abilities & Characteristics
15-1221 Computer and information research scientists	Computers & electronics; math; engineering & technology; administration	Complex problem solving; critical thinking; judgment dec-making	Deductive reasoning; inductive reasoning; idea fluency;
15-1252 Software Developers	Computers & electronics; math; engineering & technology; customer & personal service; administration	Programming; complex problem solving; critical thinking; quality control analysis	Deductive reasoning; inductive reasoning; idea fluency;
15-2051 Data Scientists	Mathematics; computers and electronics; English language	Mathematics; critical thinking; reading comprehension; complex problem solving	Mathematical reasoning; number facility; inductive reasoning; deductive reasoning
25-1021 Computer science teachers, postsecondary + Artificial Intelligence professors and teachers, a new occupation	Computers & electronics; education & training; math; engineering & technology; customer & personal service	Instructing; reading comprehension; speaking; writing; active listening; critical thinking; learning strategies	Deductive reasoning; inductive reasoning; oral and written comprehension and expression

28. Using *GOSA Earning and Learnings data*, what is the typical salary range 5 years after graduation from the program?

Average Salary	75 th Percentile	50 th Percentile	25 th Percentile
1 year after graduation	\$112,606	\$97,248	\$83,439
5 years after graduation	\$131,825	\$113,466	\$90,221

Provide any additional comments, if needed: Figures were used from the GOSA data for Computer and Information Sciences, as the closest field to this proposed degree. The 1 year data was reported from Georgia State University, as UGA had no data for 1 year, while the 5 year data was the average of Georgia State University and UGA.

29. Based on the data compiled and analyzed for this section (see Section C: Need), what is the

job outlook for occupations filled by students with this degree?

In Georgia, based upon a July 2020 data set provided by the Georgia Labor Bureau, computer and information research scientists are expected to see 12.3% growth over the years 2018 to 2028. Applications software developers are expected to see 26.2% growth, and statisticians (e.g. data scientists) are expected to see 39.3% growth. Computer Occupations not listed under any more specific category are expected to see 14.4% growth. All of these are above the average of 11.1% growth for all occupations. These are all occupations related to artificial intelligence, and an individual with AI training could fill positions in each. Using 2019 occupational wages for the state of Georgia, the current mean salaries for these positions range from approximately \$86,000 to over \$100,000.

At the national level, these occupations are also expected to see growth. For example, computer and information research scientists are expected to see 15% growth from 2019 to 2029. The 2019 median salary for computer and information research scientists was \$122,840. Entry level positions typically required a master’s degree.

D. CURRICULUM

30. Enter the number of credit hours required to graduate

46

31. Are you requesting a credit hour requirement waiver (either below or above traditional credit hour length requirements as prescribed by the University System of Georgia? See section 2.3.5 (Degree Requirements) of the USG Board of Regents Policy Manual [here](#) for more information).

X No

Yes (If yes, explain the rationale for the request in the space below)

32. Related to SACSCOC accreditation, specify if the program format of the proposed program is a^:

Format (Check 1)	50% or more of the program is delivered online
<input type="checkbox"/> Combination of on-campus and online	<input type="checkbox"/> Yes
<input type="checkbox"/> Combination of off-campus and online	<input type="checkbox"/> Yes
<input type="checkbox"/> Hybrid, combination delivery	<input type="checkbox"/> Yes

33. Is the program synchronous or asynchronous?⁶ Mark one of the options below.

Synchronous

The majority of courses are offered at scheduled, pre-determined times with students connecting to a virtual room or location and interacting with faculty and fellow students via web/video conferencing platform.

Asynchronous

34. For associate’s, Nexus, and bachelor’s degree proposals, which [High Impact Practices⁷](#) (HIPs) will faculty embed into the program? Mark all that apply.

First-Year Experiences

Common Intellectual Experiences

Learning Communities

Writing-Intensive Courses

Collaborative Assignments and Projects

Undergraduate Research

Diversity/Global Learning

ePortfolios

Service Learning, Community Based Learning

Internships

Capstone Courses and Projects

⁶ See SACSCOC Handbook for Institutions Seeking Initial Accreditation [here](#).

⁷ See Kuh (2008). High-Impact Practices: What They Are, Who Has Access to Them, and Why They Matter. *Association of American Colleges and Universities*, 14(3), 28-29).

35. Discuss how HIPs will be embedded into the program? Your discussion should provide specific examples and include whether the HIP is required or an optional component. It should also indicate at what point the experience is offered or required.

(i.e. “Students will be required to participate in an externship during their third year of enrollment, in order to develop skills in... etc.”).

1. The GradFirst seminar, a new requirement by the UGA graduate school for all graduate students, in addition to the required course ART 6950 Faculty Research Seminar, will provide graduate students with foundational training in research, scholarship, and professional development.
2. The required ARTI(PHIL) 6340, Ethics and Artificial Intelligence course will teach Diversity and Global Learning.
3. Internships are not required as part of the program, but most Ph.D. students are expected to do one or more during the course of their study.
4. Although there is no separate capstone project, the dissertation may be viewed as serving this purpose.
5. At least two of the required courses include group assignments and/or course projects, thereby providing the Collaborative Assignments and Projects HIP.

36. Does the program take advantage of any USG initiatives? Mark all that apply, and provide a letter of support from applicable initiatives' leadership.

eCampus

Georgia Film Academy

FinTECH

Other: Specify Initiative Here

37. For associate's, Nexus, and bachelor's degree proposals, list the specific occupational technical skills, and KSAs identified in question 27 and show how they related to the program learning outcomes. Insert more rows as needed.

