

# AY 2012 – 2013 Program Review

**Technology Integration** 

# Program Review

Technology Integration

Prepared by:

Jack Yon John Sluder

# A. Program Overview

The Technology Integration Program includes three distinct technical areas:

Network Technician Telecommunications VoIP Technician Computer Maintenance and Repair Technician

The program offers Technical Certificates in three areas of concentration: Technology Integration - A+/N+/CCENT/CCNA Technology Integration - VoIP Technician

The program offers Associate of Applied Science degree in one area of concentration: Technology Integration – Network/Telecommunications Technician

The Technology Integration program, or some of the technical areas in the program, has been offered at Colorado Mesa University – Western Colorado Community College for more than 30 years. The current structure of the program was established in the 2000s in response to changes in the technology businesses in the region. The local networking companies advised that there were few jobs for graduates with narrowly focused training in one of the three areas that are now under this program. The suggestion was that we begin offering a program that provided some classes in all areas to any student that was pursuing a degree in technology related studies. The eventual outcome of that advice was the current structure in which all students in the program will take core courses in each of the technical concentrations that then leads to the emphasis the students are pursuing. Then all students come back together for a capstone course. This provides graduating students with a better understanding of the systems of technology activities that they will encounter upon entering the workforce in our community.

The curriculum in each technical area is updated regularly to reflect changes in area businesses and technology as a whole. The most recent major change occurred in the Networking and Telecommunications emphases where we have combined them into one because of the standardization of the Voice over Internet Protocol. This reflects the national and international trends in the industry. By utilizing the industrial information technology expertise of the faculty we have incorporated Cisco Systems International, CompTIA international key curriculum and technical components into the core of the Networking/Telecommunications Technology degree.

# B. Program Goals and Objectives

"Colorado Mesa University shall maintain a community college role and mission, including vocational and technical programs as "Western Colorado Community College". Colorado Mesa University shall receive resident credit for two-year course offerings in its commission-approved service area."

# **Program Goals**

The overall program goals for the Technology Integration program at WCCC are:

- Provide the students with the skills and knowledge to be productive citizens and excel in their chosen fields.
- Work with business and industry stakeholders to continually enhance the quality and timeliness of technical content.

# **Program Objectives**

The program objectives for the Technology Integration program at WCCC are aligned with the role and mission of Colorado Mesa University which allows students and faculty to:

- Demonstrate an understanding and appreciation of the liberal arts including the humanities, social sciences, mathematical and natural sciences,
- Practice a commitment to student learning and achievement, including, but not limited to applying basic through advanced technology theory, demonstrating hands-on skills, problem solving techniques, using multiple strategies,
- Demonstrate subject matter knowledge and pedagogy, including, but not limited to creating effective learning environments, practicing teaching both as a science, providing contextual learning activities,
- Manage and monitor student learning, based upon best practice including, but not limited to using a variety of teaching methodologies, involving support personnel, parents and community members to maximize student success, following ethical responsibilities of teaching,
- Organize teaching practices and learn from experiences including, but not limited
  to, using current research to improve practice, accept teaching as a lifelong
  learning process, interact with various education personnel and professional
  associations,
- Participate in learning communities, including, but not limited to, using the community to enhance programs, interact with parents and business and industry to maximize learning, participate in local, state and national professional associations,
- Use technology and concepts to enhance learning and personal/professional
  productivity including, but not limited to, implementing curriculum that includes
  technology-enhanced methods and strategies, applying technology to a variety of
  assessment and evaluation strategies; and,
- Colorado Mesa University values teaching, learning, and student-faculty interaction. We provide our students with expanded opportunities to participate in

research and active hands-on learning as a supplement to the classroom. Colorado Mesa University is dedicated to assisting students in achieving their goals and dreams.

# C. Analysis of Need for the Program

• Enrollment rates have been steady until recent years have shown an increase, which also reflects the state-wide enrollments in similar programs, due to the increase in industry demands and refocusing on the new specific AAS emphasis and certificate degrees.

Dunguam	Degree	Code	Major	2007- 08	2008- 09	2009- 10	2010- 11	2011- 12
Program Tech Integ Clst	Cert	1324	Tech Integ Clst-Cert Elec Tech	2	2	2		
rech lifteg cist	AAS	1326	Tech Integr Cluster-Tele Engr	8	1	2	2	7
		1327	Tech Integr Cluster-Cert Elec	8	13	7	9	1
		1328	Tech Integr Clust-Network Tech	22	28	27	37	41
Subtotal				40	44	38	48	49
Tech Integr Clstr	Cert	1322	Tech Integr Clstr-Network Tech		1	4	7	8
ta ecretoria meanistra		1330	Tech Integ Clstr-VoIP			1	4	1
Grand Total				40	45	43	59	58

<sup>\*\*</sup>Not divided between Fall and Spring

Our graduation and placement rates are very good in relationship to the type of student that enters or program. We have very few full-time traditional students. Most of the cohorts are working students only taking a few classes per semester, thus it takes them more than two years to graduate and we will have groups of graduates and then only a few per Spring semester

 As the Grand Valley continues to grow and the technology needs and demands of industry increases, we see a growing demand for, networking, and computer maintenance and telecommunications technicians. We have placed many of our graduates in local and national businesses (including Colorado Mesa University, DOE, RICOH, Etc..) as network, computer maintenance and telecommunications technicians, and maintain a strong advisory council which helps guide our curricular decisions.

The program, supports other programs such as, CISB, and Mathematics coursework (Include Cisco State(s) wide support) at the Bishop campus our efficiency is very effective.

Through the guidance of our Business Advisory Committee, we have identified a critical need for network, computer and

telecommunications technicians. This is not only in support of the local businesses and industry, but many other businesses needs are now beginning to emerge. The core of that coursework is Cisco proprietary and non-proprietary generating invaluable multivendor networking and telecommunications problem solving skills.

Our program is successful for the students because we teach contextually in a technologically rich environment with extensive hands-on content-rich course work. Our graduates have work with Faculty that have rich industry experience and the students have work in real-world environments created by that faculty. As stated by Craig Barrett, Chairman Intel Corporation, "My hope as a business leader is that these reforms will get us to the 21<sup>st</sup>-century school – a 21<sup>st</sup>-centrury learning environment that offers a content-rich curriculum. "inquiry-based learning" has value, but process should not replace content" (Appendix vii).

These concepts have been reinforced when members of our department and school were awarded a National Science Foundation Grant (NSF) titled; Integrated Learning Systems: A model approach in which we proposed the development of a content-rich model integrating multiple disciplines in a project-based learning environment. Working with local businesses as partners on the grant, the team will explore this innovative learning model to help create the 21<sup>st</sup>-century school environment. This acknowledgement by the NSF attests to the fact that we are on the right track.

With the role and mission at Colorado Mesa University/WCCC being a teaching college, our program strives to innovate, research, and excel in that mission. We are teachers first and foremost and the positive results show in the success of our graduates exemplifies our efforts.

# D. Narrative Summaries of Resources

i) Unique characteristics of the program influencing the need for resources.

Technology Integration includes multiple disciplines that present a unique set of challenges and synergy.

The challenge is to prioritize the resources to meet industry demands for technically competent workers in developing markets; while maintaining the academically rigorous basic skills required of multiple diverse employers.

ii) Faculty and Staff

a. The afore-mentioned mult-idisciplined market place requires multi disciplined faculty with strong teaching and technical skills. Professional development has to be vigorously pursued to satisfy the rapid advances required of our graduates. We need additional training in current Network Operating Software, Linux Platforms, and other technologies of VoIP.

# iii) Physical Facilities

The facilities have been dramatically improved by moving the program into a newly renovated dedicated space. This design was based on a real-world industry environment with production benches for computer maintenance and VoIP, a Network Operating Center separate from the classroom with patch panels between the rooms, and an integrated classroom CISCO learning center.

- iv) Instructional equipment, including instructional technology and its use.
  - a. The program has utilized the fundamental equipment to good advantage for the changing skill demands of industry. This basic equipment is however becoming dated and is in need of deferred preventative maintenance.
  - b. Changing emphasis of the job market and current technologies and well as requirements for security and improved abilities requires significant capital to meet the specific skill sets which are cyclical. This equipment is more specialized and costly.
  - c. Additional capital is required to provide asynchronous distance learning for our non-traditional working student.
- v) Library, including DVD, video, etc.
  Library support is adequate and provides good reference materials to support the core competencies. The changing technical skills need additional asynchronous curriculum and course development. The WCCC campus has need of a dedicated student computer to supplement and augment class/ library support.

# E. Effectiveness

Accreditations by Professional, National, and International
 Associations are critical to the Technology Integration and Process
 Systems Technology degree programs, because the businesses and
 industries that support us require certifications when hiring our
 graduates. The program is nationally and internationally certified
 by the following external organizations:

Certified curriculum (ETA Electronics Technicians Association) Local Cisco Academy, Accredited by CISCO

- Changes since the most recent program review include the blending of the Network Technician and Telecommunications Engineering emphases into one. This change grew out of industry changes in which the telephones with network systems are combined utilizing Voice over Internet Protocol. Additionally, in working closely with the Math department we have restructured the MATH 107 math class to more closely align with the Colorado Community College System (CCCS) and with the requirements of the mathematics department by developing MATH 108 Technical Mathematics. The staff has also restructured the Applied Physics course to align with the changes in the mathematics course.
- Assessment of student academic achievements within the program includes the assessment process of Mesa State College. The department also keeps CCCS assessment records on completers, surveys, certifications, and skills Olympics.
- Faculty success data

## Promotions

2005 One faculty promoted to Associate Technical Professor 2006 One faculty promoted to Assistant Technical Professor 2007 One faculty applying for Assistant Technical Professor 2011 One faculty promoted to Assistant Technical Professor

Teaching

Professional and student evaluations CCCS Certification and mentoring approval

- Advising Departmental SOAR
- Scholarship
   Industry Certifications
   Professional Certifications
   Bridge Courses
   Continuing education coursework

# Service

Advisory committees Career Center, Job Corp, RMPBS, Business departments in MCSD 51

MSC service: Faculty Senate, Advising Committee, Information Technology support, Promotion and Tenure committees, Hiring committees.

