

Career Technical Credit Transfer (CT²)
INFORMATION TECHNOLOGY CAREER TECHNICAL ASSURANCE GUIDE (CTAG)
April 24, 2009

Note: The Information Technology April 24, 2009 CTAG includes Networking and Information Support and Services.

The following courses are eligible for transfer between career technical education, adult workforce education, and post-secondary education:

CTIT001 – Basic	Credits: 3 semester/4 quarter hours
Advising notes:	
Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.	
Student passage of	
Ohio Career-Technical Competency Assessment(OCTA) – IT Basics (Module 1) end of program assessment	
<u>or</u> holds current IC ³ certificate	
<u>or</u> holds current ICDL certificate.	
Must access credit within 3 years of program completion.	
CTIT002 – Networking /CompTIA Network +	Credits: 3semester/4 quarter hours
Advising notes:	
Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.	
Student passage of	
Ohio Career-Technical Competency Assessment(OCTA) – IT-Networking (applicable modules) end of program assessment	
<u>or</u> holds current CompTIA Network+ certificate	
<u>or</u> holds current Cisco certification	
<ul style="list-style-type: none"> ○ holds Cisco Certified Network Associate (CCNA) certificate ○ or holds Cisco Certified Entry Networking Technician (CCENT) certificate 	

- or passes four_semester tests (proctored and closed book test environment) in Cisco Discovery curriculum
- or passes Cisco Exploration I and II semester tests (proctored and closed book test environment.)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT003 – PC Hardware Operation and Maintenance/A+ Essentials Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student passage of

Ohio Career-Technical Competency Assessment(OCTA) – IT Information Support and Services (applicable modules) end of program assessment

or holds current CompTIA A+ Essentials certificate

Must access credit within 3 years of program completion or within currency of certificate.

CTIT004 –CompTIA A+ Technician Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds current CompTIA A+ certificate that represents the A+ Essentials examination plus the 602 examination (equates to IT Technician credential)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT005 –Introduction to Desktop Operating Systems Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student passage of

Ohio Career-Technical Competency Assessment(OCTA) – IT Information Support and Services (applicable modules) end of program assessment

Must access credit within 3 years of program completion.

CTIT006 –Introduction to User Support

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Information Support and Services Information Technology program.

Student passage of

Ohio Career-Technical Competency Assessment(OCTA) – IT Information Support and Services (applicable modules) end of program assessment

or holds a Microsoft Certified Desktop Support Technician (MCDST) certificate

Must access credit within 3 years of program completion.

CTIT007 – Cisco Exploration I

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds current Cisco certification

- holds Cisco Certified Network Associate (CCNA) certificate
- or holds Cisco Certified Entry Networking Technician (CCENT) certificate
- or passes four_semester tests (proctored and closed book test environment) in Cisco Discovery curriculum
- or passes Cisco Exploration I and II semester tests (proctored and closed book test environment.)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT008– Cisco Exploration II

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds current Cisco certification

- holds Cisco Certified Network Associate (CCNA) certificate
- or holds Cisco Certified Entry Networking Technician (CCENT) certificate
- or passes four_semester tests (proctored and closed book test environment) in Cisco Discovery curriculum
- or passes Cisco Exploration I and II semester tests (proctored and closed book test environment.)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT009– Cisco Exploration III

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds current Cisco certification

- holds Cisco Certified Network Associate (CCNA) certificate
- or passes four_semester tests (proctored and closed book test environment) in Cisco Discovery curriculum
- or passes Cisco Exploration I,II, and III semester tests (proctored and closed book test environment.)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT010 – Cisco Exploration IV

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds current Cisco certification

- holds Cisco Certified Network Associate (CCNA) certificate
- or passes Cisco Exploration I,II, III, and IV semester tests (proctored and closed book test environment.)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT011 - Windows Desktop Operating Systems – Exam 70-271

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking or Information Support and Services Information Technology program.

Student holds a current Microsoft Windows Desktop Operating Systems certification (MS Examination 70-271 or updated test)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT012 - Microsoft.NET Framework – Application Development Foundation – Exam 70-536

Credits: 3semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Information Support and Services Information Technology program.

