

## Doctor of Philosophy with a Major in Computer and Cyber Sciences

The following curriculum has been tentatively approved and is subject to change until officially listed in the 2023-2024 Augusta University Catalog.

Required Courses	Credit Hours
CSCI-6900: Introduction to Research or AIST-6900: Introduction to Information Security Research	3
CSCI-8720: Problems in Computer and Cyber Sciences	3
CSCI-7900: Research Colloquium (* take 3 times)	1
<b>Total Credit Hours – Required Courses</b>	<b>9</b>
<b>Area A: Courses in Theoretical Foundations</b>	
CSCI-7100: Algorithm analysis	3
CSCI-8250: Quantum computing	3
CSCI-8320: Verification of software	3
CSCI-7300: Programming Languages	3
CSCI-7500: Theory of computation	3
CSCI 8310: Proof Systems	3
CSCI-7350: Network and distributed algorithms	3
<b>Area B: Courses in Computer Systems</b>	
CSCI-7110: Cyber-physical systems	3
CSCI-7410: Operating systems	3
CSCI-7580: Computer architecture	3
CSCI-7585: High Performance Computing	3
CSCI-7654: Communication in Networks	3
<b>Area C: Courses in Applications</b>	
CSCI-7340: Machine learning	3
CSCI-7420: Human-computer interaction	3
CSCI-7620: Data science	3
CSCI-7810: Information management	3
<b>Area D: Courses in Cybersecurity</b>	
CSCI-7120: Advanced topics in computer security	3
CSCI-7130: Software engineering	3
CSCI-7440: Evaluating cybersecurity	3
CSCI-7520: Applied cryptography	3
AIST-7100: Data Analytics in Cybersecurity	3

<b>AIST-8353: Human Factors in Information Security</b> • Cross-leveled with AIST-6353 (** cannot take both)	<b>3</b>
<b>Area E: Courses in Human Centered Computing</b>	
<b>AIST-7110: Qualitative Research Methods in Information Systems</b>	<b>3</b>
<b>AIST-7120: Quantitative Research Methods in Information Systems</b>	<b>3</b>
<b>AIST-7130: Advanced Quantitative Research Methods in Information Systems</b>	<b>3</b>
<b>Area F: Additional Courses</b>	
<b>CSCI-7011: Studies in Foundation of Computer and Cyber Sciences</b>	<b>3</b>
<b>CSCI-7012: Studies in Applications of Computer and Cyber Sciences</b>	<b>3</b>
<b>CSCI-7950: Selected topics</b>	<b>3</b>
<b>CSCI-8510: Independent Study</b>	<b>1-3</b>
<b>CSCI-8940: Dissertation Research</b>	<b>1-9</b>
<b>AIST-8500: Topics in Behavioral Research (**take up to 3 times)</b>	<b>3</b>
<b>Total Required Courses</b>	<b>9</b>
<b>Total Breadth Courses (Areas A-E)</b>	<b>18</b>
<b>Total Elective Courses (minimum)</b>	<b>9</b>
<b>Total Dissertation Hours (minimum)</b>	<b>36</b>
<b>Total Credit Hours for Degree (minimum)</b>	<b>72</b>

\* Take CSCI-7900 three times (does not count toward graduation beyond 3 credits)

\*\* AIST-8353 cannot be taken if AIST-6353 was taken at the MS level

\*\*\* Can be taken up to 3 times if each occurrence is a different topic

## **Academic Program Regulations**

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### 1. Breadth Requirements (18 credits):

Doctoral students are expected to demonstrate competency in Computer and Cyber Sciences by taking courses within at least 3 of the following areas.

Area A: Theoretical Foundations

Area B: Computer Systems

Area C: Applications

Area D: Cybersecurity

Area E: Human-Centered Computing

To satisfy the Breadth Requirements, students must take 6 courses totaling 18 credit hours. among the 5 areas A-E. Students choose, based on their interests and in consultation with their academic or dissertation advisor. The following rules must be followed:

1. Courses must come from at least 3 areas
2. Students must take at least 2 courses from 2 areas

Based on these rules, potential course options across areas are 2-2-1-1, 2-2-2, and 3-2-1. A student must complete their breadth requirements in a manner that supports their research emphasis. Their plan (i.e. number of classes they will take in each of the areas) has to be approved by the program director and a member of the graduate committee.

To have the courses satisfy the Breadth Requirements, the student must receive a grade of B or better in each of the 6 courses and have more A's than B's in the 6 courses. Area courses taken beyond the 6 required Breadth Requirements will be considered electives.

#### 2. Preparation for Research (6 credits):

In their first semester, all students take the Introduction to Research course (CSCI-6900) or the Introduction to Information Security Research course (AIST-6900), in consultation with their advisor. Subsequently, students register for CSCI-8720, Problems in Computer and Cyber Sciences, under the supervision of a faculty member in the school. Students do not need to have a formal dissertation advisor at this stage.

#### 3. Research Exposure (3 credits):

\* Students register for CSCI-7900, Research Colloquium (1 credit), a minimum of three times during the program. This course is a venue to discuss contemporary problems in Computer and Cyber Sciences. While students can take this class more than 3 times during their program, a maximum of 3 credits of CSCI-7900 can count towards the degree requirements.

#### 4. Electives (9 credits):

Students take elective coursework adding to another 9 credits, across areas A, B, C, D, E, and F.

#### 5. Dissertation (36 credits):

After students have a formal advisor, they may register for CSCI-8940 (1-9 credits), Dissertation Research. A minimum of 36 credits of CSCI-8940 needs to be completed prior to graduation.

#### 6. Credit Hours:

A doctoral student must earn a minimum of 72 credit hours during the program. This is comprised of a minimum of 36 credits for coursework, including breadth-requirements courses (18), preparation for research courses (6), research exposure courses (3), and electives (9). In addition, there is a minimum of 36 credits for Dissertation Research.