



Cloud Computing A.A.S.

Career Community: Computer, Engineering, Manufacturing and Information Technology

Curriculum Code: 1839

Effective: Fall 2024 – Summer 2029

Description

Cloud computing provides remote computing resources that leverage virtualization technologies to create business solutions that are scalable, performant, and cost-effective. Students learn to design, create, maintain, and automate cloud environments with architectures that promote security and efficiency using services from industry leaders. This degree integrates several fields within information technology, including networking, programming, cybersecurity, databases, and artificial intelligence. Students completing this curriculum may also be eligible to apply for the certificate of completion in Cybersecurity Foundations (1833). Not all courses in this program transfer to all colleges. Students planning to transfer should see an academic advisor before enrolling in any course.

Milestone

In addition to the required General Education courses in Math and English, completion of CITP 110 with a 2.0 or higher is a key component for success in completing this program. Knowledge obtained in these courses is the foundation for learning in other required courses. Students are encouraged to contact their faculty if they need additional assistance with learning the concepts presented in these courses.

Additional Information

Students select one subspecialty from the following options:

- A. Artificial Intelligence/Machine Learning Operations (AIOps/MLOps)
- B. Full-Stack Development (Web) with C#
- C. Full-Stack Development (Web) with Java
- D. Security/System Operations (SecOps/SysOps)

Contact Information

For further information, including about career options, course substitutions and waivers, etc., contact the Computer Information Technologies Program in the West Campus Building, Room M103, telephone number 517-267-6406 or Student Services West Campus, West Campus Building, Room M016, telephone number 517-267-5452.

General Education – Applied Degrees, Recommended Courses

(For the full list of options, see [General Education](#))

- English Composition or Applied English – *Select one*
ENGL 121, Composition I, 4 credits / 4 billing hours
ENGL 127, Business Writing, 3 credits / 3 billing hours

- English Composition (second course)/Communication or Applied Communication – *Select one*
 CITS 110, Helpdesk Support Specialist, 3 credits / 3 billing hours
 COMM 110, Communication in the Workplace, 3 credits / 3 billing hours
 COMM 130, Fundamentals Public Speaking, 3 credits / 3 billing hours
 ENGL 122, Composition II, 4 credits / 4 billing hours
- Humanities and Fine Arts or Social Sciences or Applied Social Sciences – *Select one*
 MGMT 234, Diversity in the Workplace, 3 credits / 3 billing hours
 SOCL 120, Introduction to Sociology, 4 credits / 4 billing hours
- Mathematics or Applied Mathematics – *Select one*
 STAT 170, Introduction to Statistics, 4 credits / 4 billing hours
- Natural Sciences Lab or Applied Science and Technology Lab – *Select one*
 BIOL 120, Environmental Science, 4 credits / 6 billing hours
 ISCI 131, Integrated Physical Science, 4 credits / 6 billing hours

Please check with specific institutions to determine whether courses transfer or not. Generally speaking, ENGL 121, ENGL 122, SOCL 120, STAT 170, and BIOL 120 provide more transfer options, but this varies by institution.

Program of Study Required Courses

Course Code	Course Title	Credit / Billing Hours
CITD 120	SQL Concepts	3 / 3
CITI 100	AI Foundations	3 / 3
CITN 280	IT Security Foundations	3 / 3
CITO 100	Cloud Foundations with AWS	3 / 3
CITO 120	Cloud Architecting with AWS	3 / 3
CITO 140	Cloud Development Ops with AWS	3 / 3
CITP 110	Intro to Programming-Python	4 / 4
CITS 225	Networking for PC Technicians	3 / 3

Program of Study Required Courses, Limited Choice - *Select one course, minimum of 3 credits*

Course Code	Course Title	Credit / Billing Hours
CITF 120	Operating Systems Concepts	3 / 3
CITS 125	Computer Support: A+ Cert Prep	6 / 6

Program of Study Required Courses by Subspecialty – Select one concentration (A, B, C, or D) and complete all courses listed for that subspecialty.

