**STATE BOARD OF COMMUNITY COLLEGES**
**Program Application**
**Summary Evaluation Report**
**Wayne Community College**
**Artificial Intelligence (A25710)**

**Program Planning**: Wayne Community College is seeking approval for the Artificial Intelligence (A25710) program to begin Fall 2022. The planning area is defined as the college's service area of Wayne County. All colleges were notified of the planning process for this program.

The proposed program was approved by the Board of Trustees at Wayne Community College on July 27, 2021. Minutes from this Board meeting were attached to the program application. The President and the Board of Trustees of Wayne Community College have certified the following:

- The proposed program will enhance the workforce of North Carolina, will provide educational and training opportunities consistent with the mission of the college, and will not duplicate the opportunities currently offered.

- They have assessed the need for the proposed program and the resources required to maintain a viable program and certify that the college can operate the proposed program efficiently and effectively within the resources available to the college.

- The college will complete a program accountability report including student success measures, enrollment trends, completion rates, and employment data three years after implementation of the program.

**Program Rationale:** Wayne Community College (WCC) indicates the following:

- Artificial Intelligence (AI) is an evolving area of STEM that covers the theory and development of technology that simulates thinking, draws inferences according to context, discovers meaning, reaches conclusions based upon experiences, and makes decisions by using complex and dynamic data.

- The closest program offered under the North Carolina Community College System is Information Technology (A25590). The existing Information Technology program has a core and description that differs from the proposed AI program. The proposed AI program provides students with more relevant courses in the subject area.

- AI technologies create the foundations for autonomous devices, such as self-driving vehicles, robots, and a host of other autonomous devices entering residential and enterprise environments. Emerging technologies such as internet-of-things, face recognition, voice recognition, big-data analysis, and simulation agents rely on AI applications.

- The proposed program is intended to address the merging shortage of individuals prepared for artificial intelligence careers in the service area of Wayne Community College, as well as North Carolina.

- Current qualified WCC full-time and adjunct instructors are available to teach the courses required for the proposed degree. Required labs, hardware and software are in place to offer the program. Any additional equipment and software needs can be purchased through the institution's normal budget process.

- According to a recent Google search for AI related jobs in the college's service area, a total of 38 positions were available. The search was conducted on September 20, 2021, and included computer science, artificial intelligence, and data science related jobs in the Goldsboro/Wayne County area.

- Letters of support for the proposed program were received from the City of Goldsboro, Wayne County, and the Wayne County Chamber of Commerce.

- Wayne Community College has received emails of support to move forward with the program from Blue Ridge Community College, Martin Community College, and Surry Community College.

- The Wayne County Public Library has partnered with Wayne Community College to offer immersive AI learning to underrepresented local middle school students to promote their interest in STEM related programs and careers.

- Remote AI employment is available for AI-trained residents who live in the planning area. As of September 4, 2021, there were more than 17,500 remote AI job openings posted on "ziprecruiter.com" employment site, with an average salary of $125,818.

- Several Information Technology based companies have already announced a substantial commitment to hire trained IT professionals in North Carolina. Many of those jobs are based on traditional and remote settings. The proposed program will allow WCC, as well as other NC community colleges, to prepare students for those high sustainable paying jobs.

- Currently, WCC is offering CSC-113, Artificial Intelligence Fundamentals, as an elective course under the Information Technology (A25590) program. All of the seventeen (17) students enrolled in the course showed interest in pursuing additional courses or credentials related to AI. Those students represent a variety of educational and employment backgrounds.

- According to Gartner Inc, "by the end of 2021, 51% of all knowledge workers worldwide are expected to be working remotely, up from 27% of knowledge workers in 2019. In 2022, 31% of all workers worldwide will be remote. The U.S. will lead in terms of remote workers in 2022, accounting for 53% of the U.S. workforce."

**Impact of the Proposed Program on Other Programs: The** Artificial Intelligence (A25710) degree is new to the system. An impact assessment was sent to five colleges that offer the Information Technology (A25590) program in contagious service areas to Wayne Community College. ***No negative impact responses were received.***

**Implementation of Collaborative Plan:** Not Applicable

**Curriculum Design:** The proposed program of study is in compliance with the State Board approved curriculum standard.

**Curriculum Description as Designated on Curriculum Standard:**

The Artificial Intelligence (AI) curriculum is designed to provide students with the knowledge and skills necessary for employment and growth in the AI profession. Course work includes various subject areas related to AI fundamentals, machine learning, deep learning theory, and hands-on training in multiple AI domains for the purpose of creating and implementing artificial intelligence across a broad range of applications. Graduates may qualify for entry-level AI positions such as AI engineer, AI project manager, AI researcher, AI consultant, AI architect, conversational AI specialist, AI automation engineer, AI software engineer, and machine learning specialist.