Student holds a current Microsoft.NET Framework – Application Development Foundation (MS Examination 70-536)

Must access credit within 3 years of program completion or within currency of certificate.

CTIT013 - Managing and Maintaining a Microsoft Windows Server 2003 Environment – Exam 70-290

Credits: 3 semester/4 quarter hours

Advising notes:

Career-technical (adult or secondary) program must be an approved Networking program.

Student holds a current Microsoft Managing and Maintaining a Microsoft Windows Server 2003 Environment (MS Examination 70-290)

Must access credit within 3 years of program completion or within currency of certificate.

Total Guaranteed Credits

Credits are determined by type of program (Networking or Information Support and Services), credentials held by the student and the pertinent courses offered at the receiving higher education institution.)

Institutional Requirements and Credit Conditions:

1. Admission requirements of individual institutions and/or programs are unaffected by the implementation of CT² outcomes.
2. Institutional residency requirements may affect the amount of transfer credit.
3. Candidates for graduation from collegiate or university programs may have to satisfy additional degree requirements associated with basic related or general education studies.
4. The institution must have a comparable program or major.
5. The student must provide proof to the receiving institution that she/he holds the appropriate end of program assessment certificate, vendor specific certificate, or vendor neutral certificate.

Learning Outcomes

The CTAG illustrates the learning outcomes that are equivalent or common in introductory technical courses/programs. In order for career-technical completers to receive the indicated credit, institutions must document that their course/program content matches the learning outcomes in the CTAG.

Industry Credentials

Pertinent to H.B. 66 legislation, industry standards and certifications provide documentation of student learning. Recognized industry standards are expectations established by business, industry, state agencies, or professional associations that define program curricular requirements, establishes certification or licensure criteria, and often serve as the basis for program accreditation.

Subject Codes for Equivalent Career-Technical Information Technology Courses/Programs:

140220	Network Systems (career-technical and adult education)	An instructional program that provides training for careers in communication network systems planning, administration, and management.
140210	Information Support and Services (career-technical and adult education)	An instructional program that provides training for careers dealing in information technology deployment and information systems management and support.

Career-Technical Articulation Numbers (CTAN): The Course Equivalency Management System (CEMS) numbering system defines the content of the technical area. Institutions map their course(s)/program(s) to these Career-Technical Articulation Numbers or CTANS.

CTIT001 – INFORMATION TECHNOLOGY- BASIC

(Note: Replaces CTITN001 Basic)

3 semester/4 quarter hours

Learning Outcomes

All CT² Information Technology-Basic learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking or information support and services programs must document access to state end of program assessment, IC³ certificate examination, and/or ICDL certificate examination.

Students must access the credit within three years of career-technical program completion.

1.1. Demonstrate basic knowledge of information technology history and the future of information technologies.

1.2. Demonstrate basic knowledge of the information technology impact on society including security.

(Note: 1.1. and 1.2. may be combined in course objectives and content.)

1.3. Demonstrate basic proficiency with computer tools and applications, such as, software installation, word processing, databases, spreadsheets, presentations, email, and Internet.

(Note: Introductory or application courses may not address all of the tools and applications listed in 1.3.)

**CTIT002 – INFORMATION TECHNOLOGY- NETWORKING/CompTIA Network +
(Note: Replaces CTITN002 Networking and expands CTITN005 CompTIA)**

3 semester/4 quarter hours

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking or information support and services programs must document access to state end of program assessment, CompTIA Network+ certificate examination, and/or Cisco certificate examinations.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

Hardware Design, Operation, and Maintenance

2.1 Identify and describe connectivity devices related to hardware design, operation, and maintenance.

Networking

- 2.2. Demonstrate knowledge of basic network classifications and topologies.**
- 2.3. Demonstrate knowledge of local-area network trends and issues.**
- 2.4. Demonstrate knowledge of network physical layer.**
- 2.5. Demonstrate knowledge of network connectivity basics.**
- 2.6. Demonstrate knowledge of networking protocol concepts**
- 2.7. Demonstrate knowledge of the Open Systems Interconnection (OSI) standard (ISO Standard 7498).**
- 2.8. Demonstrate knowledge of communication standards for networks.**
- 2.9. Demonstrate knowledge of data encoding basics for networks.**
- 2.10. Demonstrate knowledge of IP addressing schemes for networks.**

