

# CLOUD COMPUTING, ASSOCIATE IN APPLIED SCIENCE



College(s): TR, WR

Program Code: 0051

The Associate Applied Science degree in Cloud Computing is a comprehensive program designed to equip students with the skills and knowledge necessary to thrive in the dynamic field of cloud computing. Students will gain hands-on experience with the latest technologies and best practices in the industry, preparing them for a variety of roles in the rapidly evolving cloud computing landscape. This degree offers a combination of theoretical understanding and practical experience, covering key areas such as cloud administration, development, security, architecture, and data management. This program also serves as a foundation to further other academic pursuits or for career advancement in the field.

## Program Requirements

Code	Title	Hours	
<b>General Education Coursework</b>			
ENGLISH 101	Composition	3	CIS 255      Operating Systems II      3
Fine Arts & Humanities Course		3	COMPSFI 102      Information Security Essentials      3
Social and Behavioral Sciences Course		3	NET TEC 101      Client-Server Database I      3
Physical Sciences / Life Sciences Course		3	NET TEC 121      Internetworking I      3
Mathematics General Education Course (MATH 125 recommended)			or COMPSFI 101 Networking Essentials
<b>Required Program Core</b>			
CIS 101	Computer Science 101	3	NET TEC 240      Operating Systems/Server I      3
CIS 111	Computer Operations	3	<b>Required Work-Based Learning</b>
CIS 116	Operating System I	3	CIS 260      Computer Information Systems Field Project      3
CIS 124	Introduction to Cloud Computing	3	or CIS 265      Computer Information Systems Internship      3
CIS 146	Python Programming I	3	<b>Program Electives</b>
CIS 224	Cloud Architecture	3	Select a minimum of 9 hours of program electives      9
BUSINES 111      Introduction To Business			
CIS 142      C++ Object Oriented Programming I			
CIS 144      Java Object Oriented Programming I			
CIS 181      Web Development I/Basic Web Technologies			
CIS 182      Web Development II/Client Side Scripting			
CIS 242      C++ Object Oriented Programming II			
CIS 244      Java Object Oriented Programming II			
CIS 246			
CIS 281      Web Development III/Server Side Programming			
COMPSFI 101      Networking Essentials			
COMPSFI 205      Cyber Forensics			
COMPSFI 215      Information Security Domain			
COMPSFI 216      Info Security Program Management			
COMPSFI 231      Internetworking Security			
NET TEC 121      Internetworking I			
NET TEC 122      Internetworking II			
<b>Total Hours</b>			60

One course must satisfy the Human Diversity (HD) (<https://catalog.ccc.edu/hd/>) requirement.

## Pathway

This is an example course sequence for students interested in pursuing Cloud Computing. It does not represent a contract, nor does it guarantee course availability. If this pathway is followed as outlined, you will earn an Advanced Certificate (AC), and an Associate in Applied Science (AAS) in Cloud Computing.

## Semester-by-Semester Program Plan for Full-Time Students

All plans can be modified to fit the needs of part-time students by adding more semesters.

Semester 1		Hours
CIS 101	Computer Science 101	3
CIS 111	Computer Operations	3
ENGLISH 101	Composition <sup>1</sup>	3
NET TEC 121 or COMPSFI 101	Internetworking I or Networking Essentials	3
Mathematics General Education Course (MATH 125 recommended) <sup>1</sup>		3-4
	Hours	15-16
Semester 2		Hours
CIS 116	Operating System I	3
CIS 124	Introduction to Cloud Computing	3
CIS 146	Python Programming I	3
COMPSFI 102	Information Security Essentials	3
Fine Arts & Humanities course (HD) <sup>1</sup>		3
	Hours	15
Semester 3		Hours
CIS 224	Cloud Architecture	3
CIS 255	Operating Systems II	3
NET TEC 240	Operating Systems/Server I	3
Social and Behavioral Sciences Course <sup>1</sup>		3
Program Elective (p. 2)		3
	Hours	15
Semester 4		Hours
CIS 260 or CIS 265	Computer Information Systems Field Project or Computer Information Systems Internship	3
NET TEC 101	Client-Server Database I	3
Physical Sciences/Life Sciences Course <sup>1</sup>		3
Program Elective (p. 2)		3
Program Elective (p. 2)		3
	Hours	15
Total Hours		60-61

<sup>1</sup> General Education course

## Program Electives

Code	Title	Hours
BUSINES 111	Introduction To Business	3
CIS 142	C++ Object Oriented Programming I	3
CIS 144	Java Object Oriented Programming I	3
CIS 181	Web Development I/Basic Web Technologies	3
CIS 182	Web Development II/Client Side Scripting	3
CIS 242	C++ Object Oriented Programming II	3
CIS 244	Java Object Oriented Programming II	3

CIS 246	3	
CIS 281	Web Development III/Server Side Programming	3
COMPSFI 101	Networking Essentials	3
COMPSFI 205	Cyber Forensics	3
COMPSFI 215	Information Security Domain	3
COMPSFI 216	Info Security Program Management	3
COMPSFI 231	Internetworking Security	3
NET TEC 121	Internetworking I	3
NET TEC 122	Internetworking II	3

Choose your courses with your College Advisor.

## Careers

This program can prepare students for the jobs listed below. Click on each one to learn more, including average earnings, annual job openings, and how much education people in that field have. For additional guidance and resources on career options, current City Colleges students and alumni can contact the Career Services Office (<https://www.ccc.edu/departments/Pages/Career-Services.aspx>).