#### Other

NSF Grant
Industry association work – special recognition
Cisco Academy Support Center – Colorado, New Mexico, Utah
and Wyoming
Instructor Training Center

## Student success data

# Awards

2010, Postsecondary Netriders (Cisco) placed 12<sup>th</sup> in USA and Canda

2011, Secondary Netriders (Cisco) placed in top 3 in the state 2012, Postsecondary student selected to maintain the NOC at Cisco

Live International

2012, Postsecondary Netriders (Cisco) placed in the top 5 of the state.

2012, Postsecondary Netriders (Cisco) placed to continue in the top 2 in the state to represent Colorado in the USA and Canada Theatre Finale

#### Certifications

2005 two CCNA CISCO Certifications

2005 seven Associate Certified Electronics Technicians

2005 two A+ Certifications

2006 two Associate Certified Electronic Technicians

2009 one CCNA Cisco Certifications

2010 six Voice over IP Certifications

2011 one CCNA Cisco Certifications

2012 one CCNA Cisco Certification

2012 two A+ Certifications

2012 two Network+ Certifications

2012 one Associate Certified Electronics Technicians

# BAS degree students

Even though there are no current statistics for BAS students, we know of four graduates with a BAS degree and four students currently on the BAS path who have earned an AAS in Technology Integration.

# F. Strengths Identified by the Review

 The strengths identified by our internal review include strong support from our business advisory council and participation of businesses with internships, support of grants, and guest lectures.
 We are also accredited by external national and international organizations which enhance the placement and growth of our graduates.

Additionally, the program is enhanced by the quality and commitment of the faculty in scholarship, advising, service and professional development. The student's evaluations attest to the quality of education they are receiving.

# G. Areas Needing Strengthening Identified by Review

• The major area needing strengthening is the enrollments and graduation rates. The degree offerings require a very specialized student willing to commit to very rigorous coursework as demanded by the industry. Many of our international certifications only have an 80% pass rate. Our students are very easy to spot, they are just hard to find.

We know that there is a pool of qualified students in our service area and we need to develop a recruiting plan to reach out to those interested. There is also competition from other colleges and technical schools in the area that advertise heavily in our service area. Even though, their programs are more specialized and more expensive, they have a strong marketing component that attracts the type of student we need.

Finally, as we propose to launch a new degree which will strengthen the program, we will need to have equipment and trainers to be able to design our instruction around modern technologies to support the needs of local and regional businesses.

# H. Vision

- As previously mentioned, we are proposing to combine the Networking and Telecommunications emphases into one now that the Voice over Internet Protocol standards has been established. This will increase the headcount in all of the classes for a combined degree and it will help the faculty to student FTE numbers effectively.
- The technology we work with needs to be the same equipment and systems that our students will be using in the field; if not, we are

doing the students a disservice and ineffectively supporting our business stakeholders. Some of the equipment and support can be solicited from the business partners, but the college needs to also support this critical new path.

# Appendix A Program Statistics

This CIP Statewide

32

18%

# • Statistics for past five years

6

Active

07

29

# 5 Year Completion Rate Trends Program at WESTERN COLORADO COMMUNITY COLLEGE

School Year	Status	Number Enrolled	Number of Completers	Completion Rate	Number Enrolled	Number of Completers	Completion Rate
11	Conditional	28	5	18%	146	98	67%
10	Conditional	26	8	31%	137	87	64%
09	Active	31	8	26%	1122	515	46%
08	Active	20	0	0%	551	124	23%

# 5 Year Placement Trends - Follow Up Students

21%

182

	Program a	at WESTERN COLORADO COMMUNITY  COLLEGE  This CIP States					tewide	<u>ewide</u>							
Yr	Status	Comp	Empl R	Empl U	UnEmpl	Cont	TPP	R	Comp	Empl R	Empl U	UnEmpl	Cont	TPP	R
11	Conditional	5	3	1	0	5	5	5	98	3	2	0	5	6	6
			60%	20%	0%	100%	100%	100%		50%	33%	0%	83%	100%	6%
10	Conditional	8	4	1	0	8	8	8	87	6	3	0	12	12	12
			50%	13%	0%	100%	100%	100%		50%	25%	0%	100%	100%	14%
09	Active	8	8	0	0	1	8	8	515	10	1	1	6	15	16
			100%	0%	0%	13%	100%	100%		83%	6%	6%	38%	100%	3%
08	Active	0	0	0	0	0	0	0	124	0	3	0	2	4	5
			0%	2%	2%	0%	0%	0%		0%	60%	0%	40%	100%	4%
07	Active	6	3	1	0	2	4	4	32	4	1	0	3	7	8
			75%	25%	0%	50%	100%	67%		50%	13%	0%	38%	100%	

# Appendix B Finance & Budget

# • Finance and Budget Sheet for past five years

# FY14 Budget Worksheet BASIS

PROGRAM	HAVE SEED TO THE RESIDENCE OF THE PARTY OF T	FY12 Budget	FY12 Actual	over (under)	FY13 Budget	inc (dec)	FY14 Req*
Agriculture	Program Expenses		-	-	1,000	1,000	3,000
The state of the s	Course Fees		-	-	5,000	5,000	12300 010
	Total Agriculture	-	-		6,000	6,000	3,000
Marketing	Program Expenses	2,000	2,516	516	2,100	100	2,000
	Course Fees			-	-	-	
	Total Marketing	2,000	2,516	516	2,100	100	2,000
Digital Design**	Program Expenses	6,500	5,766	(734)	2,800	(3,700)	3,000
	Course Fees	1,375	237	(1,138)	1,375	-	
	Total Digital Design	7,875	6,003	(1,872)	4,175	(3,700)	3,000
Process Tech	Program Expenses	3,500	1,918	(1,582)	2,100	(1,400)	3,500
	Course Fees	1,590	2,612	1,022	1,590	-	
	Total Process Tech	5,090	4,530	(560)	3,690	(1,400)	3,500
Office Admin	Program Expenses	2,000	1,216	(784)	1,300	(700)	1,500
	Course Fees	1,750	458	(1,292)	1,750	-	
	Total Office Admin	3,750	1,674	(2,076)	3,050	(700)	1,500
Tech Int	Program Expenses	3,500	3,573	73	3,500		3,500
	Course Fees	2,400	2,102	(298)	2,400		
	Total Tech Int	5,900	5,675	(225)	5,900	-	3,500
Water Quality	Program Expenses	2,000		(2,000)	500	(1,500)	1,500
	Course Fees			NE	•	-	
	Total Water Quality	2,000	(4)	(2,000)	500	(1,500)	1,500
	TOTAL BASIS	26,615	20,398	(6,217)	25,415	(1,200)	18,000

<sup>\*</sup> attach justification for budget increases (specific purchases, increased costs, increased FTE, etc)

<sup>\*\*</sup> includes Animation, Graphics, Media Tech

# Appendix C Library Assessment

# Library Curriculum Assessment Tomlinson Library Colorado Mesa University

The following form is a snapshot of the library's collection in support of a program review.

Date of assessment: December 2012

Collection under review: <u>Technology Integration with the following areas of emphasis:</u>
Network/ <u>Telecommunications Technician</u>, <u>Telecommunications VoIP Technician</u>, <u>Network</u>
Technician (Western Colorado Community College)

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Library Liaison: Aimee Brown

## 1. Current Collection Review

The Library collection was assessed using the Library of Congress subject headings listed in section b divided three areas, electric circuits, integrated circuits and telecommunications/networking.

# a. Reference Sources:

There are 15 titles on these subjects in the Reference Collection published 1965-2008. They include *Handbook of Research on Educational Communications and Technology* (Lawrence Erlbaum Associates, 2008) and *Desktop Encyclopedia of Telecommunications* (McGraw-Hill, 2000). Most of them were published before 1995.

# b. Monographic Sources:

# Electric circuits

The library has 43 books, including 3 e-books, published 1944-2011 in the general collection with this subject heading. Only 3 of these books were published in 2000 or more recently.

# Integrated circuits

The library has 258 books, including 211 e-books, published 1969-2013 in the general collection with this subject heading. 82% of these (e-books) were published 2011-2013.

Telecommunications/networking

- Cisco Systems, Inc.
- Computer networks
- Internet telephony
- Internetworking Telecommunication
- Local area networks (computer networks)
- Routers (computer networks)
- TCP/IP (computer network protocol)
- Telecommunication
- Telecommunication systems
- Wide area networks (computer networks)

There are over 1500 books with at least one of these subject heading, including over 1300 e-books published 2011-2012.

Age Analysis of Monographic Collection

Please see section above.

# c. Periodicals:

The library provides access through our licensed article databases to several periodicals in full text online through the current issue that cover these subjects. They include:

- Active And Passive Electronic Components
- Advances in Electrical and Computer Engineering
- Computer Speech and Language
- Electronic Device Failure Analysis
- Electronic Engineering Times
- IUP Journal of Telecommunications
- Journal of Telecommunications Management
- Rural Telecommunications
- USA Telecommunications Report

In addition, there are several open access journals available through the journal finder on the library's web site incusing:

- Advances in Electrical & Electronic Engineering
- International Journal of Computer Networks
- International Journal of Computer Networks & Communications
- International Journal of Computer Science and Communication Networks
- Journal of Computer Networks and Communications

#### d. Electronic Resources:

The library subscribes to the licensed article database Academic Source Complete which provides access to articles on technology integration. Below is a list of the number of full-text articles published in 2000 or later specifically in trade journals that a search for the subject terms below produced.

Telecommunication systems: 3,154

• Computer networks: 17,357

Electric circuits: 894

# 2. Recommendations for additions to the collection:

Most of the library's e-books related to this program are geared toward upper-level students and engineering and computer science professionals. Most of the hard copy resources may be out-of-date. In consultation with the faculty, the collection needs to be weeded and additional materials should be added to ensure that they are relevant to the entry-level students. Any new materials added should be in electronic format so that they are convenient for students to access.