Complete this chart for the upper division or major curriculum only.

Alignment of Occupational KSAs ¹	Student Learning Outcome (s)	Direct Measure (s)	Data Source
Computer and information research scientists	Complex problem solving; critical thinking; judgment decision-making	All exams in courses, Dissertation, Comprehensive exam as well as most course assignments.	https://www.onetonline.org/link/summary/15-1221.00
Software Developers	Programming; complex problem solving; critical thinking; quality control analysis	All exams in courses, Dissertation, Comprehensive exam as well as most course assignments.	https://www.onetonline.org/link/summary/15-1252.00
Data Scientists	Mathematics; critical thinking; reading comprehension; complex problem solving	All exams in courses, Dissertation, Comprehensive exam as well as most course assignments.	https://www.onetonline.org/link/summary/15-2051.00

Computer science teachers, postsecondary (Artificial Intelligence teachers and professors)	Instructing; reading comprehension; speaking; writing; active listening; critical thinking; learning strategies	All exams in courses, Dissertation, Comprehensive exam as well as most course assignments.	https://www.onetonline.org/link/summary/25-1021.00

¹ Direct measures may include assessments, HIPs, exams, etc.

38. For associate's, Nexus, and bachelor's degree proposals, fill in the table below to demonstrate the link between the **learning outcomes and NACE **career ready competencies**.**

Insert more rows as needed.

Career Ready Competencies (NACE)	Student Learning Outcomes	Direct Measure (s) ¹
Critical Thinking/Problem Solving	The graduate must be capable of critical thinking and problem solving. Specifically: <ol style="list-style-type: none"> (1) Communicating evidence of thought process & reasoning (inductive & deductive) (2) Identification of key information needed to address common problems (3) Development of strategy to address common tasks in the area of AI (4) Demonstration of executing developed strategies 	All exams in courses and Comprehensive exam as well as most course assignments
Oral/Written Communications	The graduate must be an effective communicator, including: <ol style="list-style-type: none"> (1) Fluent and structured communication of complex information (2) Active listening skills 	Comprehensive exam, course projects and paper presentations; final dissertation and defense
Team Work/ Collaboration	The graduate must be able to work in a team by demonstrating: <ol style="list-style-type: none"> (1) Fluent and timely communication with team members (2) Adequate contributions in alignment with 	Course projects and multi-author publications

	skills and abilities of team members (3) Ability to develop relevant coordination and integration with diverse team members	
Digital Technology	The graduate must be able to effectively use digital technology	Most courses on the program of study heavily rely on digital technology
Leadership	The graduate must produce an original contribution in AI and demonstrate ability to lead complex projects. This will include: (1) Effectively planning a course of action (2) Organizing tasks and resources aligned with course of action (3) Directing the efforts of others	Final dissertation and defense
Professionalism/ Work Ethic	The graduate must have an excellent degree of professionalism and work ethic	All exams and assignments, grade in ARTI(PHIL) 6340, Ethics and Artificial Intelligence
Career Management	N/A	
Global/Intercultural Fluency	N/A	

¹ Direct measures may include assessments, HIPs, exams, etc.

39. How will learning outcomes for the program be assessed? Attach the curriculum map for the upper division or major curriculum.

Ensuring Academic Quality: For every related course offered, the learning outcome is evaluated based on both student performance in projects and exams as well as feedback collected from students through anonymous survey.

Quality review: All graduate programs are administered by the Graduate Coordinator of the Institute for Artificial Intelligence. The coordinator, in conjunction with the Institute Director, will be responsible for coordinating course offerings, maintaining student records, promoting activities, seeking student funding opportunities, and consulting with the Institute's graduate admissions and curriculum committees regarding courses in the degree program. All doctoral students in the program must enroll for at least 6 research credit hours under the direction of a major professor and have a dissertation committee consisting of at least three graduate faculty members with at least two of the members from the Artificial Intelligence Graduate Program faculty fellows.

All academic programs are reviewed annually to assess the program outcomes and student learning outcomes. Students completing the Ph.D. in AI are required to take the all the major courses that will encompass the student learning outcomes for the program.

In addition, the new major will be assessed as part of the UGA comprehensive program review carried out every seven years.

40. How will outcomes for graduates of the program be assessed? (Outcomes may include employment and placement rates, student or employer surveys, or other assessments of

graduate outcomes)

Students in this program should acquire a deep understanding of the various sub-areas of Artificial Intelligence and their applications in contemporary domains of science and engineering. The students should also be able to address current and future challenges to the proliferation of AI technologies in daily life and their effect on society.

41. List the entire course of study required to complete the academic program. ^

Include course: prefixes, numbers, titles, and credit hour requirements

Indicate the word “new” beside new courses

Include a program of study

The curriculum for the proposed Doctor of Philosophy with a major in Artificial Intelligence was developed after reviewing the doctoral program requirements for the University of Georgia Graduate School and examining existing degree programs at UGA, as well as surveying potentially relevant degree programs at other universities in the United States. Degree requirements were also discussed by the faculty fellows of the AI Institute, and their opinions as well as those of other reviewers influenced the final structure of the program.

