Course Title	Course	SCH	Course Description	Course Outcomes
Introduction to the Cloud I	NETC 3301	3	This course introduces Cloud Computing. Students will explore cloud computing services, applications, and case studies. Students will apply to apply cloud computing best practices through introductory labs and learn other benefits such as "pay as you go" model. Students will understand the concept of a well architected framework, how to apply a cloud infrastructure on a global scale. White papers and case studies will be presented that define core characteristics of a basic cloud architecture.	• Describe the role of cloud computing providers. • Apply basic security principles such as Identity and Access Management and creating Security Groups. • Understand billing and pricing models of various cloud computing providers. • Identify Internet resources to adopt cloud computing best practices. • Identify situations where a company should choose the cloud, and why • Understand the differences between traditional on-premises infrastructure, hybrid and full cloud deployment models.
Introduction to Cloud II	NETC 3302	3	This course provides further exploration into Cloud Computing. In this course, students will understand the core cloud services that apply to all vendor platforms (Infrastructure as a Service, Platform as a Service, and Software as a Service). Utilizing vendor tools, students will learn how to apply "health checks" to ensure the proper provision of cloud resources and begin to examine the importance of regulatory compliance requirements within a cloud infrastructure.	• Apply basic core cloud services to apply to all cloud vendors: • Infrastructure as a Service • Platform as a Service • Software as a Service • Apply "Health Checks" to ensure resources are not over or under provisioned. • Cloud Watch • Cloud Trail • Learn regulatory compliance requirements for organizations: • PCI/DSS • FERPA • HIPAA • Sarbanes-Oxley • Federal Information Security Management Act
Principles of Architecting on Cloud Computing Platforms	NETC 3300	3	This course covers the fundamentals of building IT infrastructures on cloud computing platforms. The course teaches students how to optimize use of cloud services and how they fit into cloud-based solutions.	• Utilizing best practices, make architectural decisions that ensure fault-tolerance and data back-up • Use cloud services to make infrastructure elastic and highly available. • Apply redundancy in the cloud to ensure continued operations • Monitor performance and reduce cost of a cloud infrastructure • Use the principle of a Well-Architected Framework to improve architectures
Cloud Datacenter Operations I	NETC 3350	3	This course prepares students to work in large datacenters. Best practices will be explored to ensure datacenter efficiency with regard to energy conservation and safety compliance. This course will teach students how to solve problems and troubleshoot various scenarios. The course will show students basic principles in migrating on-premises infrastructures to the cloud. Students will build a variety of infrastructures via instructor provided hands-on labs.	• Implement auto-scaling solutions • Create and manage virtual machines • Identify container services on cloud platforms for serverless computing • Create and secure databases in the cloud. • Build virtual private networks • Manage resource consumption in a cloud computing account by using tags and other tools • Create routine/scheduled deployments of cloud resources

Cloud Datacenter Operations II	11.0902	NETC 3360	3	3-3-2 (80)	This course provides students' knowledge of data center hardware and operations. This course also introduces established models of compliance and interoperability. Students will learn day-to-day management challenges within a datacenter including an understanding of the responsibilities of the cloud provider in terms of shared governance within the cloud.	• Know the various operating systems available to clients. • Perform safety checks on hardware within a datacenter • Identify the components of a motherboard, and steps to install or remove one • Describe the basic concepts of computer programming • Recognize the basics of databases (relational and non-relational) • Describe the basics of web development
Introduction to Machine Learning in Cloud Environments	11.0902	NETC 4301	3	3-3-2 (80)	This course introduces students to the concepts and terminology of Artificial Intelligence and Machine Learning. By the end of this course, students will be able to select and apply machine learning services on cloud platforms to resolve business problems. They will also be able to label, build, train, and deploy a custom machine learning model through hands-on, instructor provided labs.	• Describe machine learning (ML) • Create a ML solution using tools on a cloud platform. • Understand how to implement managed ML services for forecasting on a cloud platform • Use managed cloud services for computer vision • Use managed cloud services for natural language processing
Advanced AI and Machine Learning in Cloud Environments	11.0902	NETC 4302	3	3-3-2 (80)	Students will be introduced to natural language processing (NLP) on a cloud computing platform. Students will explore the range of problems, tasks and solutions associated with NLP. Students will be introduced to various algorithms for NLP.	• Understand NLP terms on a cloud computing platform • Implement NLP solutions to solve business problems • Explain how NLP solutions can be implement through case studies • Use a ML service to build a solution using a combination of algorithms and other ML services
Cloud Engineering and Datacenter Compliance	11.0902	NETC 4350	3	3-3-2 (80)	This course is designed to help students develop technical expertise in engineering operations. Students will identify tools and processes used to manage a datacenter, that include monitoring and using cloud vendor provided tools for monitoring datacenter operations.	• Identify datacenter compliance requirements • Learn the physical security requirements for a datacenter • Describe a datacenter's electrical and power requirements • Identify various battery systems that are used in a data center • Understand how backup power and cooling are implement in datacenters. • Recognize the fire detection, communication, and suppression systems in a data center • Understand fault-tolerance for datacenters • Apply metrics for understanding compliance requirements • Identify safety considerations for a data center • Identify regulations that apply to a data center
Big Data Analytics on Cloud Infrastructures	11.0902	NETC 4380	3	3-3-2 (80)	This course is designed to introduce students to data analysis and solutions using "big data" analytic tools. The student will perform instructor provided lab exercises that will demonstrate how to analyze "big data," and publish results in cloud platforms.	• Understand concepts in analyzing large datasets • Create, query, and store data • Query data that is maintained in a simulated data warehouse • Understand the differences between structured and unstructured data • Analyze data that is generated from Internet of Things devices.

Capstone Course

Senior Project in Cloud Computing (requires program coordinator approval)	**ITEC 4388**	**3**	**This course is taken in the final semester before graduation. Students will design and implement a cloud- based solution to a realistic IT project. Emphasis will be on practical experience, professional behavior, ethics and teamwork. Students prepare written reports and give oral presentations.**	• **Create enterprise network cloud solutions on a cloud platform** • **Demonstrate proficiency in technical writing** • **Communicate clearly and concisely within an IT team environment**