Networking Architectures

- 2.11. Demonstrate knowledge of the basics of network architecture.**
- 2.12. Demonstrate knowledge of the basics of Ethernet technology.**
- 2.13. Demonstrate knowledge of the TCP/IP protocol suite details for networking architectures.**

Network Operating Systems

- 2.14. Demonstrate knowledge of the network operating systems characteristics.**
- 2.15. Install and administer network operating system and services.**

Wide Area Networks

- 2.16. Demonstrate knowledge of basic telecommunications and the interconnection of networks.
- 2.17. Assess user needs for a wide-area network (WAN).
- 2.18. Design WAN systems for networks.

Network Management

- 2.19. Demonstrate knowledge of network management activities and procedures.
- 2.20. Demonstrate knowledge of network applications.
- 2.21. Perform network installation procedures.
- 2.22. Perform network maintenance and diagnostics and testing.

Telecommunications

- 2.23. Demonstrate knowledge of telecommunications transmission line applications.
- 2.24. Demonstrate knowledge of concepts and techniques used in working with communications systems.
- 2.25. Demonstrate knowledge of telecommunications networks.

Operating Systems

- 2.26. Provide for user authentication for security compliance
- 2.27. Apply systems operations procedures
- 2.28. Maintain and respond to system needs

CTIT003 – PC Hardware Operation and Maintenance/CompTIA A+ Essentials
(Note: Replaces and expands CTITN005 CompTIA)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking or information support and services programs must document access to state end of program assessment and/or CompTIA Essentials+ certificate examination.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

- 1.1 Demonstrate proficiency in working with microcomputer systems.**
- 1.2 Demonstrate proficiency in working with basic computer system architecture**
- 1.3 Explain the purpose and importance of hardware standards**
- 1.4 Identify common computing platforms**
- 1.5 Classify computer architecture and processor types**
- 1.6 Classify computer systems**
- 1.7 Identify and explain CPU and system components**
- 1.8 Identify and describe connectivity devices**
- 1.9 Identify and describe peripheral equipment**
- 1.10 Evaluate cost and performance issues in designing, building or upgrading a computer system**
- 1.11 Troubleshoot computer systems**

CTIT004 – CompTIA – A+ IT Technician**(Note: Replaces and expands CTITN005 CompTIA)****3 Semester/4 Quarter****Learning Outcomes**

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking or information support and services programs must document access to CompTIA the A+ Essentials examination plus the 602 examination (equates to IT Technician credential).

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT005 – Introduction to Desktop Operating Systems
(Note: New CTAN)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking or information support and services programs must document access to state end of program assessment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

- 1.1 Explain operating systems**
- 1.2 Describe computer memory utilization**
- 1.3 Implement and maintain security compliance**
- 1.4 Apply systems operations procedures**
- 1.5.1 Maintain and respond to system needs**
- 1.6 Perform standard computer backup procedures**

CTIT006 - Introduction to User Support
(Note: Replaces and expands CTITN004 Microsoft)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education information support and services programs must document access to state end of program assessment or Microsoft Certified Desktop Support Technician (MCDST) certificate assessment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

- 1.1 Analyze technical support needed**
- 1.2 Perform customer service**
- 1.3 Provide support and training**
- 1.4 Explain the life cycle of an information system**
- 1.5 Implement a system**
- 1.6 Monitor the information system**
- 1.7 Perform system maintenance**
- 1.8 Troubleshoot problems**
- 1.9 Evaluate problem-solving processes and results**
- 1.10 Integrate software upgrades and fixes**

CTIT007 – Cisco Exploration I**(Note: Replaces and expands CTITN003 Cisco)****3 Semester/4 Quarter****Learning Outcomes**

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking and information support and services programs must document access to CCNA certificate examination, CCENT certificate examination, Discovery semester examinations, or Exploration semester examinations. Note: the semester examinations must be proctored and in a closed book test environment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT008 – Cisco Exploration II**(Note: Replaces and expands CTITN003 Cisco)****3 Semester/4 Quarter****Learning Outcomes**