The minimum requirement for a doctoral program at UGA is 30 hours, of which three hours may be dissertation. This proposed major consists of 40 hours of graduate coursework, plus six hours of dissertation. Of these, at least 20 hours must be 8000- or 9000-level courses. There is considerable variety in the doctoral degree requirements at UGA. However, there are other existing programs which have a comparable number of hours to this proposed program. At Georgia Tech, the set of minimum requirements for a Ph.D. in Robotics is 36 semester hours of courses with a letter grade, while the Ph.D. in Machine Learning requires 37 hours (excluding the doctoral qualifying exam preparation course). These are exclusive of the research and dissertation requirements.

Artificial Intelligence (Ph.D.) Course and Dissertation Requirements:

Course Requirements

Students must complete a minimum of 40 hours of graduate course work and a minimum of 6 hours of dissertation credit. Of the 40 hours of course work, at least 20 hours must be 8000-level or 9000-level courses.

The following courses must be completed unless specifically waived for students entering the program with a master’s degree in Artificial Intelligence or a related field, or for students with substantially related graduate course work. All waived credits may be replaced by an equal number of doctoral research or doctoral dissertation credits (ARTI 9000, Doctoral Research **(NEW)** or ARTI 9300, Doctoral Dissertation **(NEW)**):

- ARTI(PHIL) 6340, Ethics and Artificial Intelligence (3 hours)
- ARTI 6950, Faculty Research Seminar (1 hour)
- CSCI 6380, Data Mining (4 hours)
- CSCI(PHIL) 6550, Artificial Intelligence (3 hours)
- PHIL(LING) 6510, Deductive Systems (3 hours)

Elective Courses

In addition to the required courses above, at least two courses must be taken from Group A and two from Group B below. The courses in each group should come from at least two areas. The student must also decide

on an area of emphasis and take at least three courses from that area. No course can satisfy more than one area.

GROUP A:

AREA 1: Artificial Intelligence Methodologies

- CSCI 6560, Evolutionary Computation and Its Applications (4 hours)
- CSCI 8050, Knowledge-Based Systems (4 hours)
- CSCI(PHIL) 8650, Logic and Logic Programming (4 hours)
- CSCI 8920, Decision Making Under Uncertainty (4 hours)
- CSCI(ENGR) 8940, Computational Intelligence (4 hours)
- CSCI(ARTI) 8950, Machine Learning (4 hours)

AREA 2: Machine Learning and Data Science

- CSCI 6360, Data Science II (4 hours)
- CSCI 8360, Data Science Practicum (4 hours)
- CSCI 8945, Advanced Representation Learning (4 hours)
- CSCI(ARTI) 8950, Machine Learning (4 hours)
- CSCI 8955, Advanced Data Analytics: Statistical Learning and Optimization (4 hours)
- CSCI 8960, Privacy-Preserving Data Analysis (4 hours)

AREA 3: Machine Vision and Robotics

- CSCI(ARTI) 6530, Introduction to Robotics (4 hours)
- CSCI 6800, Human-Computer Interaction (4 hours)
- CSCI 6850, Biomedical Image Analysis (4 hours)
- CSCI 8850, Advanced Biomedical Image Analysis (4 hours)
- CSCI 8820, Computer Vision and Pattern Recognition (4 hours)
- CSCI 8530, Advanced Topics in Robotics (4 hours)
- CSCI 8535, Multi-Robot Systems (4 hours)

GROUP B:

AREA 4: Cognitive Modeling and Logic

- LING 8150, Generative Syntax (3 hours)
- PHIL(LING) 6300, Philosophy of Language (3 hours)
- PHIL 6310, Philosophy of Mind (3 hours)
- PHIL(LING) 6520, Model Theory (3 hours)
- PHIL 8310, Seminar in Philosophy of Mind (max of 3 hours)
- PHIL 8500, Seminar in Problems of Logic (max of 3 hours)
- PHIL 8600, Seminar in Metaphysics (max of 3 hours)
- PHIL 8610, Seminar in Epistemology (max of 3 hours)
- PSYC 6100, Cognitive Psychology (3 hours)
- PSYC 8240, Judgment and Decision-Making (3 hours)

AREA 5: Linguistics and Natural Language Processing

- ENGL(LING) 6885, Introduction to Humanities Computing (3 hours)
- LING 6021, Phonetics and Phonology (3 hours)
- LING (ENGL) 6080, Language and Complex Systems (3 hours)
- LING 6570, Natural Language Processing (3 hours)
- LING 8150, Generative Syntax (3 hours)

- LING 8580, Seminar in Computational Linguistics (3 hours)
- PHIL(LING) 6300, Philosophy of Language (3 hours)

AREA 6: Artificial Intelligence Applications

- ELEE 6280, Introduction to Robotics Engineering (3 hours)
- ENGL 6826, Style: Language, Genre, Cognition (3 hours)
- ENGL(LING) 6885, Introduction to Humanities Computing (3 hours)
- FORS 8450, Advanced Forest Planning (3 hours)
- INFO 8000, Foundations of Informatics for Research and Practice (3 hours)
- MIST 7770, Business Intelligence and Analytics (3 hours)

Note: Since not all courses have the same number of credit hours, Ph.D. students may need to take additional graduate courses to complete the 40 hours. Other courses may be substituted for those on the Electives lists, provided the subject matter of the course is sufficiently related to artificial intelligence and consistent with the educational objectives of the Ph.D. degree program. Substitutions can be made only with the permission of the student's Advisory Committee and the Graduate Coordinator.

