Level up your life with Wake Tech IT

Wake Tech is North Carolina's largest community college, serving more than 70,000 adults annually, with six campuses, three training centers, multiple community sites, and a comprehensive array of online learning options. Wake Tech is accredited and offers more than 200 associate degrees, diplomas, and certificates that prepare students for university transfer or immediate employment. The college also offers short-term, non-degree programs in IT, healthcare, hospitality, public safety, skilled trades, and more. Non-degree programs include small business support, customized corporate training, and basic skills courses such as English as a Second Language and high school equivalency preparation. Wake Tech also serves high school students at the Wake Early College of Health and Sciences, Vernon Malone College and Career Academy, and North Wake College and Career Academy, in partnership with Wake County Public Schools. No other institution offers the breadth of IT training like Wake Tech. Industry-recognized certifications can prepare you for a new job in as little as four months. Earn a great living while you continue to pursue an associate degree online or on campus, whatever is most convenient for you. Additionally, Wake Tech offers high-quality instruction, at a much lower cost than competitors.

Data Science and Programming Support Services
About the Program

The Associate of Applied Science degree, in Data Science and Programming Support Services, prepares learners to design and develop desktop and web application with an emphasis on business logic and data-driven applications. Graduates will be proficient in SQL, XML, database development, client/server-side JavaScript and Python. Graduates will be able to support the software development needs of businesses in a wide variety of industries, including healthcare, manufacturing, insurance, finance, and software publishing. Students can apply their skills with Work Based Learning opportunities, as well as Student Club participation. Students have an opportunity to connect with local industry representatives via the two-semester Capstone, or the many "Meet and Greets" we do. Students can choose to get a job at the end of the curriculum or transfer all their credits to a four-year program.

Work Based Learning (WBL)

Students choose between the two-semester programming capstone or Work-Based Learning. Here students can apply what they have learned in the classroom with paid, supervised, practical work experiences, directly related to their fields of study. They typically work part-time, from 10 to 30 hours per week (depending on credit hours to be earned) while attending school and earning academic credit.

To date we have 227 active students who are either currently enrolled in or have taken data classes in the past. Both full time and part time faculty have taught these students, and those faculty have carefully adjusted the content of the courses as we evolve and gain better insight into what the students and the broader community need and expect from the classes. One of our program's greatest assets is the sheer diversity of our students' backgrounds – some students enter without any prior degree, while some students enter the program with prior undergraduate or even in some cases graduate degrees, with males and females equally represented, and age groups ranging from teens to retired professionals.

About the Curriculum

The curriculum is a total of 71 credits and can be completed online, in-person during the day or evening on two of the WTCC campuses. General Education Electives make up 15 of the overall credits, in English, Math, Communications, Social and Behavioral Sciences, and Humanities and Fine Arts. Three credits are from a Major Elective, and three credits from a Project Elective. Students select from a list of transferrable courses in the Math, Humanities/Fine Arts, Communications, and Social and Behavioral Science electives.

Students learn Python, as it is one of the most widely adopted computer languages used for a variety of applications in areas as diverse as data analytics, machine learning, and web programming. This beginning course provides a foundation in Python by covering these topics: Input, Processing, and Output; Decision and Repetition Structures; Modular Programming; Basic Sequence and Collection Data Structures; Introductory Object-Oriented Language Constructs; and Introductory Graphical User Interface Development. Most coursework will consist of weekly reading, quizzes, and lab assignments with an additional group project designed to demonstrate an integration of the course learning. After completing this course, students are prepared to continue researching Python on their own or continue their exploration in

CSC 221 (Advanced Python Programming). This course introduces advanced programming concepts using the Python programming language. Students are introduced the PEP 8 Style Guide and the importance of well-written code. Testing and debugging strategies are presented, along with the benefits provided by Integrated Development Environments (IDEs) and code repositories (Git/GitHub). Students learn to write Python code using Jupyter Notebook plus added Python libraries commonly used in data analysis and web development to process, read, write, and parse data extracted from the web in various file formats (CSV, HTML, XML, JSON, YAML). Students learn to use techniques like web scraping and REST APIs to collect data from the web for additional processing or visualization.

Database programming has been a mainstay of relational databases for decades since 1980's, and this class helps students understand relational databases concepts, begin writing SQL codes, and create data scripts to process and manage data from relational database to generate database reports and manage database objects.

Database Analysis/Design covers the key technologies used to manipulate, store, and analyze big data.   Students will be able to explain Data versus Information and learn data modeling using Oracle database application. During the whole semester, students should create Entity Relationship Diagram. Each entity will be built with relationships and data will be normalized. Student should differentiate the Arcs, Hierarchies, and Historical Data within the models they build. When mapping the model into database, student will perform transform conceptual model to physical tables.   As refreshing skills, SQL programming will be implemented. SQL programming concepts cover database objects creation, data population, data transaction, data deletion, data query and report production, log evaluation, SQL errors debugging and troubleshooting, and query data dictionary to output metadata of database objects.

SAS programming has been a mainstay of analytics for decades, and this class helps students (who may not have coding experience) begin writing scripts to process and analyze data. Concepts covered are importing data, transforming, and processing data, writing code to produce output, evaluating logs to troubleshoot errors, and analyzing output to gain business insights. An introduction to SQL and relational databases is also covered.

Software Development is the first course in the two-semester Programming Capstone. Students are paired with industry mentors to receive the professional feedback on the topics covered in the course. Topics include fundamentals of software development. Emphasis is placed on the concepts, principles and tasks implemented for each step of software development cycle. The topics include requirements gathering, high-level design, low-level design, development, testing, deployment, metrics, maintenance, predictive and iterative models.

This course also provides students the methodologies of team software development, project management, documentation, collaboration, and version control. Upon completion, students should be able to work in a team environment and apply software development methodologies to complete high-level software design and create software requirements specification documentation.

Cloud Applications Development provides students with content on the Cloud and gives them tools to be able to develop and deploy a cloud application. The course teaches students about cloud types and covers cloud topics of:
* Introduction to Cloud Computing
* Virtual Hardware
* Migration to the Cloud
* Cloud Infrastructure
* Cloud Connectivity and Troubleshooting
* Securing Cloud Resources
* Identity and Access Management
* Cloud Storage

The instruction provided is compliant with CompTIA Cloud+. With each of these topics students are exposed to working with major cloud services of AWS, Azure, and GCP as well as completing virtual openstack labs on the topics.

Following the completion of the topics the students will begin working with Kubernetes using Red Hat Openshift. This is their final project where students will deploy an Openshift (or Minishift) environment where they will create a working Kubernetes cluster. Students complete two Red Hat Academy courses on Openshift using Kubernetes with Openshift and it includes version control using GitHub. From the cluster, students will create an application and demonstrate they are able to successfully deploy their application on the Internet using their cluster.

Finally, the Programming Capstone students are paired with industry mentors to receive the professional feedback on the topics covered in the course. This course provides an opportunity to complete a significant programming project from the design phase through implementation with consultations from industry mentors and minimal instructor support. Software development for the programming project uses the Agile methodology to perform multiple sprints with scrum meetings, sprint reviews and sprint retrospectives. Emphasis is placed on project definition, testing, presentation, and implementation. Upon completion, students submit project documentation and present the completed project to a panel consisting of faculty, industry mentors, and their peers.

Transfer Options

Students have the option to transfer a minimum of 65 credits to 4 programs both in-state and out of state.