Library Director: Sarah Cron Date: 1/2/2013

Appendix D

Faculty Vitae

Name:

Carolyn R Ferreira-Lillo

Start Year: 1/2009

Program:

Technology Integration

Department:

WCCC - Business, Applied Science & Information Services

Faculty Rank

C Technical Professor

Assistant Technical Professor

C Associate Technical Professor

C Technical Instructor



**Full-time Faculty Vita** 

**Highest Degree** 

MS

StonyBrook University

Technology System Management

1999 - 2001

Education: (List all degrees beginning with most recent-include post docs and external certificates)

M.S. Technology System Management, StonyBrook University, 2001

B.S.E.E Electrical Engineering, City College of New York, 1993

A.A.S Electrical Engineering Technology, Queensborough Community College, 1984

Teaching 2003-Present:

Courses Taught

TECI-132 Introduction to IT Hardware and System Software

TECI-260 Information Technology Hardware and System Software

TECI-110 Applied Physics

PROS-117 AC Circuits

PROS/TECI-118

Math -108 Technical Mathematics

Math - 107 Mathematics for Technology

PROS 120 Process Technology I: Equipment

PROS 230 Quality in Process Technology

44310 Process Technology

44311 Engineering Physics

44316 Technology Integration 1

44317 Math for IT

44329 Technology Integration 2

PROS 100 Introduction to Process Technology

Certificate

CTE Post secondary: Technology Integration Preliminary

CTE Post secondary Energy, STEM

2011 Cisco Networking Academy Instructional Conference

Spring 2011 Instructor Certification by Cisco for Discovery 3: Introducing Routing and Switching in the Eterprise

Spring 2010 Instructor Certification by Cisco for Discovery 2: Working at a Small-to-Medium Business or ISP

Spring 2010: Instructor Certified by Cisco for Discovery 1: Network for Home and Small Business

2009 Instructor Certified by Cisco for TECI 132/260 PC Hardware and Software

Evidence of Continuous Improvement

Spring 2012: EDU 260

Spring 2012: Campous Safty Workshop Fall 2011: EDUT 250 CTE in Colorado

Fall 2011: ISMT 580 IS Phys: Acad Insitute/CTE

2011: NEEDS and ENCANA: Colorado Energy Workshop Completed.

Summer 2011: Colorado Career & Technical Education Conference (14 contact Hours)

Summer 2011: ISMT 580 IS ED: Understanding by Design

Spring 2011: Instructor Technical Webinars Spring 2011: Plans of Study (POS) Palooza

Spring 2011: ISMT 580 IS Math: Acad Insitute/CTE (7.5 contact hr)

Spring 2011: ICAP Career Guidance and (1 contact hr)

Fall 2010 Cisco Networking Academy Instructional Conference

2009/2010 workshops at Mesa state in Web CT

2009 Universal Design for Learning: Creating Accessible Course Materials

Fall 2011: EDUT 250 CTE in Colorado Spring 2009: WebCT Basic Workshop Spring 2009: WebCT Advanced Workshop

## Innovative Materials/Activities

Supervision of Student Research/Project(s)

# Scholarship and Creative Work, 2003-Present:

Journal Articles

Conference Presentations

Technical Reports

**Exhibits** 

Grants (proposed or funded)

<u>Professional Memberships</u> 2009 - present Cisco Alumni

2011- present ACTE

Honors and Awards

# Service 2003-Present:

Institutional

Colorado Community College System: Member of the Curriculum Committee 2010 - present

Vice Chair for 2011-Present

Undergraduate Curriculum Committee 2011 - present

WCC Counsel spring 2011

CTE Committee 2010 - present

2010 - present Secondary (high school) Committee 2011

2010 - present High Schools Interviews

2010 - present Tours for high school

2009 advising at Mesa State

Community

2010 - present Rotary

2010 - present Event volunteer at Sacred heart Church

2011 CACTE

# Advising 2003-Present:

Institutional level

2010 - present Post Secondary Advising

Committee:

2010- present Curriculum Committee

2. Career in technical Education

public service:
Fund raisers for Rotary
Fund Raiser for Sacred Heart Church
Department level
2010 -Present Postsecondary Advising
2010- Present High school Advising

# Prior Professional Experience Relevant to Current Position: (Include year(s) of employment, employer, position title and responsibilities)

Year(s) of Employment

Employer

Position Title

Position Responsibilities

1997 - 2008 Bronx Community College (Bronx NY) Lecturer Syllabi, Creating Writing intensive classes for JENED 1984 - 1998 Queensborough Community College Adjunct Technician: the operation and maintenance of lab equipment associated with electronic classes,

1985 - 1992 Lucas Aul Aerospace Electronics Technician/Material and Production Control: Testing, Troubleshooting

Please record the number "items/events" you have listed above in the following categories.

If you specify items/events under "other," please provide an explanation/definition.

Books

**Book Reviews** 

**Creative Publications** 

Journal Articles

Performances

Patents

Conference Presentations

Exhibitions

Grants-funded and non-funded

Sabbaticals

**Fulbrights** 

**Book Chapters** 

Other (related to discipline)

Name:

Jack P Yon

Start Year: 2003

Program:

Technology Integration

Department:

WCCC - Business, Applied Science & Information Services

Faculty Rank

C Associate Technical Professor C Technical Instructor



# **Full-time Faculty Vita**

# **Highest Degree**

AAS Mesa State College

Technology Integration - Networking/Telecommunic 2008

Education: (List all degrees beginning with most recent-include post docs and external certificates)

Certificate/License: Authorization to Teach Career & Technical Education, State of Colorado June 2011 - June 2016;

Certificate: National Career Pathways Network Leadership Certification, Career Cluster Institute, Denver, CO, 2010;

Certificate: Cisco Certified Network Associate - Security, Santa Barbara City College, CA, 2009;

Associates of Applied Science, Technology Integration - Networking/Telecommunications Cluster: With Distinction, Mesa State College, Grand Junction, CO, 2008;

Certificate: Cisco Information Technology (IT) Essentials I: PC Hardware and Software, Mesa Community College, AZ, 2008:

Certificate: Cisco Information Technology (IT) Essentials II: Network Operating Systems, Mesa Community College, AZ, 2008;

Certificate: SkillsUSA - Colorado State Certified Leadership Trainer (Train-the-Trainer), SkillsUSA University, Kansas City, MO, 2008;

Certificate: Associate Electronics Technician, Electronics Technicians Association International, Greencastle, IN, 2008;

Certificate/License: Professional Teacher License, State of Colorado, June 2007 - June 2012

Certificate: Cisco Certified Network Associate - Wide Area Network (WAN) Technologies, Colorado Mountain College, CO, 2007;

Certificate: Cisco Certified Network Associate - Switching Basics and Intermediate Routing, Colorado Mountain College, CO, 2006;

Certificate: Chapter Management Institute, SkillsUSA University, Denver, CO, 2006;

Certificate/License: Provisional Teacher License, State of Colorado, August 2004 - August 2007:

Certificate: Cisco Certified Network Associate - Routers and Routing Basics, Colorado Mountain College, CO, 2003;

Certificate: Cisco Certified Network Associate - Networking Basics, Colorado Mountain College, CO, 2003:

Certificate/License: Alternative Teacher Licenser Program, Colorado State University, CO, 2003-2004

# Teaching 2003-Present:

Courses Taught

44310, Process Technology I

44311, Engineering Physics

44312, Process Technology II

44316, Technology Integration I

44317, Math for IT

44318, Technology Integration II

ELCL 120, Fundamentals of Electricity

PROS 100, Introduction to Process Technology

PROS 110, Safety, Health, & Environment

TECI 132. Introduction to IT Hardware and System Software

TECI 180, Cisco Networking I

TECI 185, Cisco Networking II

TECI 196, Topics: Security

TECI 220, Regulations and Standards

TECI 230, Cisco Networking III

TECI 235, Cisco Networking IV

TECI 260, Information Technology Hardware and System Software

TECI 265, Advanced IT Hardware and System Software

TECI 265L, Advanced IT Hardware and System Software

TECI 290, Certification: A+

TECI 290, Certification: CCENT/ICND1

TECI 290, Certification: CET(a)

TECI 290, Certification: ICND2

TSTC 160, Electronic Control Systems

UTEC 120, Industrial Safety Practices

UTEC 220, Industry Employment Practices

WQMS 100, Introduction to Water Quality

# Evidence of Continuous Improvement

Fluke Networks, Webinar, "Wired & Wireless Analysis with One Tool", February 20, 2012

Fluke Networks, Webcast: Troubleshooting on Both Sides of the Access Point, February 14, 2012

Colorado Association for Career and Technical Administrators, Mid-Winter Conference, February 7-10, 2012

Colorado Association of Career and Technical Educators, Executive Board Meeting, January 20, 2012

Lauren Jones, MA, NCC, CTE-Career Guidance Trainer & Specialist, Individual Career and Plans/Plans of Study workshop, January 9-11, 2012

Career and Technical Regional Standards Workshop, October 14, 2011

Academics-in-Career and Technical Education, Workshop, October 7-8, 2011

ISMT-580, IS Math: Academic Instruction/CTE, Graduate-level In-service, October 7, 2011

ISPH-580, IS Physics: Academic Instruction/CTE, Graduate-level In-Service, October 8, 2011

Colorado Association of Career and Technical Educators, Executive Board Meeting, September 30, 2011

Colorado Community College System (CCCS), Regional Career and Technical Education Workshops, September 21-23, 2012

Colorado Association for Career and Technical Educators, Summer Conference, July 17-21, 2011

Cisco Networking Academy Conference 2011, June 26-30,2011

Perkins Funding and Budgets Training, May 23, 2011

Academics-in-Career and Technical Education, workshop, April 29-30, 2011

ISEN-580, IS English: Academic Instruction/CTE, Graduate-level In-Service, April 29, 2011

Colorado Energy NEED Workshop, Encana Corporation, April 19, 2011

Fruita Middle School, Career Fair Presentation, March 29, 2011

Colorado Association for Career and Technical Administrators, Mid-Winter Conference, February 8-11, 2011

Colorado Association of Career and Technical Educators, Executive Board Meeting, January 21, 2011

Individual Career and Academic Plans, meeting, November 16, 2010

Academic-in-Career and Technical Education, workshop, November 5-6, 2010

Colorado Association of Career and Technical Educators, Executive Board Meeting, October 15, 2010

STEM, Careers and Technical Education, workshop, October 8-9, 2010

ISMT-580, IS Math Academic Instruction/CTE, Graduate-level In-Service, October 9, 2010