Alternates

Students may, under certain very rare special circumstances, use up to 6 hours from the following list to apply towards the Electives group requirement. Permission of the Advisory Committee, Graduate Coordinator, and Course Instructor is required.

- ARTI 8000, Topics in Artificial Intelligence (3 hours; repeatable up to 17 hours)
- ARTI 8800, Directed Readings in Artificial Intelligence (1-5 hours; repeatable up to 17 hours)

Advisory Committee

A doctoral student's advisory committee shall consist of at least three members of the graduate program faculty of the Institute for Artificial Intelligence, including the student's major professor who will chair the committee. A member of the graduate program faculty at UGA may be appointed as co-major professor in which case the minimum size of the advisory committee shall be four. A majority of the committee and especially the major professor must be regular (non-courtesy and non-adjunct) faculty fellows of the Institute for Artificial Intelligence.

Comprehensive Examination

The student must pass the Ph.D. Comprehensive Examination that covers the student's advanced coursework. The examination consists of two parts: a written part and an oral part. Students have at most two attempts to pass the written part. The oral part may not be attempted unless the written part has been passed.

Dissertation

The student's dissertation must represent originality in research, independent thinking, scholarly ability, and technical mastery of a field of study. The dissertation must also demonstrate competent style and organization. While working on his/her dissertation, the student must enroll for a minimum of 6 credit hours of ARTI 9300 Doctoral Dissertation spread over at least 2 semesters.

Sample Program of Study

	Course Number	Course Title	Hours
First Year Fall	PHIL(LING) 6510	Deductive Systems	3
	CSCI 6380	Data Mining	4

	CSCI(PHIL) 6550 ARTI 6950	Artificial Intelligence Faculty Research Seminar	3 1
First Year Spring	CSCI(ARTI) 8950 CSCI 8360 CSCI 8960	Machine Learning Data Science Practicum Privacy-Preserving Data Analysis	4 4 4
Second Year Fall	CSCI(ARTI) 6530 LING 6021	Introduction to Robotics Phonetics and Phonology	4 3
Second Year Spring	ARTI(PHIL) 6340	Ethics and Artificial Intelligence	3
Third Year Fall	FORS 8450	Advanced Forest Planning	3
Third Year Spring	CSCI 8530	Advanced topics in Robotics	4
Fourth Year Fall	ARTI 9300	Doctoral Dissertation	3
Fourth Year Spring	ARTI 9300	Doctoral Dissertation	3

E. IMPLEMENTATION

42. Provide an enrollment projection for the next four academic years[^]

	Year 1	Year 2	Year 3	Year 4
Fiscal Year (Fall to Summer)	2022-23	2023-24	2024-25	2025-26
Base enrollment ¹		7	14	21
Lost to Attrition (should be negative)		0	0	0
New to the institution	4	5	6	7
Shifted from Other programs within your institution	3	2	1	0
Total Enrollment	7	14	21	28
Graduates	0	0	0	0
Carry forward base enrollment for next year	7	14	21	28

¹Total enrollment for year 1 becomes the base enrollment for year 2

a. Discuss the assumptions informing your enrollment estimates (i.e. for example, you may highlight anticipated recruiting targets and markets, if and how program implementation will shift enrollment from other programs at the institution, etc.)

Using data from Fall 2019, the number of undergraduate students in the Cognitive Science (B.S.) major at UGA is more than 195, and the number of students enrolled in the Artificial Intelligence (M.S.) program is more than 40. A significant number of students who matriculate into the Artificial Intelligence (M.S.) program are students in either the Computer Science (B.S.)/Artificial Intelligence (M.S.) or Cognitive Science (A.B.)/Artificial Intelligence (M.S.) dual degree programs. Over, 2018-2020, approximately 15 students per year are admitted into the pathway for these dual degree programs. A smaller number are admitted into and begin the graduate degree component.

This conservative enrollment projection assumes that in year 1, 3 of the existing M.S. in AI students will shift into the new program and 4 new students will enter the new program. Faculty conservatively estimates new enrollments to increase in year 2 and beyond.

b. If projections are significantly different than enrollment growth for the institution overall, please explain.

N/A

43. If projected program enrollment is not realized in year two, what actions are you prepared to take?

The program's enrollment expectations are conservative. In the unlikely event that they are not met, the department will conduct more outreach activities to attract additional high-quality students to the program.

44. Discuss the marketing and recruitment plan for the program. Include how the program will be marketed to adult learners and underrepresented and special populations of students. What resources have been budgeted for marketing the new program?.

The Institute for AI will utilize a number of venues for recruitment and marketing of the proposed program by including it on the department's website, mailing and emailing a brochure/newsletter to potential feeder programs nationwide, and organizing/participating in local recruitment events.

45. Provide a brief marketing description for the program that can be used on the Georgia OnMyLine website.

Program Description

The University of Georgia's Ph.D. in Artificial Intelligence — offered through the Institute for Artificial Intelligence—is designed to offer Ph.D.-level, research-based expertise in various aspects of artificial intelligence, such as machine learning, data science, machine vision, robotics, logic, cognitive modeling, natural language processing, AI ethics and policy, computational intelligence, and applications of these concepts to real-world problems. This 46 credit hour program is designed to offer depth and breadth while giving the student considerable flexibility in designing their program of study. The program is intended to help provide a well-trained workforce to meet the increasing demand for artificial intelligence experts in the modern economy.

