

# CLOUD COMPUTING, ADVANCED CERTIFICATE



College(s): TR\*, WR

Program Code: 0052

The Advanced Certificate in Cloud Computing serves as a gateway to sustainable careers in cloud computing for students new to the field. The program is an introduction to computer technology and is structured to provide students with the skills necessary to confidently excel in the rapidly evolving field of cloud technology. This comprehensive program covers multiple topics including programming fundamentals, basic networking, introduction to cloud services, security essentials, and server management. Students will engage in both theoretical and hands-on learning, preparing them for a variety of roles in the IT industry. The curriculum is organized to provide a deep understanding of cloud computing systems and operations – increasing employability, ensuring graduates are job-ready for positions such as Cloud Support Associates, Cloud Technicians, Junior Cloud Administrators, and more.

## Program Requirements

Code	Title	Hours
<b>Required Program Core</b>		
CIS 101	Computer Science 101	3
CIS 111	Computer Operations	3
CIS 116	Operating System I	3
CIS 124	Introduction to Cloud Computing	3
CIS 146	Python Programming I	3
CIS 224	Cloud Architecture	3
CIS 255	Operating Systems II	3
COMPSFI 102	Information Security Essentials	3
NET TEC 121	Internetworking I	3
	or COMPSFI 10 Networking Essentials	
NET TEC 240	Operating Systems/Server I	3

or NET TEC 101 Client-Server Database I

**Total Hours** **30**

## Pathway

This is an **example course sequence** for students interested in earning a degree in 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) 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
NET TEC 121	Internetworking I	3
	or COMPSFI 101 or Networking Essentials	
<b>Hours</b>		<b>9</b>
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
<b>Hours</b>		<b>12</b>
Semester 3		Hours
CIS 224	Cloud Architecture	3
CIS 255	Operating Systems II	3
NET TEC 240	Operating Systems/Server I	3
<b>Hours</b>		<b>9</b>
<b>Total Hours</b>		<b>30</b>

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	\$49,197
Median 50 <sup>th</sup> Percentile	\$77,700
Senior-Level 90 <sup>th</sup> Percentile	\$137,289

##### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$24
Median 50 <sup>th</sup> Percentile	\$37
Senior-Level 90 <sup>th</sup> Percentile	\$66

#### Annual Job Openings

272 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	\$66,528
Median 50 <sup>th</sup> Percentile	\$107,631
Senior-Level 90 <sup>th</sup> Percentile	\$163,741

##### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$32
Median 50 <sup>th</sup> Percentile	\$52
Senior-Level 90 <sup>th</sup> Percentile	\$79

#### Annual Job Openings

495 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%
A Master's or Professional degree	1.42%
A Doctoral degree or more	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	\$70,243
Median 50 <sup>th</sup> Percentile	\$121,181
Senior-Level 90 <sup>th</sup> Percentile	\$183,449

#### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$34
Median 50 <sup>th</sup> Percentile	\$58
Senior-Level 90 <sup>th</sup> Percentile	\$88

### Annual Job Openings

156 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	\$90,971
Median 50 <sup>th</sup> Percentile	\$141,382
Senior-Level 90 <sup>th</sup> Percentile	\$197,978

#### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$44
Median 50 <sup>th</sup> Percentile	\$68
Senior-Level 90 <sup>th</sup> Percentile	\$95

### Annual Job Openings

165 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	\$53,025
Median 50 <sup>th</sup> Percentile	\$102,037
Senior-Level 90 <sup>th</sup> Percentile	\$187,882

### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$25
Median 50 <sup>th</sup> Percentile	\$49
Senior-Level 90 <sup>th</sup> Percentile	\$90

### Annual Job Openings

97 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

### 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

## 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	\$54,650
Median 50 <sup>th</sup> Percentile	\$133,722
Senior-Level 90 <sup>th</sup> Percentile	\$184,676

### Hourly Wages

Entry-Level 10 <sup>th</sup> Percentile	\$26
Median 50 <sup>th</sup> Percentile	\$64
Senior-Level 90 <sup>th</sup> Percentile	\$89

### Annual Job Openings

44 annual openings in Cook County