

# CERTIFICATE IN COMPUTER SCIENCE ENDORSEMENT

## School of Computer Science, Information, & Engineering Technology

Dr. Abdu Arslanyilmaz, Certificate Coordinator  
aarslanyilmaz@ysu.edu

The School of Computer Science, Information, and Engineering Technology offers the Graduate Computer Science endorsement preparation program. This non-degree endorsement preparation program is intended for teachers who are either already teaching or interested in becoming computer science educators or pursuing computer science-related positions in their school districts. After passing the Ohio 054 Computer Science Endorsement exam, the endorsement may be added to any teaching license, but cannot be obtained as a separate license.

Ohio licensed teachers completing this program will receive a graduate certificate and will be prepared to take the Ohio 054 Computer Science endorsement exam, enabling them to teach Computer Science courses in K-12 settings.

Interested teachers will also be able to apply to our Master's degree in Computing Information Systems to simultaneously work toward both a master's degree and the endorsement.

### Admission Requirements

1. Current and valid four-year Resident Educator or five-year Professional State of Ohio teaching license
2. Bachelor's degree from an accredited university
3. Official transcripts for all post-secondary degrees
4. Minimum admission requirements of the College of Graduate Studies at YSU

### Certificate Requirements

#### Year 1

Fall		S.H.
DATX 5801	Data Management	3
CSCI 6901	Principles of Computer Programming	3
CSCI 6920	Theory and Practice of Information Systems	3
<b>Semester Hours</b>		<b>9</b>
Spring		
CSIS 5723	Networking Concepts and Administration	3
CSIS 5755	Information Assurance	3
CSIS 6902	Computing in Education	3
CSIS 6903	Practicum & Portfolio	2
<b>Semester Hours</b>		<b>11</b>
<b>Total Semester Hours</b>		<b>20</b>

### Learning Outcomes

Students will demonstrate foundational knowledge and skills in Computer Programming, Computer Networking, Computer Databases, Cybersecurity, an Overview of Information Systems for Individuals, Organizations, and Society, as well as the Design, Development, and Implementation of Computing Lessons in K-12 grade levels.

Students after completion of this non-degree endorsement preparation program will be able to:

1. Analyze the Influence of Human Behavior on Computing:
  - a. Explore how human behaviors, cultural norms, and social interactions impact computing. Evaluate the societal impacts, both positive and negative, of computing advancements.
2. Explore Contemporary Computing Technologies:
  - a. Describe and delve into diverse computing technologies, such as artificial intelligence, cybersecurity, machine learning, augmented/virtual reality, and other emerging fields within Computer Science.
3. Promote Inclusive Computing Culture and Problem Recognition:
  - a. Foster an inclusive computing culture. Collaborate, communicate effectively around computing concepts, and proficiently recognize and define computational problems.
4. Design Inclusive Learning Environments for Computer Science:
  - a. Create effective, inclusive, and accessible computer science learning environments suitable for K-12 grade levels. Implement and deliver these environments with consideration for diversity and inclusivity.
5. Apply Knowledge of Computing Systems:
  - a. Utilize an understanding of how hardware and software function within computing systems. Analyze interactions, design projects, and troubleshoot problems related to input, processing, storage, and output of information.
6. Model Network Connectivity:
  - a. Demonstrate the connectivity of computing devices through networks and the Internet to facilitate effective communication between systems.
7. Understand Usability and Security Tradeoffs:
  - a. Explain the tradeoffs between usability and security within computing systems. Apply appropriate security measures considering these tradeoffs.
8. Utilize Digital Data for Analysis and Predictions:
  - a. Collect, store, transform, and analyze digital data to gain insights into the world and create more accurate predictive models.

**Abdu Arslanyilmaz**, Ph.D., Professor, Director

Computer-based learning design; hazard detection in traffic simulation; computer-based and case-based learning

**Alina Lazar**, Ph.D., Professor

Applied machine learning; database mining; agent-based simulations, and parallel programming

**John R. Sullins**, Ph.D., Associate Professor

Artificial intelligence; game design; neural networks and expert systems

**Feng Yu**, Ph.D., Associate Professor

NoSQL databases; big data systems; cloud computing