MCSD 51, ICAP Task Force, September 21, 2010

Colorado Association of Career and Technical Educators, Executive Board Meeting, September 17, 2010

Cisco Networking Academy Conference 2010, August 2-4, 2010

Colorado Association for Career and Technical Educators, Summer Conference, July 19-22, 2010

8th Annual Career Cluster Institute, June 13-16, 2010

Association of Career and Technical Education, Math-in-CTE, May 2009-May 2010

Colorado Association for Career and Technical Administrators, Mid-Winter Conference, February 3-5, 2010

North American STEM Education Symposium, October 12-16, 2009

College-in-Colorado-Advancer Training, July 24, 2009

Cisco Networking Academy Conference 2009, July 13-15, 2009

Colorado Association for Career and Technical Administrators, Mid-Winter Conference, February 4-6, 2009 Leadership in Technical Education, workshops, December, 2008

State Certified Trainer, SkillsUSA State Certified Trainer Workshop, Kansas City, Missouri, February 25-28, 2008 SkillsUSA Fall Leadership Conference, November 10, 2007

Colorado Association of Career and Technical Educators, E-Portfolio Workshop, July 9, 2007

Colorado Association of Career and Technical Educators, Summer Conference, July 10-12, 2007

SkillsUSA Chapter Management Institute, October 2, 2006

Colorado Association of Career and Technical Educators, Summer Conference, July 25-28, 2005

SkillsUSA University, National Leadership and Skills Conference, Kansas City, Missouri, June 22-24, 2005

VE 494, Independent Study, Colorado State University, Spring 2004

VE 486, Practicum, Colorado State University, Spring 2004

VE 473, Communication Strategies, Colorado State University, Fall 2003

VE 472, Classroom Management, Colorado State University, Fall 2003

VE 471, Orientation and Assessment -New Teachers, Colorado State University, Fall 2003

Crossroads Conference, Colorado Council for Children with Behavioral Disorders, October 17, 2003

#### Innovative Materials/Activities

Chapter and Final Case studies for, Technology Integration I & II; "real world" scenario based study integrates content of objective areas and requires students to apply concepts to create a solution for the scenario. Final case study is one of which the students will create presentations and virtual networking concepts, which enables them to create a portfolio of accomplished skill sets.

Chapter and Final Case studies for, Cisco Networking classes, TECI 180 - 235; "real world" scenario based study integrates content of objective areas and requires students to apply concepts to create a solution for the scenario. Final case study is one of which the students will create presentations and virtual networking concepts, which enables them to create a portfolio of accomplished skill sets.

Embedded Academic content within CTE course, cross-walked to State, National, ACT standards and approved for Graduation credit requirements.

# Supervision of Student Research/Project(s)

December 2011: Ten students from TECI 230, completed a presentation of a case study scenario, that represented a fictional company with specific requirements for a company network and were required to use proper and preferred methods of protocols and practices.

May 2011: Ten students from TECI 185, completed a presentation of a case study scenario, that represented a fictional company with specific requirements for a company network and were required to use proper and preferred methods of protocols and practices.

April 2009: Seven students from TECI 260, performed preventative maintenance on 127 computers under the supervision of myself and the company of Western Colorado Podiatry services.

# Scholarship and Creative Work, 2003-Present:

# Conference Presentations

"Affect of Moores Law" and it's relationship to an IT Support persons pay and or the cost of new technology today, Academic-in-CTE, October 7-8, 2011

"Energy and relationships" and the cause and effect as stored in a spring, Academic-in-CTE, October 7-8, 2011

"Information representation" - Information representation in Information Technology, using base numbers, April 29-30, 2011

#### Grants (proposed or funded)

"Digital Tools for Electronics and Electricity in the classroom", Grand Junction Chamber of Commerce classroom Improvement grant, \$800.00 for handheld digital oscilloscopes for the Technology Integration Curriculum, December 2008

# Professional Memberships

Association of Career and Technical Education (ACTE) -- 2004 - present Colorado Association of Career and Technical Education (CACTE) -- 2004 - present Colorado Association of Career and Technical Administrators (CACTA)-- 2009 - present SkillsUSA -- 2003 - present Electronics Technician Association, International (ETAi) -- 2003 - present National Coalition for Electronics Education (NCEE) -- 2003 - present

# Honors and Awards

#### 2011

- -- Promoted to Assistant Technical Professor, Rank
- -- Recommended for "Distinguished Faculty", Mesa State College

Computer Science Teachers Association (CSTA) -- 2005 - present

#### 2008

-- Five Year Service Award

## Service 2003-Present:

## Institutional

## 2012

- -- Career and Technical Education Committee, Chair
- -- Crisis Team Member
- -- College and Career Readiness Tour

#### 2011

- -- Career and Technical Education Committee, Chair
- -- Crisis Team Member
- -- SkillsUSA Advisor
- -- Tenure and Promotion Recommendation Committee
- -- Imbedded Academic-in-CTE Crosswalks, Chair
- -- Sophomore Tour

#### 2010

- -- Career and Technical Education Committee, Chair
- -- Crisis Team Member
- -- SkillsUSA Advisor
- -- Imbedded Academic-in-CTE Crosswalks, Chair
- -- Sophomore Tour

# 2009

- -- SkillsUSA Advisor
- -- Imbedded Academic-in-CTE Crosswalks, Chair
- -- Sophomore Tour

#### 2008

- -- SkillsUSA Advisor
- -- Imbedded Academic-in-CTE Crosswalks, Chair
- -- Sophomore Tour

#### 2007

- -- SkillsUSA Advisor
- -- Sophomore Tour

#### 2006

- -- SkillsUSA Advisor
- -- Sophomore Tour

#### 2005

- -- SkillsUSA Advisor
- -- Sophomore Tour

#### 2004

- -- SkillsUSA Advisor
- -- Sophomore Tour

#### 2003

-- SkillsUSA Advisor

# Community

#### 2012

- -- School District 51, Individual Career and Academic Plans Committee, Advisor
- -- Secondary and Post Secondary Plans of Study, Chair
- -- Colorado Association for Career and Technical Education, Executive Board Member
- -- Colorado Association for Career and Technical Education, STEM, Arts, Design and IT Division President
- -- Career Center: Multi-Media, Graphics, and Computer Technology Advisory Committee Member
- -- Career Fair, Fruita Monument Middle School
- -- Career and Technical Education MCSD 51 Leadership Team, Chair
- -- Imbedded Academic-in-CTE Crosswalks, Chair
- -- CTE, College Credit in place, Chair

#### 2011

- -- School District 51, Individual Career and Academic Plans Committee, Advisor
- -- Secondary and Post Secondary Plans of Study, Chair
- -- Colorado Association for Career and Technical Education, Executive Board Member
- -- Colorado Association for Career and Technical Education, STEM, Arts, Design and IT Division President
- -- Career Center: Multi-Media, Graphics, and Computer Technology Advisory Committee Member
- -- Career Fair Fruita Monument Middle School
- -- Career and Technical Education MCSD 51 Leadership Team, Chair
- -- School District 51, Individual Career and Academic Plans Committee, Advisor
- -- Secondary and Post Secondary Plans of Study, Chair
- -- Imbedded Academic-in-CTE Crosswalks, Chair

#### 2010

- -- Colorado Association for Career and Technical Education, Executive Board Member
- -- Colorado Association for Career and Technical Education, STEM, Arts, Design and IT Division President Elect
- -- SkillsUSA State Certified Trainer
- -- Proto Camp Instructor/Advisor
- -- Career Fair, Fruita Monument Middle School
- -- Career Fair, Rocky Mountain Elementary School
- -- Imbedded Academic-in-CTE Crosswalks, Chair

#### 2009

- -- SkillsUSA State Certified Trainer
- -- Imbedded Academic-in-CTE Crosswalks, Chair

# 2008

-- SkillsUSA State Certified Trainer

#### Advising 2003-Present:

Institutional level

2008

-- SOAR Sessions: 2

2007

--SOAR Sessions: 3

2006

-- SOAR Sessions: 2

2005

-- SOAR Sessions: 2

Department level

2005 - present

Student Advisor -- 20-45 students

2004 - present

Technology Integration Program High school Interviews -- 30-50 students

# Prior Professional Experience Relevant to Current Position: (Include year(s) of employment, employer, position title and responsibilities)

Year(s) of Employment	Employer	Position Title	Position Responsibilities
2001 - 2002	IntelliTec Colleges, CO	Dean of Faculty	Train and manage full time faculty
2000 - 2001	SBM Site Services, CO	Area Manager	Train and manage staff
1979 - 2000	United States Navy	Chief Petty Officer	Train and manage service members
Di Jilla assasba	w Hitamalariantall rion havin	listed above in the follow	

Please record the number "items/events" you have listed above in the following categories.

If you specify items/events under "other," please provide an explanation/definition.

	Books		<b>Book Reviews</b>		Creative Publications
	Journal Articles		Performances		Patents
3	<b>Conference Presentations</b>	3	Exhibitions	1	Grants-funded and non-funded
	Sabbaticals		Fulbrights		Book Chapters
	NAMES OF THE PROPERTY OF THE P				

Other (related to discipline) | Student Services and Advising Center presentations of Technology Integration, Process Technology

Name:

John L Sluder

Start Year: 1998

Program:

Technology Integration

Department:

WCCC - Business, Applied Science & Information Services

Faculty Rank

C Associate Technical Professor C Technical Instructor



**Full-time Faculty Vita** 

**Highest Degree** 

Colorado Mesa University Business Computer Information Systems 2014

Education: (List all degrees beginning with most recent-include post docs and external certificates)

Cisco Networking Academy CCNA Discovery Certificate 2010

VoIP Global Knowledge Certificate 2009

Cisco Networking Academy CCNA 1&2 Certificate 2003

Colorado State University Professional Teacher Licensure License 2003

Buck Institute for Education Project-Based Curriculum Dev. Certificate 2002

Red Hat Global Learning Linux System Administration Certificate 2002

Intel Innovation in Education Intel Master Teacher Certificate 2001

Colorado State University Vocational Teacher Credential Credential 1998

Teaching 2003-Present:

Courses Taught

TECI 132 Introduction to IT Hardware and System

TECI 170 Introduction to Communications

TECI 180 Cisco Networking I

TECI 185 Cisco Networking II

TECI 240 VoIP Fundamentals

TECI 251 Leadership

TECI 260 Information Technology Hardware and System

TECI 265 Advanced IT Hardware and System Software

TECI 265L Advanced IT Hardware and System Software Laboratory

TECI 290 Certification:

TECI 292 Capstone in Technical Engineering Planning and Economics

Evidence of Continuous Improvement

Cisco Networking Academy CCNA Discovery Certificate 2010

VoIP Global Knowledge Certificate 2009

Innovative Materials/Activities

National Science Foundation - "Integrated Learning Systems, A Model Approach" Co-Principle Investigator. Awarded to Mesa State College/Western Colorado Community College - \$445,000

Supervision of Student Research/Project(s)

Encana Drill Cuttings Reclamation and Reuse

Developed and maintained the Linux, Apache, Moodle, PHP (LAMP) distance learning site for the NSF project.