Admissions Information

Students applying to The University of Georgia must be accepted by the Graduate School. All persons holding a Bachelor's or Master's degree in an area related to Artificial Intelligence from an accredited institution are eligible to apply for admission. The applicants must have a strong computational, programming, and Mathematical background.

Other requirements include:

Statement of Purpose
Three (3) Letters of Recommendation
Resume or Curriculum Vitae
Scholarly writing sample

46. If this proposal is for a Doctorate program, provide information below for at least three external and one USG reviewer of aspirational or comparative peer programs

Note: External reviewers must hold the rank of associate professor or higher in addition to other administrative titles.

Eunice E. Santos

Professor and Dean
 University of Illinois
 eesantos@illinois.edu
 217-333-3280

Richard M. Voyles
 Professor and Director of the Robotics Accelerator
 Purdue University
 rvoyles@purdue.edu
 765-494-3733

Munindar Singh
 Professor
 North Carolina State University
 singh@ncsu.edu
 919-515-5677

Ghassan AlRegib
 Professor; John and Marilu McCarty Chair of Electrical Engineering
 Georgia Institute of Technology
 alregib@gatech.edu
 404-894-7005

F. RESOURCES

F1. Finance^: Complete and submit the Excel budget forms and the questions below (Do not cut and paste in the excel budget template into this document, submit the Excel budget templates separately.)

47. Are you requesting a differential tuition rate for this program? (masters, doctoral, and professional programs only)

- No (Move to answer question 48)
- Yes (If yes, answer questions 47a & 47b)

a. What is the differential rate being requested? The rate below should reflect the core tuition plus the differential, i.e. the tuition rate being advertised to the student.

In-State per Semester: \$Enter Amount

Out-of-State per Semester: \$Enter Amount

b. Provide tuition and mandatory fee rates assessed by competitive/peer programs per full-time student per semester. Please complete the table below:

Institution name	Link to institution's tuition & fee website	In-state tuition	Out-of-state tuition	In-state fees	Out-of-state fees

48. If existing funds are being reallocated, describe the impact on existing programs and the plan to mitigate these impacts.

Existing faculty lines budgeted for instruction will be utilized to cover program instructional costs.

49. If student fees are being charged (excluding mandatory fees), explain the cost and benefit to students, per fee.

No additional fees are to be charged.

50. Are there any additional financial costs that students will have to take on as part of this program, but not assessed directly by the institution? (e.g. software licenses, equipment, travel, etc.) If so, please describe these costs and what strategies you have considered to decrease the student's financial burden?

There are no additional costs other than the normal tuition and fees.

51. How does the institution plan for and fund increased indirect costs associated with the growth in students anticipated in the proposed program? Consider costs such as student advisement, student support services, tutoring, career services, additional library materials, technology, or other infrastructure.

Faculty anticipate that the addition of Ph.D.-level students will increase research productivity of the University, leading to an increase in research grants.

F2. Faculty^ – Explain your faculty and staff plan for the program

52. Discuss how existing courses may be incorporated into this new program:

a. Course Development

of total courses in the curriculum: **13**

of existing courses to be part of the new program **11**

Net number of new courses to be developed **2**

b. Comment on the costs and workload related to the new course development.

All resources needed for the program are pre-existing except for the two new courses, ARTI 9000, Doctoral Research, and ARTI 9300, Doctoral Dissertation. These new courses will be covered through the reallocation of some of the efforts of the existing faculty.

53. Explain how current faculty and staff will contribute to the program.

The Institute for Artificial Intelligence consists of a director, associate director, graduate and undergraduate

coordinators, one dedicated support staff, as well as several dozen faculty fellows who have tenure homes in other departments. The allocation of Institute resources to the new program is described in the accompanying spreadsheet.

a. How many faculty will be re-directed to this program from existing programs?

Enter #0

b. If this program is approved, what will be the new teaching load and distribution of time for the current faculty members? How will existing staff be impacted?

All faculty resources needed for the program are pre-existing. There are currently 17 AI faculty fellows who will support the teaching component of the new program. Those faculty will be teaching the core and elective courses. In addition, 17 other faculty fellows will support the research and dissertation components and serve as instructors of record for the ARTI 9000 and ARTI 9300 courses. No new staff are needed.

c. List the faculty that will be redirected from their current teaching load assignments to support this new program.

The overall teaching load assignments of faculty will not be changed as a result of the program. The courses supporting the Ph.D. program are already offered regularly and the number of students in the program is not expected to put significant pressure on any course.

d. Explain who will be teaching the existing courses that are being released so faculty can teach a new program course. Additionally, please discuss the fiscal implications associated with course releases and redirections of faculty.

No course releases are anticipated for the new program.

e. What costs are included in your budget for course development? (Consider professional development, course development time buy out, overload pay, and re-training)

No budget costs for course development are anticipated.

f. Attach your SACSCOC roster for the proposed program. Include in parentheses the individual with administrative responsibility for the program and whether listed positions are projected new hires and/or currently vacant.