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking and information support and services programs must document access to CCNA certificate examination, CCENT certificate examination, Discovery semester examinations, or Exploration semester examinations. Note: the semester examinations must be proctored and in a closed book test environment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT009 – Cisco Exploration III

(Note: Replaces and expands CTITN003 Cisco)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking and information support and services programs must document access to CCNA certificate examination or Exploration semester examinations. Note: the semester examinations must be proctored and in a closed book test environment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT010 – Cisco Exploration IV

(Note: Replaces and expands CTITN003 Cisco)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking and information support and services programs must document access to CCNA certificate examination or Exploration semester examinations. Note: the semester examinations must be proctored and in a closed book test environment.

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT011 – Microsoft – Windows Desktop Operating Systems

(Note: Replaces and expands CTITN005 Microsoft)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking and information support and services programs must document access to Microsoft Windows Desktop Operating Systems certification examination (MS Examination 70-271 or updated test).

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT012 – Microsoft.NET Framework – Application Development Foundation – Exam 70-536

(Note: Replaces and expands CTITN005 Microsoft)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education information support and services program must document access to Microsoft.NET Framework – Application Development Foundation (MS Examination 70-536 certification).

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

CTIT013 – Managing and Maintaining a Microsoft Windows Server 2003 Environment – Exam 70-290

(Note: Replaces and expands CTITN005 Microsoft)

3 Semester/4 Quarter

Learning Outcomes

All CT² Information Technology-Networking learning outcomes align to *itWORKS*.OHIO technical content standards.

Career-technical secondary and adult education networking program must document access to Microsoft Managing and Maintaining a Microsoft Windows Server 2003 Environment (Exam 70-290).

Students must access the credit within three years of career-technical program completion and within currency of certificate.

The learning outcomes are dictated by the credential examination. Additional learning outcomes were not identified by the faculty panel.

Need to update this?

INFORMATION TECHNOLOGY – FACULTY PARTICIPANTS

Networking Learning Outcome Writing Faculty Panel

Name	Institution
Martin Anderson	Bowling Green State University- Firelands College
Willard Bailey	Zane State College
Jerry Bradford	Washington County Career Center
Hikmat Chedid	Lorain County Community College
Valerie Fronczak	Hocking College
Richard Hartmann	Stark State College
Mike Haines (Panel Co-Chair)	Auburn Career Center
Rich Montgomery	Northwest Career Center
Tom O'Neill	Butler Tech/Ross HS
Jeffrey Osthimer	Whitmer Local Schools
Denise Pheils	Owens Community College
Roy Pignatiello	Euclid High School
Lorraine Pruitt	Cuyahoga Valley Career Center
Robert Sherman (Panel Co-Chair)	Sinclair Community College
Bill Souder	C-TEC Adult Education Center
Mark Stockman	University of Cincinnati
Vallie Tew	Wayne County Career Center
Bob Warner	Greenville High School
Paul Weingartner	Cincinnati State Technical & Community College
Linda Williams	Marion Technical College

Institutions Beta-Testing, Matching, Submitting, and Reviewing Process

Marion Technical College (Lead Site)
 Shawnee State University
 Columbus State Community College
 Central Ohio Technical College
 C-TEC (Licking County)
 Lorain City Schools
 Delaware Career Center

Information Support and Services Learning Outcome Writing Faculty Panel

Name	Institution
Martin Anderson	Bowling Green State University, Firelands
Robert Haas (Panel Co-Chair)	Marion Technical College
Debra Keller	University of Akron
Kathy Lavieri	Great Oaks Institute of Technology and Career Development
Tom O'Neill	Butler Tech at Ross High School
Rhonda Phillips	Miami Valley Career Technology Center
Melissa Hill-Seifman	Miami Valley Career Technology Center
Kathy Simindinger	James A. Rhodes State College
Martha Taylor	Sinclair Community College
Bob Warner (Panel Co-Chair)	Greenville High School
Brad Wright	Medina County JVS

State Agency Representatives

Name	Institution
Sara Mazak	Ohio Department of Education
Vicki Melvin	Ohio Board of Regents