## Scholarship and Creative Work, 2003-Present:

Conference Presentations

TeleCOOP of Colorado Invited Oral Presentations 1998-2003

CISCO Accademy CISCO I & II Instructor Certified 1998-2011

NSF/ATE CoPI Integrated Learning Systems 2006-2010

SCATE National Robotics Training Center 2009

Curriculum Development Consultant

AACC Annual Convention; Presenter, ILS 2009

#### Technical Reports

SCATE National Robotics Training Center 2009

Curriculum Development Report

## Grants (proposed or funded)

National Science Foundation - "Integrated Learning Systems, A Model Approach" Co-Principle Investigator. Awarded to Mesa State College/Western Colorado Community College - \$445,000

# Professional Memberships

Cisco Networking Academy

Association for Career and Technical Education (ACTE)

## Honors and Awards

Chamber of Commerce Teacher of the Year, 2001

#### Service 2003-Present:

Institutional

HLC Self evaluation subcommittee lead

#### Community

RMPBS Local Advisory Board

# Advising 2003-Present:

Institutional level

WCCC student advising sessions

# Department level

Students in department programs

# Prior Professional Experience Relevant to Current Position: (Include year(s) of employment, employer, position title and responsibilities)

Position Responsibilities

Year(s) of Employment Employer Position Title
Information Technologies International, Inc., ISP Grand Junction, CO

Owner, Chief Operating Officer (1993-1997)

- · Director of Internet Services from startup to sale of first successful ISP in Grand Junction.
- · Supervise all the stages involved with planning and production of multimedia programs and Internet Services, including technical support and customer service.
- · Actively teaching and training Internet communications through the use of digital technology.
- Principal Consultant for Information Management Systems. Principal Expert/Consultant for photographic and video production.

#### RUST Geotech, Grand Junction, CO

Manager, Reproduction and Audiovisual Services (1988-1993)

- · Responsible for all photographic, printing, audiovisual, and multimedia services for the U.S. Department of Energy Grand Junction Project Office.
- · Managed the facility's copy center production, managed 12 employees.
- · Responsible for budget and cost control.

# UC West Photo Lab, Colorado Springs, CO

General Manager (1985-1987)

- · Manager responsible for bringing the business to break-even in eight months.
- · Supervised the purchase and installation of equipment.
- · Responsible for employee hiring and training, responsible for inventory control, sales, marketing, and budgeting while managing 20 employees.

# Williams and Meyer Co., Art Form Communications, K&S Photo, Chicago, IL

General Manager/ Freelance Designer (1982-1985)

- · Managed a full-service photo laboratory with 80 employees.
- · Trained in Kodak E-6, C-41, and EP-2 processes.
- · Experienced designer on Dicomed D-38, Micro II IBM, Micro I Apple, and FCG Beacon computer graphic systems.

# Please record the number "items/events" you have listed above in the following categories.

If you specify items/events under "other," please provide an explanation/definition.

	Books		<b>Book Reviews</b>		Creative Publications
	Journal Articles		Performances		Patents
3	Conference Presentations	1	Exhibitions	3	Grants-funded and non-funded
	Sabbaticals		Fulbrights		<b>Book Chapters</b>
1	Other (related to discipline)	Cole	man Fellow		

# Appendix E Program Sheets



# 2012-2013 PETITION/PROGRAM SHEET

Degree: Associate of Applied Science Major: Technology Integration

Emphasis: Network/Telecommunication Technician

#### About This Emphasis . . .

Students enrolled in Technology Integration learn a multitude of skills to help prepare them to enter a variety of careers related to computer systems, computer system administration and networking, electronics, and telecommunications engineering. Students begin the program studying basic core classes including communications, DC/AC circuitry, information technology hardware and software, and Cisco Systems Network training.

In the second year, students select an area of emphasis from three choices – telecommunications engineering, network technician, or certified electronics technician. The course work in this associate of applied science program is aligned with national and international certifications including Cisco, A+/N+, CET, and Convergent Technology Professional (CTP), and Voice over Internet Protocol (VoIP). Program content has been structured to give a basic education to all graduates entering this field. Emphasis has been placed on providing a common core of training for all students due to the convergence of the communication industries.

Network Technician coursework teaches students valuable Internet technology skills, including networking, Web design, IT Essentials, Cabling, Java and UNIX. The curriculum covers a broad range of topics from basics on how to build a network to how to build a website and more complex IT concepts such as applying advanced troubleshooting tools.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/wccc/programs.html.

#### POLICIES:

- It is your responsibility to determine whether you have met the requirements for your degree. Please see the catalog for a complete list of graduation requirements.
- You must turn in your "Intent to Graduate" form to the Registrar's Office by September 15 if you plan to graduate the following May, and by February 15 if you plan to graduate the following December.
- 3. This program sheet must be submitted with your graduation planning sheet to your advisor during the semester prior to the semester of graduation, no later than October 1 for spring graduates, no later than March 1 for fall graduates.
- 4. Your advisor will sign and forward the Program Sheet and Graduation Planning Sheet to the Department Head for signature.
- Finally, the Department Head or the department administrative assistant will take the signed forms to the Registrar's Office. (Students cannot handle the forms once the advisor signs.)
- If your petition for graduation is denied, it will be your responsibility to reapply for graduation in a subsequent semester. Your "Intent to Graduate" does not automatically move to a later graduation date.
- NOTE: The semester before graduation, you may be required to take a Major Field Achievement Test (exit exam).

NAME:	STUDENT ID #	
LOCAL ADDRESS AND PHONE NUMBER:		
	( )	
I, (Signature), hereby con the Program Sheet. I further certify that the grade listed for those courses is currently enrolled and the courses which I complete next semester. I have indicate the course of t	the final course grade received except	for the courses in which I am
Signature of Advisor	Date	20
		20
Signature of Department Head	Date	
		20
Signature of Registrar	Date	
Associate of Applied Science: Technology Integration - Network/Telecommunics Posted 12/4/12	ation Technician 2012-201	3 Program Sheet, Page 1 of 3

Students should work closely with a faculty advisor when selecting and scheduling courses prior to registration.

Degree Requirements:	Course No Title	e Sem	hrs	Grade	Term/Trns
<ul> <li>Minimum of 60 semester hours total (A minimum of 16 taken at</li> </ul>					
CMU in no fewer than two semesters).	Social Sciences,	, Natural Science, Fine Arts	s or Hu	manities	, or
<ul> <li>2.00 cumulative GPA or higher in all CMU coursework and a "C"</li> </ul>	Selected Applie	d Studies Courses* (Minim	um 6 se	mester h	ours)
or better must be achieved in coursework toward major content			3		APPROXITION CO.
area.					
<ul> <li>Pre-collegiate courses (usually numbered below 100) cannot be</li> </ul>			3		
used for graduation.					R
<ul> <li>A student must follow the CMU graduation requirements either</li> </ul>	OTHER LOWE	ER DIVISION REQUIREM	MENTS		
from 1) the program sheet for the major in effect at the time the	Wellness (2 ser				
student officially declares a major; or 2) a program sheet for the	KINE 100 H	lealth and Wellness	1		
major approved for a year subsequent to the year during which the	KINA I		1		
student officially declares the major and is approved for the student				7.00	Alle
by the department head. Because a program may have requirements	ASSOCIATE O	OF APPLIED SCIENCE: T	ECHN	OLOGY	1
specific to the degree, the student should check with the faculty	INTEGRATION	N-NETWORK/TELECO	MMUN	ICATIO	N
advisor for additional criteria. It is the student's responsibility to	TECHNICIAN	REQUIREMENTS			
be aware of, and follow, all requirements for the degree being	(48 semester hou	urs)			
pursued. Any exceptions or substitutions must be approved by the	Core Classes				
student's faculty advisor and Department Head.		C Passive Circuits	3		Material Company
<ul> <li>When filling out the program sheet a course can be used only once.</li> </ul>		C Passive Circuits	3		
<ul> <li>See the "Undergraduate Graduation Requirements" in the catalog</li> </ul>	YOUR PRINCIPLE STATES STATES	ntro to IT Hardware and			BARRALL M
for additional graduation information.		ystem Software	3		
		ntro to Communications	3		V Alexandra and
GENERAL EDUCATION REQUIREMENTS (Minimum 15		isco Networking I	3	A DO	W
semester hours) See the current catalog for a list of courses that fulfill		isco Networking II	4		
the requirements below. If a course is on the general education list of		isco Networking III	4		22042500 15c/1sc/1-042*
options and a requirement for your major, you must use it to fulfill the		isco Networking IV	4		
major requirement and make a different selection within the general		formation Technology		AGAS	
education requirement.		ardware & System Software	3		Name and the state of the state
		dvanced IT Hardware &	3		
Course No Title Sem.hrs Grade Term/Trns		ystem Software			
		dvanced IT Hardware &	1		
Communication (6 semester hours)		ystem Software Lab			, , , , , , , , , , , , , , , , , , ,
ENGL 111 English Composition 3		ertification:	2		
ENGL 112 English Composition 3		apstone in Technical			
-OR-		ngineering and Economics	4		
ENGL 111 English Composition and 3		pplied Physics	3	Name and the same of the same	
SPCH 101 Interpersonal Communication or 3		ersonal and Professional			
SPCH 102 Speechmaking 3		eadership Development	2		
w sw	TECI 240 Vo	oIP Fundamentals	3		
Mathematics: (Minimum 3 semester hours)					
MATH 108 Technical Mathematics (or higher) 4					
	*Please see your ad	dvisor for requirements specific to	o this pro	gram.	