Faculty Name	Rank	Courses Taught (including term, course number & title, credit hours (D, UN, UT, G)	Academic Degrees & Coursework (relevant to courses taught, including institution & major; list specific graduate coursework, if needed)	Current Workload	Other Qualifications & Comments (related to courses taught)

Khaled Rasheed	Professor and Director	<p>Fall 2020 CSCI 4560/6560, Evolutionary Computing, 4.0 (UT/G)</p> <p>Spring 2019 CSCI 8950, Machine Learning, 4.0 (G)</p>	<p>Ph.D. Computer Science, Rutgers University</p> <p>M.S. Computer Science, Rutgers University</p> <p>B.S. Computer Science, Alexandria University, Egypt</p>	5 credit hours/sem.	Ph.D. dissertation: "GADO: A Genetic Algorithm for Continuous Design Optimization"
Neal Outland	Assistant Professor And Graduate Coordinator	<p>Ph.D. Industrial/Organizational Psychology, DePaul University</p> <p>M.A. Industrial/Organizational Psychology, DePaul University</p> <p>B. Sc. Psychology, Loyola University New Orleans</p>	<p>Ph.D. Dissertation: "Getting on the Same Page: How Personality Impacts Diffusion of Knowledge, Mental Model Similarity, and Mental Model Accuracy in Teams"</p>	5 credit hours/sem.	Ph.D. Dissertation: "A Computational Architecture for Exploring Team Mental Models"
Frederick Maier	Assistant Research Scientist and Associate Director	<p>Fall 2020 CSCI 4380/6380 Data Mining 4.0 (UT/G)</p> <p>Fall 2018 CSCI(PHIL) 4550/6550 Artificial Intelligence 3.0 (UT/G)</p>	<p>Ph.D., Computer Science, University of Georgia</p> <p>M.S., Artificial Intelligence, University of Georgia</p> <p>M.A., Philosophy, Tulane University</p> <p>B.A., Philosophy, Spring Hill College</p>	3 credit hours/sem.	Ph.D. dissertation: "A Study of Defeasible Logics"
Jason Anastasopoulos	Assistant Professor	<p>Fall 2019 POLS 8500 Modern Text Analysis with Machine Learning 3.0</p> <p>Spring 2019 PADP 9200 Big Data and Machine Learning in Public Administration and Policy</p>	<p>University of California, Berkeley, Ph.D., Political Science, 2014</p> <p>Harvard University, AM, Statistics, 2005.</p> <p>Cornell University, B.S., Industrial and Labor Relations, 2003</p>		Ph.D. dissertation: "Essays in the politics of diversity in modern America: A causal inference approach"

		3.0			
O. Bradley Bassler	Associate Professor	<p>Spring 2019, PHIL 4300/6300, Philosophy of Language, 3.0 (UT/G)</p> <p>Spring 2019 PHIL(LING) 4520/6520, Model Theory, 3.0 (UT/G)</p>	<p>Ph.D. Mathematics and Computer Science, Wesleyan University</p> <p>Ph.D. Committee on Social Thought, University of Chicago</p>	6 credit hours/sem.	<p>Ph. D. Thesis, Wesleyan: “d-bar Topological Entropy and Pressure for Amenable Group Actions”</p> <p>Ph.D. Thesis, Chicago:</p>
			B.A. Mathematics and Philosophy, Rice University		“labyrinthus de compositione continui: The origins of Leibniz’ solution to the continuum problem 1666-1672”
Pete Bettinger	Professor	Fall 2018 FORS 8450 Advanced Forest Planning (3.0) (G)	<p>Ph.D. Forest Resources, Oregon State University</p> <p>M.S. Forest Management and Economics, Virginia Tech</p> <p>B.S. Forestry, Virginia Tech</p>	5 credit hours/sem.	PhD. thesis: "Spatial analysis techniques for ensuring the compatibility of land management activities and aquatic habitat quality in eastern Oregon"
Suchendra Bhandarkar	Professor	Fall 2018 CSCI 8820, Computer Vision, 4.0 (G)	<p>Ph.D. Computer Engineering, Syracuse University</p> <p>M.S. Computer Engineering, Syracuse University</p> <p>B. Tech. Electrical Engineering Indian Institute of Technology, India</p>	5 credit hours/sem.	Ph.D. dissertation: “3-D Object Recognition from Qualitative Surface Descriptions”
Prashant Doshi	Professor	<p>Spring 2019 CSCI 8920, Decision Making, 4.0 (G)</p> <p>Fall 2018 CSCI 4530/6530, Introduction to Robotics, 4.0 (UT/G)</p>	<p>Ph.D., University of Illinois</p> <p>M.S., Drexel University</p> <p>B.E., University of Mumbai, India</p>	5 credit hours/sem.	Ph.D. dissertation: “Optimal Sequential Planning in Partially Observable Multiagent Settings”

Adam Goodie	Professor and Graduate Coordinator	Spring 2017 PSYC 8240 Judgment and Decision Making, 3 (G)	Ph.D., Psychology, University of California – San Diego M.S., Psychology, University of California – San Diego	6 credit hours/sem.	Ph.D. dissertation: “Base-rate neglect under direct experience”
			A.B., Psychology, Washington University in St. Louis B.S. Computer Science, Wuhan University, China		
Jaewoo Lee	Assistant Professor	Spring 2019 CSCI 8960, Privacy Preserving Data Analysis, 4.0 (G)	Ph.D. Computer Science, Purdue University M.S. Computer Science, Yonsei University, South Korea	5 credit hours/sem.	Ph.D. dissertation: "Achieving Practical Differential Privacy"
Sheng Li	Assistant Professor	Spring 2020 CSCI 8950, Machine Learning, 4.0 (G)	Ph.D. Computer Engineering, Northeastern University M.Eng. Information Security, Nanjing University of Posts and Telecommunications B.Eng. Computer Science & Engineering, Nanjing University of Posts and Telecommunications	5 credit hours/sem.	Ph.D. dissertation: " Robust Data Representations for Visual Learning"