**Contact(s):**

Dr. Hilmi Lahoud
Senior Program Administrator

# Proposed CURRICULUM STANDARD

*Effective Term*
*Fall 2022*
*[2022*03]*

| | | | |
|---|---|---|---|
| Curriculum Program Title | **Artificial Intelligence** | Program Code | **A25710** |
| Concentration | **(not applicable)** | CIP Code | **11.0102** |

## *Curriculum Description*

The Artificial Intelligence (AI) curriculum is designed to provide students with the knowledge and skills necessary for employment and growth in the AI profession.

Course work includes various subject areas related to AI fundamentals, machine learning, deep learning theory, and hands-on training in multiple AI domains for the purpose of creating and implementing artificial intelligence across a broad range of applications.

Graduates may qualify for entry-level AI positions such as AI engineer, AI project manager, AI researcher, AI consultant, AI architect, conversational AI specialist, AI automation engineer, AI software engineer, and machine learning specialist.

## *Curriculum Requirements**

***[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10]***

**I. General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

**II. Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

**III. Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

| | AAS | Diploma | Certificate |
|---|---|---|---|
| Minimum General Education Hours | 15 | 6 | 0 |
| Minimum Major Hours | 49 | 30 | 12 |
| Other Required Hours | 0-7 | 0-4 | 0-1 |
| **Total Semester Hours Credit (SHC)** | **64-76** | **36-48** | **12-18** |

**Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.*

# *Major Hours*

**A. Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

**B. Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

**C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

## Artificial Intelligence A25710

| | AAS | Diploma | Certificate |
|---|---|---|---|
| **Minimum Major Hours Required** | **49 SHC** | **30 SHC** | **12 SHC** |
| **A. Technical Core**<br>*Courses required for the diploma are designated with **<br><br>**Required Courses:**<br>* CSC 113 Artificial Intelligence Fundamentals 3 SHC<br>* CSC 114 Artificial Intelligence I 3 SHC<br>* CSC 115 Machine Learning I 3 SHC<br>* CSC 121 Python Programming 3 SHC<br><br>Additional courses:<br>12 SHC to be selected from:<br>CIS, CSC, CTS, DBA, MAT, NET, NOS, SEC, SGD, and WEB | **24 SHC** | **12 SHC** | |
| **B. CONCENTRATION** *(Not applicable)* | | | |
| **C. OTHER MAJOR HOURS**<br>*To be selected from the following prefixes:*<br>ACC, AET, AGR, ATR, AUT, BAF, BAS, BAT, BPR, BUS, CCT, CET, CIS, CJC, CSC, CST, CTI, CTS, DBA, DDF, DEA, DFT, DME, EGR, ELC, ELN, ENT, GIS, GRD, HBI, HIT, HMT, HPC, HYD, IMG, ISC, ITL, ITN, LOG, MAT, MCO, MEC, MKT, NET, NOS, OMT, OST, PCI, PHO, PMT, SEC, SIM, SGD, TNE, TOM, TRN, WBL, and WEB.<br><br>*Up to two semester hour credits may be selected from ACA.*<br><br>*Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.* | | | |

**III. Other Required Hours**

*A college may include courses to meet graduation or local employer requirements in a certificate (0-1 SHC), diploma (0-4 SHC), or an associate in applied science (0-7 SHC) program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.*

# Proposed Artificial Intelligence (CSC) Courses

***Effective Term – Fall 2022 [2022*03]***

**CSC 112 Machine Learning Computation**

Class 2 Lab 3 Clinical 0 Work 0 Credit 3

Prerequisites: None
Corequisites: None

This course covers the underlying foundations upon which machine learning solutions are created. Emphasis is placed on the mathematical foundations of machine learning concepts. Upon completion, students should be able to apply the underlying computations of machine learning systems.

**CSC 162 Computer Vision**

Class 2 Lab 3 Clinical 0 Work 0 Credit 3

Prerequisites: None
Corequisites: None

This course provides an introduction to the fundamentals of computer vision. Topics include image classification, motion tracking, imaging geometry, image formation, feature detection, feature matching, classical machine learning, and deep learning. Upon completion, students should be able to apply computer vision design and technologies in various applications.