# SUGGESTED COURSE SEQUENCING FOR THE ASSOCIATE OF APPLIED SCIENCE WITH A MAJOR IN TECHNOLOGY INTEGRATION, EMPHASIS IN NETWORK/TELECOMMUNICATION TECHNICIAN

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with the assigned advisor and check the 2 year course matrix on the Colorado Mesa website for course availability.

First Semester		Hours	Second Semes	ster Ho	ours
MATH 108	Technical Mathematics	4	ENGL 111	English Composition	3
TECI 117	DC Passive Circuits	3	TECI 110	Applied Physics	3
TECI 132	Intro to IT Hardware & Sys Software	3	KINE 100	Health and Wellness	1
<b>TECI 170</b>	Introduction to Communications	3	TECI 118	AC Passive Circuits	3
TECI 180	Cisco Networking I	3	TECI 185	Cisco Networking II	4
	Control of	16	TECI 251	Personal/Professional Leadership Dev.	2
			KINA	Activity	1
					17

Third Semester		Hours	Fourth Semes	ster	Hours
ENGL 112	English Composition	3	General Educa	tion Soc/Beh. Sci, Humanities, or Speech	n 3
General Education	on Soc/Beh. Sci, Humanities, or Speech	3	TECI 235	Cisco Networking IV	4
TECI 230	Cisco Networking III	4	TECI 265	Adv. IT Hardware & Sys Software	3
TECI 240	VoIP Fundamentals	3	TECI 265L	Adv. IT Hardware & Sys Software La	ab I
TECI 260	Info Tech Hardware/System Software	: <u>3</u>	TECI 290	Certification:	2
	***************************************	16	TECI 292	Capstone in Tech Engineering/Econo.	mics 4
					17



#### 2012-2013 PETITION/PROGRAM SHEET

O Award: Technical Certificate
Program of Study: Technology Integration
Specialization: Telecommunications VoIP Technician

#### About This Certificate . . .

Students enrolled in Technology Integration learn a multitude of skills to help prepare them to enter a variety of careers related to computer systems, computer system administration and networking, electronics, and telecommunications engineering. Students begin the program studying basic core classes including communications, DC/AC circuitry, information technology hardware and software, and Cisco Systems Network training.

Students select an area of specialization from two choices – telecommunications VoIP technician or network technician. The coursework in this certificate is aligned with national and international certifications including Cisco, A+/N+, CET, and Convergent Technology Professional (CTP). Program content has been structured to give a basic education to all graduates entering this field. Emphasis has been placed on providing a common core of training for all students due to the convergence of the communication industries.

Telecommunications Technician coursework includes networking fundamentals, telephony networking installing and troubleshooting analog and digital phone lines, and fundamental concepts, standards and practices that combine telephony and data networks into convergence networks. This program is designed to help prepare students to work in technical positions in communication fields.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/wccc/programs.html

#### POLICIES:

- It is your responsibility to determine whether you have met the requirements for your degree. Please see the Catalog for a complete list of graduation requirements.
- You must turn in your "Intent to Graduate" form to the Registrar's Office by September 15 if you plan to graduate the following May, and by February 15 if you plan to graduate the following December.
- This program sheet must be submitted with your graduation planning sheet to your advisor during the semester prior to the semester of graduation, no later than October 1 for spring graduates, no later than March 1 for fall graduates.
- 4. Your advisor will sign and forward the Program Sheet and Graduation Planning Sheet to the Department Head for signature.
- Finally, the Department Head or the department administrative assistant will take the signed forms to the Registrar's Office. (Students cannot handle the forms once the advisor signs.)
- If your petition for graduation is denied, it will be your responsibility to reapply for graduation in a subsequent semester. Your "Intent to Graduate" does not automatically move to a later graduation date.
- 7. NOTE: The semester before graduation, you may be required to take a Major Field Achievement Test (exit exam).

NAME;		
LOCAL ADDRESS AND PHONE NUMBER:		
	( )	
on the Program Sheet. I further certify that the grad currently enrolled and the courses which I complete	, hereby certify that I have completed (or le listed for those courses is the final course grade received next semester. I have indicated the semester in which I will	except for the courses in which I am complete these courses.
Signature of Advisor	Date	20
•		20
Signature of Department Head	Date	
		20
Signature of Registrar	Date	

Technical Certificate: Technology Integration – Telecommunications VoIP Technician Posted 4/6/12

2012-2013 Page 1 of 2

#### Students should work closely with a faculty advisor when selecting and scheduling courses prior to registration.

#### Degree Requirements:

- 2.00 cumulative GPA or higher in all CMU coursework
- "C" or better in each course which comprises the area of emphasis or specialization.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Program sheets are for advising purposes only. Because a program may have requirements specific to the degree, check with your advisor for additional guidelines, including prerequisites, grade point averages, grades, exit examinations, and other expectations. It is the student's responsibility to be aware of, and follow, all guidelines for the degree being pursued. Any exceptions or substitutions must be approved by the faculty advisor and/or Department Head.
- See the "Undergraduate Graduation Requirements" in the catalog for additional graduation information.

	cations Technician (32 Ser				Course	No 7	Title	Sem.hrs	Grade	Term/Trns
See the current	catalog for a list of courses	that fulfill	the req	uirements						
below. If a cou	arse is on the general educat	tion list of c	ptions	and a	TECI I	80	Cisco Networking I	3		
requirement for	your major, you must use	it to fulfill t	he maje	10	TECI 1	85	Cisco Networking II	4		
requirement an	d make a different selection	within the	genera	education	TECI 2	30	Cisco Networking III	4		
requirement.					TECI 2	35	Cisco Networking IV	4		
					TECI 2	40	VoIP Fundamentals	3		
Course No Tit	le	Sem.hrs	Grade	Term/Trns	TECI 2	51	Personal & Professional			
							Leadership Development	2		
TECI 132	Intro to IT Hardware &				TECI 2	90	Certification:	2		
	System Software	3			UTEC 1	07	Math for Technology	4		
	Intro to Communications	3			(CO)(CO (195.028) (CT)		**************************************			-

# SUGGESTED COURSE SEQUENCING FOR THE TECHNICAL CERTIFICATE WITH A PROGRAM OF STUDY IN TECHNOLOGY INTEGRATION – SPECIALIZATION IN TELECOMMUNICATIONS TECHNICIAN

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with the assigned advisor and check the 2 year course matrix on the Colorado Mesa website for course availability.

First Semester		Hours	Second Semeste	r He	ours
UTEC 107	Math for Technology	4	TECI 251	Personal & Professional Leadership Dev	. 2
TECI 132	Intro to IT Hardware & Sys Software	3	TECI 230	Cisco Networking III	4
TECI 170	Introduction to Communications	3	TECI 235	Cisco Networking IV	4
TECI 180	Cisco Networking I	3	TECI 240	VolP Fundamentals	3
TECI 185	Cisco Networking II	4	TECI 290	Certification:	2
		17			15



#### 2012-2013 PETITION/PROGRAM SHEET

Award: Technical Certificate
Program of Study: Technology Integration
Specialization: Network Technician

#### About This Certificate . . .

Students enrolled in Technology Integration learn a multitude of skills to help prepare them to enter a variety of careers related to computer systems, computer system administration and networking, electronics, and telecommunications engineering. Students begin the program studying basic core classes including communications, DC/AC circuitry, information technology hardware and software, and Cisco Systems Network training.

Students select an area of specialization from two choices – telecommunications VoIP technician, or network technician. The coursework in this certificate is aligned with national and international certifications including Cisco, A+/N+, CET, and Convergent Technology Professional (CTP). Program content has been structured to give a basic education to all graduates entering this field. Emphasis has been placed on providing a common core of training for all students due to the convergence of the communication industries.

Network technician coursework teaches students valuable Internet technology skills, including networking, Web design, IT Essentials, Cabling, Java and UNIX. The curriculum covers a broad range of topics from basics on how to build a network to how to build a website and more complex IT concepts such as applying advanced troubleshooting tools.

For more information on what you can do with this major, go to http://www.coloradomesa.edu/wccc/programs.html

#### POLICIES:

- 1. It is your responsibility to determine whether you have met the requirements for your degree. Please see the Catalog for a complete list of graduation requirements.
- 2. You must turn in your "Intent to Graduate" form to the Registrar's Office by September 15 if you plan to graduate the following May, and by February 15 if you plan to graduate the following December.
- 3. This program sheet must be submitted with your graduation planning sheet to your advisor during the semester prior to the semester of graduation, no later than October 1 for spring graduates, no later than March 1 for fall graduates.
- 4. Your advisor will sign and forward the Program Sheet and Graduation Planning Sheet to the Department Head for signature.
- Finally, the Department Head or the department administrative assistant will take the signed forms to the Registrar's Office. (Students cannot handle the forms once the advisor signs.)
- If your petition for graduation is denied, it will be your responsibility to reapply for graduation in a subsequent semester. Your "Intent to Graduate" does not automatically move to a later graduation date.
- 7. NOTE: The semester before graduation, you may be required to take a Major Field Achievement Test (exit exam).