Tianming Liu	Distinguished Research Professor	<p>Fall 2018 CSCI 4850/6850, Biomedical Image Analysis, 4.0 (UT/G)</p> <p>Fall 2020 CSCI 8850, Advanced Biomedical Image Analysis, 4.0 (G)</p>	<p>Ph.D. Computer Science, Shanghai Jiaotong University, China</p> <p>M.S. Automation, Northwestern Polytechnical University, China</p> <p>B.S., Automation, Northwestern Polytechnical University, China</p>	5 credit hours/sem.	Ph.D. dissertation: "On Adaptive Rate Control for Video Streaming"
John A. Miller	Professor	Spring 2019 Data Science II, 4.0	Ph.D., Georgia Institute of Technology		
Ramviyas Parasuraman	Assistant Professor	Spring 2019 CSCI 8535 Multi-Robot Systems, 4.0 (G)	Ph.D., Robotics & Automation, Technical University of Madrid		Ph.D. dissertation: "Wireless Communication Enhancement"
			<p>M.Tech, Instrument Technology, Indian Institute of Technology Delhi</p> <p>B.E., Electronics and Instrumentation, Anna University, Madurai, India</p>		Methods for Mobile Robots in Radiation Environments"
Shannon Quinn	Assistant Professor	<p>Spring 2019 CSCI 8360 Data Science Practicum, 4.0 (G)</p> <p>Fall 2017 CSCI 4360/6360, Data Science II, 4.0 (UT/G)</p>	<p>Ph.D. Computational Biology, University of Pittsburgh</p> <p>M.S. Computational Biology, Carnegie Mellon University</p> <p>B.S. Computer Science, Georgia Institute of Technology</p>	5 credit hours/sem.	Ph.D. dissertation: "Distributed Spectral Graph Methods for Analyzing Large-Scale Unstructured Biomedical Data"
Kimberly Van Orman	Lecturer	<p>Fall 2020 CSCI(PHIL) 4550/6550 Artificial Intelligence 3.0 (UT/G)</p> <p>Fall 2020, PHIL 4310/6310, Philosophy of</p>	Ph.D. University at Albany	12 credit hours/sem.	Ph.D. dissertation: "Toward Explaining the Gap: How a Particular View of Explanation Underwrites the Explanatory Gap"

		Mind, 3.0 (UT/G) Fall 2020, ARTI 6950 Faculty Research Seminar, 1.0 (G)		
Sarah Wright	Associate Professor	Fall 2018 PHIL 8610 Seminar in Epistemology, 3.0 (G)	Ph.D. in Philosophy, University of Arizona M.A. in Philosophy, Brown University B.A. Philosophy, University of Colorado at Boulder	Ph.D. Thesis: “Virtue Epistemology: Its Proper Form and Its Applications”

With the exception of lecturers, each of the above AI Faculty Fellows, as well as those listed below, may also advise students in the doctoral program and serve as instructor of record for ARTI 9000, Doctoral Research, and ART 9300, Doctoral Dissertation.

Faculty Name	Rank	Academic Degrees & Coursework	Other Qualifications & Comments
Ismailcem Budak Arpinar	Associate Professor	Ph.D. Computer Science, Middle East Technical University M.Sc. Computer Science, Middle East Technical University B.Sc. Computer Science, Middle East Technical University	Ph.D. thesis: “Formalization of Workflows and Correctness Issues in Presence of Concurrency”
Chris Cieszewski	Professor	Ph.D., University of Alberta M.Sc., U.B.C. Vancouver For. Eng., M.F., Warsaw Agriculture Academy	Ph.D. dissertation: “Development of a Variable Density Height-Growth Model Through Defining Multidimensional Height Growth Spaces”
Mark Ebell	Professor	MD, University of Michigan MS, Clinical Research Design, University of Michigan Family Medicine Residency, University of Michigan BA, Biology, Kalamazoo College	

Jennifer Gay	Associate Professor	PhD, Health Promotion, Education and Behavior, University of South Carolina Arnold School of Public Health MS, Sport and Leisure Services, University of Nevada Las Vegas BA, English, University of South Carolina	PhD Dissertation: "Testing self-determination theory and the roles of the social and physical environments in an adult beginning exerciser population"
John Gibbs	Associate Professor	Ph.D., Ohio State University	PhD Dissertation: "No-thing is more real than nothing: Zen/Chaos Theory in the Dramatic Art of Samuel Beckett. Computer graphics and Illustrations by the author"
John Hale	Professor	Ph.D., Cognitive Science Johns Hopkins University ScB, Cognitive Science, Brown University	Ph.D. dissertation: "'Grammar, Uncertainty and Sentence Processing"
Elena Karahanna	Professor	PhD, MIS, University of Minnesota MBA, Business Administration, Lehigh University BS, Computer Science, Lehigh University	
In Kee Kim	Assistant Professor	Ph.D., Computer Science, University of Virginia, Charlottesville M.S. Computer Science, Inha University, South Korea B.S. Computer Science & Engineering, Inha University, South Korea	Ph.D. dissertation: "Proactive Resource Provisioning to Ensure Predictable End-to-End Performance for Cloud Applications"
Bill Kretzschmar	Professor	Ph.D., University of Chicago	Ph.D. dissertation: "The Literary-Historical Context of Henryson's Fabillis"
Changying Li	Professor	PhD, Pennsylvania State University	