A. Artificial Intelligence/Machine Learning Operations (AIOps/MLOps) Subspecialty

Course Code	Course Title	Credit / Billing Hours
CITI 120	Data Analysis with Python	3 / 3
CITI 140	Intro to Machine Learning	3 / 3
CITI 210	Natural Language Processing	3 / 3
CITI 220	Computer Vision	3 / 3
CITO 240	Machine Learning with AWS	3 / 3

B. Full-Stack Development (Web) with C# Subspecialty

Course Code	Course Title	Credit / Billing Hours
CITP 140	Software Testing	3 / 3
CITP 180	Intro to C#.NET Programming	4 / 4
CITP 280	Advanced C#.NET Programming	4 / 4
CITW 160	Web Development HTML & CSS	3 / 3
CITW 165	Web Development JavaScript	3 / 3

C. Full-Stack Development (Web) with Java Subspecialty

Course Code	Course Title	Credit / Billing Hours
CITP 140	Software Testing	3 / 3
CITP 190	Intro to Programming in JAVA	4 / 4
CITP 290	Adv JAVA Programming for Busn	4 / 4
CITW 160	Web Development HTML & CSS	3 / 3
CITW 165	Web Development JavaScript	3 / 3

D. Security/System Operations (SecOps/SysOps) Subspecialty

Course Code	Course Title	Credit / Billing Hours
CITC 282	Ethical Hacking	3 / 3
CITC 285	System Defense	3 / 3
CITC 287	Cybersecurity Incident Respons	3 / 3
CITF 140	Information Technology Ethics	3 / 3
CITN 230	Linux Operating System	3 / 3

Additional Credits

After completing the course and credit requirements as noted on this pathway, students who fall short of the 60-credit minimum required for an Associate Degree may select any course(s) needed to reach 60 credits, except those courses noted in number 7 in the [Institutional](#)

[Requirements for Associate Degrees](#). Students are encouraged to use Degree Works and meet with an Advisor to ensure all requirements are met and for course recommendations.

Minimum Total Credit Hours

60 credits / 62 billing hours

Recommended Full-Time Course Sequence

Semester I
Gen Ed – Mathematics or Applied Mathematics
CITI 100
CITP 110 – Milestone course
CITF 120 or CITS 125

Semester II
CITD 120
CITO 100
CITS 225
Limited Choice: Select the course for your subspecialty <ul style="list-style-type: none"> A. CITI 120 B. CITP 140 C. CITP 140 D. CITF 140
Limited Choice: Select the course for your subspecialty <ul style="list-style-type: none"> A. CITI 140 B. CITW 160 C. CITW 160 D. CITC 287

Semester III
Gen Ed - English Composition or Applied English
CITN 280
CITO 120
CITO 140
Limited Choice: Select the course for your subspecialty <ul style="list-style-type: none"> A. CITI 210 B. CITP 180 C. CITP 190 D. CITN 230

Semester IV
Gen Ed – English Composition (second course)/ Communication or Applied Communication
Gen Ed - Humanities and Fine Arts or Social Sciences or Applied Social Sciences
Gen Ed - Natural Sciences Lab or Applied Science and Technology
Limited Choice: Select the course for your subspecialty

Semester IV
A. CITI 220 B. CIP 280 C. CIP 290 D. CITC 282
Limited Choice: A. CITO 240 B. CITW 165 C. CITW 165 D. CITC 285

Recommended Part-Time Course Sequence

Semester I
Gen Ed - English Composition or Applied English
CITP 110 – Milestone course

Semester II
Gen Ed – English Composition (second course)/ Communication or Applied Communication
CITD 120

Semester III
CITF 120 or CITS 125

Semester IV
Gen Ed - Humanities and Fine Arts or Social Sciences or Applied Social Sciences
CITS 225

Semester V
Gen Ed – Mathematics or Applied Mathematics
CITI 100

Semester VI
Gen Ed - Natural Sciences Lab or Applied Science and Technology
CITO 100

Semester VII
CITO 120
Limited Choice: Select the course for your subspecialty A. CITI 120 B. CIP 140 C. CIP 140 D. CITF 140

Semester VIII
CITO 140
Limited Choice: Select the course for your subspecialty
<ul style="list-style-type: none"> A. CITI 140 B. CITW 160 C. CITW 160 D. CITC 287

Semester IX
CITN 280
Limited Choice: Select the course for your subspecialty
<ul style="list-style-type: none"> A. CITI 210 B. CITP 180 C. CITP 190 D. CITN 230

Semester X
Limited Choice: Select the course for your subspecialty
<ul style="list-style-type: none"> A. CITI 220 B. CITP 280 C. CITP 290 D. CITC 282
Limited Choice: Select the course for your subspecialty
<ul style="list-style-type: none"> A. CITO 240 B. CITW 165 C. CITW 165 D. CITC 285

LCC makes every effort to limit revisions to the pathways during their effective timeframe. However, the College reserves the right to update certificate and degree title changes, and make course changes as needed, without prior notice.