NAME:	STUDENT ID #					
LOCAL ADDRESS AND PHONE NUMBER:		The second secon				
	( )					
on the Program Sheet. I further certify that the grade	, hereby certify that I have completed (or will be listed for those courses is the final course grade received exceed ext semester. I have indicated the semester in which I will compare the semester in which I will comp	ept for the courses in which I am plete these courses.				
Signature of Advisor	Date	20				
Signature of Department Head	Date	20				
Digitature of Dopartiton 1200		20				
Signature of Registrar	Date	20				

Technical Certificate: Technology Integration – Network Technician Posted 4/6/12

2012-2013 Program Sheet, Page 1 of 2

#### Students should work closely with a faculty advisor when selecting and scheduling courses prior to registration.

#### Degree Requirements:

- 2.00 cumulative GPA or higher in all CMU coursework
- "C" or better in each course which comprises the area of emphasis or specialization.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Program sheets are for advising purposes only. Because a program may have requirements specific to the degree, check with your advisor for additional guidelines, including prerequisites, grade point averages, grades, exit examinations, and other expectations. It is the student's responsibility to be aware of, and follow, all guidelines for the degree being pursued. Any exceptions or substitutions must be approved by the faculty advisor and/or Department Head.
- · See the "Undergraduate Graduation Requirements" in the catalog for additional graduation information

Technical Certificate: Technology Inte Technician (33 Semester Hours)	gration - No	<u>etwork</u>	Course No	Title	Sem.hrs	Grade	Term/Trns
See the current catalog for a list of courses	that fulfill t	the requirements	TECI 185	Cisco Networking II	4		
below. If a course is on the general educa	tion list of o	ptions and a	TECI 230	Cisco Networking III	4		
requirement for your major, you must use	it to fulfill th	he major	TECI 235	Cisco Networking IV	4		
requirement and make a different selection	within the	general education	TECI 251	Personal & Professional		*	
requirement.				Leadership Development	2		
Andrew Control of the State States			TECI 260	Info Technology Hardware &	č	*****	
Course No Title	Sem.hrs	Grade Term/Trn	S	System Software	3		
			TECI 260L	Info Technology Hardware &	5		
TECI 132 Intro to IT Hardware &				System Software Lab	1		
System Software	3		TEC1 290	Certification:	2		
TECI 170 Intro to Communications	3		UTEC 107	Math for Technology	4	5.1	
TECI 180 Cisco Networking I	3			170			

# SUGGESTED COURSE SEQUENCING FOR THE TECHNICAL CERTIFICATE WITH A PROGRAM OF STUDY IN TECHNOLOGY INTEGRATION - SPECIALIZATION IN NETWORK TECHNICIAN

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with the assigned advisor and check the 2 year course matrix on the Colorado Mesa website for course availability.

First Semester		Hours	Second Semes	ter Ho	urs
UTEC 107	Math for Technology	4	TECI 251	Personal & Professional Leadership Dev.	2
TECI 132	Intro to IT Hardware & Sys Software	3	TECI 230	Cisco Networking III	4
TECI 170	Introduction to Communications	3	TECI 235	Cisco Networking IV	4
TECI 180	Cisco Networking I	3	TECI 260	Info Tech Hardware & System Software	3
TECI 185	Cisco Networking II	4	TECI 260L	Info Tech Hardware & Sys Software Lab	1
	333	17	<b>TECI 290</b>	Certification:	2
					16

# Western Colorado Community College Technology Integration- Program Review





Prepared For: Colorado Mesa University, Grand Junction, Colorado Prepared By: Dave Galley, Director of Engineering and Technology, Collin College, North Dallas, Texas

9/1/2013

#### Background of the Reviewer

Dave Galley is the Director of Engineering at Collin College, a two year institution located in North Dallas, Texas. During the past 5 years, he has turned around the Engineering Department which had approximately 500 student enrollments and was in danger of being shut down five years ago. Today, the department has 1700 student enrollments. It has been recognized throughout the Dallas/Fort Worth Metroplex (DFW) as a premier provider of two-year terminal engineering degrees (AAS) and as a generator of excellent "2 + 2" transfer students in the area of Engineering and Engineering Technology. During the turn around, the Cyber Security and Robotics Programs have earned local/regional acclaim for generating some of the area's best students for the DFW workforce. The department offers an excellent CCNA/CCNA Security/CCNP Cisco Academy, an acclaimed Microsoft Academy and an outstanding Computer Networking program. Currently, nearly 600 students participate in the Computer Networking area of the department. In addition, the Cyber Security program has grown from 3 students (5 years ago) to 230 student enrollments, at present, by staying on top of technological Megatrends in the DFW region. Through the use of strong Industrial Advisory Boards each of the programs in the Engineering Department prides itself on being on top of industry trends and, thereby, the department is able to fulfill industry needs for entry level employees. In addition, current industry employees seeking specific certifications or needing to further their academic training for their present jobs utilize the engineering department for their academic needs.

Professor Galley can be reached at <a href="mailto:dgalley@collin.edu">dgalley@collin.edu</a> or by phone at 972-377-1676.

#### Context of the Program

#### The Observed Intent of Colorado Mesa University

The intent of Colorado Mesa University (CMU) is clearly stated in this excerpt from the CMU website.

"Colorado Mesa University was founded, not as an end in itself, but to enable its students and the residents of Western Colorado to create their own future and not simply enter a future that's been created for them. Within its resource constraints, the university has an obligation to offer the highest quality academic programs and services to those whom it serves to enable them to prepare for their future. Because the environment in which it functions is in a constant state of change, the university, like its students, must recognize that growth and change are an integral part of our collective future. University stakeholders must embrace the notion that change and innovation within the institution should be the norm rather than a necessity in response to crises. In this context, then, our goals are built around the theme of "Achieving a Higher Degree." This theme reflects a key element of the university's strategic plan: the philosophy that as the institution adapts to its changing world, it does so with the overarching goal of supporting the residents of Western Colorado to achieve a higher degree of educational attainment by preparing students to function successfully in the future."

The intent of this program review is to assist in guiding the WCCC Technology Integration Program towards the achievement the fundamental "goal of supporting the residents of Western Colorado to achieve a higher degree of educational attainment by preparing students to function successfully in the future". In order to achieve this goal, an analysis of the WCCC Technology Integration Program goals against the current and future market conditions is essential.

#### The Observed Intent of Western Colorado Community College

The intent of Western Colorado Community College (WCCC) is clearly stated in this excerpt from the WCCC website.

"Western Colorado Community College is committed to student success. Whether you are interested in an associate degree, a certificate degree, customized industry training, or a change in your career options, we are here to serve you. Our faculty members are experts in their chosen field and have substantial formal education and training. Our excellent facility and classrooms contribute to a positive learning environment. Recommendations from business advisory committees help us keep all aspects of instruction current and relevant to today's employment needs. We offer valuable, hands-on instruction that equips you with real-world skills and lets you step into the career you want."

The intent of this program review is to assist in the guiding of the WCCC Technology Integration Program towards the achievement of the above stated WCCC goal of maintaining strong programs that fulfill existing and future industrial needs. As is well known, technology is always morphing and changing. Given the two-year nature of the student pipeline, Workforce Education programs must stay ahead of the technology Megatrends in order to produce relevant graduates.

#### The Current State of the Marketplace for Technology Integration

Technology Integration programs, in general, were popular in the period between 1998 and 2010. At this time in the technology lifecycle, many devices and components were discrete entities that required workers to deploy them, connect them and troubleshoot them. Throughout the period and beyond, increases in raw computing power, storage, virtualization, and cloud-based computing concepts have changed the market from what one would consider as non-integrated technology. Today, many

technology solutions come pre-packaged and integrated. Therefore, one must take a hard look at Technology Integration programs to determine which technologies are being integrated, what the student needs in terms of understanding the integration, and how the integration is being managed by the workforce employers and program stakeholders.

#### The Current State of the Marketplace for Information Technology/Cyber Security

Even through the economic challenges of the past three years, jobs in Information Technology have remained strong (see Figure I). The general Megatrend towards improvement of the efficiency of the production of goods and services has maintained this solid trend. Many companies that one does not think of as IT companies have substantial IT staffing requirements (e.g. hospitals, retail operations). As can be seen in Figure II, the professionals in the field are being well compensated in spite of the economic problems of the past three years. In general, these individuals themselves feel positive about the trends in the IT industry.

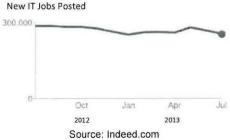


Figure I- Hiring Demand for IT Professionals - Hiring Trend 2012 - 2013

	N THE UPS			Given the current economy, do yo		
	2011	2012	2013		2012	2013
Andrew Control	4.852 respondents	4,337 respondents	4.251 respondents		4,327 respondents	4,251 respondent
Average increase in salary	1.5%	2.1%	2.3%	More secure than most other career paths	44%	47%
Average increase in bonus	0.3%	-1.1%	0.9%	As secure as most other career paths	43%	41%
Received a raise in the past year	52%	47%	57%	Less secure than most other career paths	13%	12%

Source: Computerworld.com

Figure II- IT Professionals - Salary/Satisfaction Survey 2011 - 2013

As the integration of technology has moved forward, whole technologies like Voice-Over-Internet-Protocol (VOIP), for example, have become commodities. Therefore, having an entire course dedicated to the technology behind VOIP, for example, is unnecessary and undesired. Students that desire to integrate information technology solutions rarely need printed circuit board level knowledge of systems and components. Students do need to understand how the components fundamentally behave and are configured. The need for students to understand the security of systems has increased dramatically. Primarily, this is due to the "connected nature" of our technology world and the ability of individuals to violate systems/databases through these connected pathways. Recognition of the Megatrend changes in technology during the past 15 years and the way that the concept of "technology integration" has changed are at the forefront of the recommendations in this program review.

These Megatrends have produced less demand (in most areas of the country) for two year workforce education in the disciplines of electronics and device/component level integration. Further, given the use of the new-found computing power, the size relational databases that have come into use and the advent of mobile device (or "bring-your-own-device") technology, Cyber Security has become a critical component of any Technology Integration solution. For reference, Figure III shows that details the Megatrend in hiring individuals with certifications and understanding of the Cyber Security landscape.

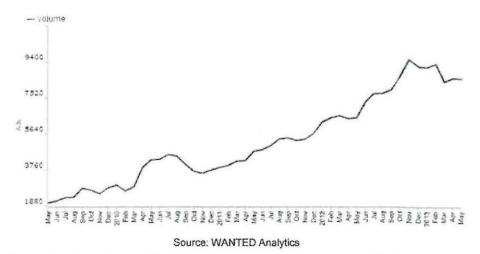


Figure III- Hiring Demand for Cyber Security Professionals - 4 Year Hiring Trend

If indeed the goal of WCCC is to produce students that can graduate and fulfill regional employers' needs, Megatrends like these are critical to benchmark Technology Integration programs against in today's marketplace. Further, all workforce programs have a fiduciary responsibility to re-tool professionals in the market that they serve. When executed properly, this responsibility results in industrial professionals coming back to the institution to upgrade their certifications and gain the knowledge that is required to perform or reform their current jobs. Recognizing the critical nature of the link that a workforce program has to a given company's competitive edge, the creation of programmatically based stakeholders in the community becomes reality. This reality results in the health and vitality not only of the workforce program, but of the relationship between the Technology Integration program and the Industrial Advisory Board for the program.