## Computer Network Support Specialists Job Description

Analyze, test, troubleshoot, and evaluate existing network systems, such as local area networks (LAN), wide area networks (WAN), cloud networks, servers, and other data communications networks. Perform network maintenance to ensure networks operate correctly with minimal interruption.

## Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$49,545
Median 50 <sup>th</sup> Percentile	\$71,392
Senior-Level 90 <sup>th</sup> Percentile	\$119,949

### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$24
Median 50 <sup>th</sup> Percentile	\$34
Senior-Level 90 <sup>th</sup> Percentile	\$58

## Annual Job Openings

206 annual openings in Cook County

## National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	4.23%
A certificate	10.16%
Some college	13.63%
An Associate degree	21.68%
A Bachelor's degree	48.77%
A Master's or Professional degree	1.53%
A Doctoral degree or more	0.00%

50.30% continue their education beyond an associate degree

## Computer Systems Analysts

### Job Description

Analyze science, engineering, business, and other data processing problems to develop and implement solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions, improve existing computer systems, and review computer system capabilities, workflow, and schedule limitations. May analyze or recommend commercially available software.

### Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

#### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$56,610
Median 50 <sup>th</sup> Percentile	\$101,844
Senior-Level 90 <sup>th</sup> Percentile	\$149,098

#### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$27
Median 50 <sup>th</sup> Percentile	\$49
Senior-Level 90 <sup>th</sup> Percentile	\$72

### Annual Job Openings

565 annual openings in Cook County

### National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	0.77%
A certificate	0.54%
Some college	4.62%
An Associate degree	50.71%
A Bachelor's degree	41.93%

<b>A Master's or Professional degree</b>	1.42%
<b>A Doctoral degree or more</b>	0.00%

43.35% continue their education beyond an associate degree

## Information Security Analysts

### Job Description

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. Assess system vulnerabilities for security risks and propose and implement risk mitigation strategies. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses.

### Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

#### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$75,387
Median 50 <sup>th</sup> Percentile	\$121,468
Senior-Level 90 <sup>th</sup> Percentile	\$180,257

#### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$36
Median 50 <sup>th</sup> Percentile	\$58
Senior-Level 90 <sup>th</sup> Percentile	\$87

### Annual Job Openings

184 annual openings in Cook County

### National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	0.00%
A certificate	7.16%
Some college	2.01%
An Associate degree	12.87%
A Bachelor's degree	75.16%
A Master's or Professional degree	2.80%
A Doctoral degree or more	0.00%

77.96% continue their education beyond an associate degree

## Computer Network Architects

### Job Description

Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets,

extranets, and other data communications networks. Perform network modeling, analysis, and planning, including analysis of capacity needs for network infrastructures. May also design network and computer security measures. May research and recommend network and data communications hardware and software.

## Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$99,535
Median 50 <sup>th</sup> Percentile	\$147,098
Senior-Level 90 <sup>th</sup> Percentile	\$202,030

### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$48
Median 50 <sup>th</sup> Percentile	\$71
Senior-Level 90 <sup>th</sup> Percentile	\$97

## Annual Job Openings

160 annual openings in Cook County

## National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	5.00%
A certificate	15.00%
Some college	0.00%
An Associate degree	15.00%
A Bachelor's degree	60.00%
A Master's or Professional degree	5.00%
A Doctoral degree or more	0.00%

65.00% continue their education beyond an associate degree

## Database Administrators

### Job Description

Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. Identify, investigate, and resolve database performance issues, database capacity, and database scalability. May plan, coordinate, and implement security measures to safeguard computer databases.

## Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

### Annual Wages

Entry-Level 10 <sup>th</sup> Percentile	\$58,015
Median 50 <sup>th</sup> Percentile	\$107,547
Senior-Level 90 <sup>th</sup> Percentile	\$176,195

### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$28
Median 50 <sup>th</sup> Percentile	\$52
Senior-Level 90 <sup>th</sup> Percentile	\$85

## Annual Job Openings

68 annual openings in Cook County

## National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	0.00%
A certificate	0.15%
Some college	2.21%
An Associate degree	3.46%
A Bachelor's degree	92.89%
A Master's or Professional degree	1.29%
A Doctoral degree or more	0.00%

94.18% continue their education beyond an associate degree

## Database Architects

### Job Description

Design strategies for enterprise databases, data warehouse systems, and multidimensional networks. Set standards for database operations, programming, query processes, and security. Model, design, and construct large relational databases or data warehouses. Create and optimize data models for warehouse infrastructure and workflow. Integrate new systems with existing warehouse structure and refine system performance and functionality.

## Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

**Annual Wages**

Entry-Level 10 <sup>th</sup> Percentile	\$84,446
Median 50 <sup>th</sup> Percentile	\$140,522
Senior-Level 90 <sup>th</sup> Percentile	\$203,746

**Hourly Wages**

Entry-Level 10 <sup>th</sup> Percentile	\$41
Median 50 <sup>th</sup> Percentile	\$68
Senior-Level 90 <sup>th</sup> Percentile	\$98

**Annual Job Openings**

48 annual openings in Cook County

**National Education Attainment**

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	0.00%
A certificate	4.76%
Some college	0.00%
An Associate degree	0.00%
A Bachelor's degree	80.95%
A Master's or Professional degree	14.29%
A Doctoral degree or more	0.00%

95.24% continue their education beyond an associate degree