Ping Ma	Professor	Ph.D., Statistics, Purdue University M.S. Statistics, Purdue University B.S., Economical Mathematics, Nankai University	
Aaron Meskin	Department Head, Philosophy	Ph.D., Rutgers University	Ph.D. dissertation: “Relevance and the Philosophy of Art”
Roberto Perdisci	Associate Professor	Ph.D. Computer Engineering, University of Cagliari, Italy M.S. Electronic Engineering, University of Cagliari, Italy	Ph.D. thesis: “Statistical Pattern Recognition Techniques for Intrusion Detection in Computer Networks, Challenges and Solutions”
Lakshmith Ramaswamy	Professor	Ph.D. Computer Science, Georgia Institute of Technology M.S. Computer Science and Automation, Indian Institute of Science, India B.E. Computer Science and Engineering, University of Mysore, India	Ph.D. thesis: “Towards Efficient Delivery of Dynamic Web Content”
Margaret Renwick	Associate Professor	Ph.D., Linguistics Cornell University M.A., Linguistics Cornell University B.A., Wellesley College Cognitive & Linguistic Sciences; Italian Studies	Ph.D. dissertation: “Vowels of Romanian: Historical, Phonological and Phonetic Studies”
Javad Mohammadpour Velni	Associate Professor	Ph.D. in Mechanical Engineering, University of Houston, TX M.Sc. in Electrical Engineering, University of Tehran, Iran B.Sc. in Electrical Engineering, Sharif University of Technology, Tehran, Iran	

54. Explain your plan for new faculty and staff for the program:

a. How many new faculty will be needed for this program over the next four years? Enter # **0**

Explanation: The existing faculty should be able to handle the demand for the next four years.

55. How many new staff will be needed for this program over the next four years?

0

- a. Discuss why new or additional staff resources are needed. Consider staff needs, support services (i.e. advisement, faculty support, etc.)

No additional staff resources will be needed.

F3. Facilities – complete the questions below:

56. Where will the program be offered?^ Mark all that apply

- Main campus
- Satellite campus: Specify Here
- Other: Specify Here
- 100% Online

57. Will new or renovated facilities or space be needed for this program over the next four years?

- No
- Yes (If yes, complete the table below, inserting additional rows as needed).

Capital Costs for Needed Facilities and Space

Facility/Space Name	Gross Square Footage	Start Up Costs	Ongoing Costs	Est. Occupancy Date	Funding Source
New Construction					
Renovations and Infrastructure*					
Purchases: Land, Buildings etc.					
Lease space					
TOTAL Cost		\$0	\$0		

*Include the name of the building or location being impacted and what will need to be done. Infrastructure includes new systems such as: water, electrical, IT networks, HVAC etc.

58. Discuss the impact of construction or renovation on existing campus activities and how disruptions will be mitigated. Explain how existing programs benefit from new facilities and/or space(s) and changes to existing space.

N/A

59. Will any existing programs be negatively impacted (e.g. lose classroom or office space) by proposed facility changes? If so, discuss how the impacts of these changes will be mitigated. ^

N/A

60. Are any of these new facilities or major renovations listed in the table above (Question 57) NOT included in the institution-level facilities master plan?

N/A

61. Will any of the following types of space be required: instructional, fine arts, meeting, study, or dedicated office?

No (Move to Question 63).

Yes (If yes, complete question 62. Insert additional rows as needed).

62. Complete the table below. Specify if these spaces are existing or new in the table below. ^ If new, provide the semester and year of completion.

Space	New Space (ASF)	Use Existing Space (as is) (ASF)	Use Existing Space (Renovated) (ASF)	Semester/ Year of Occupancy
Dry Labs (STEM related)	N/A	N/A	N/A	N/A
Wet Labs (STEM related)	N/A	N/A	N/A	N/A
Dedicated Offices	N/A		N/A	
Fine Arts Spaces ¹	N/A	N/A	N/A	N/A
Classrooms	N/A	40-60	N/A	immediately
Meeting Rooms	N/A		N/A	
Student Study Space	N/A		N/A	
Other (Specify)	N/A		N/A	

¹Fine arts spaces can include theatres, recital halls, visual arts studios, performing arts centers, recording studios, design labs, and other performance venues.

63. Are there facility needs related to accreditation? ^ Are there any accreditation standards or guidelines that will impact facilities/space needs now or in the future? If so, please describe the projected impact.

N/A

F4. Technology

64. Identify any major equipment or technology integral to program start-up and operations. List any equipment or assets over \$5,000 (cumulative per asset) needed to start-up and run the program (insert rows as needed)

1				
2				
3				
4				
5				
6				
Total Technology Costs		0	0	

G. RISKS AND ASSUMPTIONS

65. In the table below, list any risks to the program’s implementation over the next four years. For each risk, identify the severity (low, medium, high), probability of occurrence (low, medium, high), and the institution’s mitigation strategy for each risk. Insert additional rows as needed. (e.g. Are faculty available for the cost and time frame).

Risk	Severity	Probability	Risk Mitigation Strategy

66. List any assumptions being made for this program to launch and be successful (e.g. SACSCOC accreditation request is approved, etc.).

N/A

H. INSTITUTION APPROVAL

Have you completed and submitted the signature page?