#### Overview of the Observed Greater Grand Junction Market

A cursory analysis of the job market within a 150 mile radius produced relatively few (i.e. 8 to 12) Technology Integration jobs/employers. On the other hand, an analysis of the need for two year CCNA Certified professionals and Cyber Security professionals found very different results. Throughout the period of March 2013 through August 2013, more than 150 jobs were posted by more than 59 regionally identified employers. This analysis was not exhaustive. However, given the methodology the analysis is very reliable. The analysis used DICE.COM, INDEED.COM, Monster.com, Google.com, and discussions with DOD contractors and NSA officials (personal private communications with the reviewer). During the next three to five year period, the number of jobs reported above should increase as existing businesses grow and as two Cyber Security defense contractors in Denver (along with the NSA) contemplate re/co-location on the Western Slope. The main reservation expressed by those businesses contacted had to do with the ability of WCCC (and other institutions) to support the entry level employment needs of said existing and potential business entities. In summary, as one looks to the potential of a program

redesigned to support IT and Cyber Security, the future is seemingly bright in terms of market demand. (As will be indicated later, Jack Yon's "restaurant impossible" year in which the lab was moved and the CCNA program was substantially stabilized is a major reason to believe that those involved can pull off the curriculum changes needed when given the necessary/required WCCC/CMU support.) Further, as one looks to the notion of completers, surely the number of completers (2011-2012: 9 students) can be increased to two or three times the current program output. Of extreme importance to note in the analysis moving forward is the notion of the pipeline represented by this program. In order to be able to successfully support the current and projected greater Grand Junction market, one must consider that there is a one year curriculum cycle and a two to three year student production cycle. Therefore, the conclusion of the analysis is that the necessary programmatic changes need to be executed promptly and continuously for the next three years in order to fulfill the fiduciary responsibility of WCCC to the constituent business base in the local/regional area.

#### Methodology Used to Complete the Program Review

Prior to the reviewer's visit, numerous emails were reviewed which included:

- 1. the Internal Program Review: Technology Integration
- 2. the textbooks used in the program
- 3. all course syllabi including learning objectives and assessment strategies
- 4. the faculty's opinions about the program and credentials of the faculty
- 5. the relationship between WCCC and CMU
- 6. a list of individuals that would meet with the reviewer during a two day visit (which was insisted on by the reviewer for completeness at no additional cost to CMU).

Further, the reviewer requested and was granted the following:

- 1. access to the students for interviews without the faculty present
- access to perform class visits which included a classroom observation of the two main faculty members in terms of quality of delivery and quality of instruction
- 3. access to the Industry Advisory Board in a lunch meeting with faculty and students present and access after the visit on a confidential one-on-one basis
- 4. access to the President of CMU for a frank discussion of resources that could be brought to bear directly over the next few years to support the Technology Integration program assuming that the changes recommended by the reviewer were initiated (Of great concern to this reviewer is the fact that non-funded mandates don't work.)
- 5. given the level of IT support required, access to the Director of Information Services (that assisted in lab relocation) to determine whether virtualized and private cloud solutions were in fact implementable (given institutional regulations regarding white hat hacking and the implementation of segregated virtual machine space).

Specific individuals that provided the reviewer answers to questions and provided the reviewer feedback were (in visited order):

- 1. Steve Werman, Assistant VP Academic Affairs, CMU
- 2. Jack Yon, Technology Integration Faculty
- 3. Class Observation/Student Interviews- Lower Division Course: TECI 170- Introduction to Telecommunications (BB188)
- 4. Class Observation/Student Interviews- Lower Division Course: TECI 185- CCNA 2 (BB 188)
- 5. Jack Yon, Technology Integration Faculty

- 6. Class Observation/Student Interviews- Upper Division Course TECI 235- CCNA 4 (BB188)
- 7. John Sluder, Department Head of Technology Integration and Technology Integration Faculty
- 8. Brigitte Sundermann, Vice President of WCCC (VPCCA)
- 9. Andrea Grich, Technology Integration Faculty
- 10. Lunch: TECI Students, Business Advisory Members, & Faculty
- 11. Sarah Cron, Director of Library Services, CMU
- 12. Suzanne Lay, Coordinator of Assessment, WCCC/CMU
- 13. President Foster
- 14. Jeremy Brown, Director of Information Services, WCCC/CMU
- 15. Steve Werman, Assistant VP Academic Affairs, CMU.

These individuals provided valuable insight into the mission of CMU and WCCC, student expectations, faculty expectations, and critical areas of the review including:

- 1. Retention and Completion Philosophy/Requirements
- 2. Faculty Credentialing Expectations
- 3. Support Offered by CMU for WCCC
- 4. Use of the Library by WCCC Students
- 5. Perceptions of WCCC Student Connectivity to CMU
- Perspectives on Workforce Education and Perceptions of the Value of Area Employers as Program Stakeholders at WCCC.

#### Observations and Recommendations for the Future Success of the Program

#### The Observed State of the Technology Integration Program

The Technology Integration Program is technically behind best practices for programs of its type. The shining exception to this statement is the CCNA lab that has been configured by Jack Yon. Based on the market analysis mentioned in previous sections, in this reviewer's opinion, the character of the program needs to be refocused on the current noted strength of the program, Information Technology (IT). In addition, in order to follow the current industry Megatrends the program needs to further be refined to focus on the areas of Cyber Security and Server Technology.

The existing Technology Integration AAS Degree is shown below:

### SUGGESTED COURSE SEQUENCING FOR THE ASSOCIATE OF APPLIED SCIENCE WITH A MAJOR IN TECHNOLOGY INTEGRATION, EMPHASIS IN NETWORK/TELECOMMUNICATION TECHNICIAN

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with the assigned advisor and check the 2 year course matrix on the Colorado Mesa website for course availability.

First Semeste	Ľ.	Hours	Second Seme	ster Hou
MATH 108	Technical Mathematics	4	ENGL 111	English Composition
TEC1 117	DC Passive Circuits	3	TEC1 110	Applied Physics
TEC1 132	Intro to IT Hardware & Sys Software	3	KINE 100	Health and Wellness
TEC1 170	Introduction to Communications	3	TECI 118	AC Passive Circuits
TEC1 180	Cisco Networking I	.3	TECI 185	Cisco Networking II
		10	TECI 251	Personal Professional Leadership Dev.
			KINA	Activity
				1000000000
Third Semest	er	Hours	Fourth Seme	ster Hou
ENGL 112	English Composition	3		ation See/Beh. Sci. Humanities, or Speech
General Educa	tion Soc/Beh, Sci. Humanities, or Speech	3	TECI 235	Cisco Networking IV
TECI 230	Cisen Networking III	18	TECT 265	Adv. IT Hardware & Sys Software
TECT 240	VolP Fandamentals	3	TEC1 2651	Adv. IT Hardware & Sys Software Lab
TEC1 260	Info Tech Hardware System Software	3	TECI 290	Certification:
		16	TEC1 292	Capstone in Tech Engineering Economics

In order to be efficient in the discussion, the review will focus on the AAS Degree and will assume extrapolations to the Certificates in the program.

#### The Observed State of Instruction and Facilities for Instruction

The Technology Integration program has two main full time instructors, John Sluder and Jack Yon. Professor Sluder functions as the Department Head and has numerous other responsibilities. Professor Yon has the main Cisco CCNA and Computer Networking curricular responsibilities. As part of the program review, the reviewer observed two of Professor Yon's classes and one of Professor Sluder's classes. Each of the observations occurred after the objectives of the class to be observed were discussed (see Attachment #2). During the observation, a classroom evaluation was conducted (see Attachment #3). Although the details of the written evaluation were considered confidential between the individual professor and the reviewer, the reviewer found each professor to be capable, confident, and an excellent overall professor. Each managed the classroom well and achieved the learning objectives by the close of the class period. It was obvious that each professor cared deeply for their students, had an excellent grasp of the material covered, and was highly respected by the students. The students showed this respect by their attention and engagement, excellent questions and, generally, a very high professional decorum in the classes observed.

As shown in the photo below, the classroom (the new lab) was well maintained and the Cisco Equipment was state-of-the-art.



In terms of the rest of the equipment, the reviewer found it to be behind the expectation of best practice. Some of it (shown in the next photo) was appropriate to the current state of the program, but will need to be reconsidered moving forward. As indicated earlier, the program has a history. The program has just upgraded to these facilities from the facilities shown in the next two photos. The task of upgrading came at the same time that Cisco was changing its curriculum and new routers and switches had been donated to the department. With help from the IT staff (Jeremy Brown) and others, Professor Yon achieved the impossible (he calls it "restaurant impossible") and put the lab together. He is to be commended!



**Previous Generation Bench Equipment** 





Older Lab (Housed in a Non-Conditioned Area)

In summary, the new lab will be adequate for the curricular changes that are required. New equipment will need to be procured or donated. It is recommended that, in order to support the new equipment, a plan be in place that allows for the basic lab maintenance and set-ups to be done by one or two paid/qualified student assistants. The below photo shows the area of the NOC where topologies could be maintained by a qualified student, thus giving the student invaluable experience and lowering the burden on the faculty.



#### The Observed State of the Faculty and Faculty Credentials

The state of the faculty which was observed and the credentialing of the faculty proved to be of concern.

Prior to this discussion, it is important to note that (due to scheduling) I did not meet Professor Carolyn Ferreira-Lillo. I did meet with a part-time faculty member, Andrea Grych. She was charming and appeared competent from our 30 minute meeting.

As I indicated previously, the two faculty members that I met with numerous times and described the program to me were outstanding instructors. Their classroom skills, pedagogical approach, technical expertise and care for their students was viewed by this reviewer to be outstanding.

However, their credentials are of concern to this reviewer (and to them). Jack Yon has an AAS degree and a prestigious Cisco CCNA Industry Certification. He is a Cisco Certified Instructor. While this is the minimum acceptable set of credentials nationally accepted to teach at a community college (i.e. an AAS and an Area Specific Certification), it is generally accepted that a Bachelor's degree is the minimum qualification to teach AAS students in practice. In Professor Sluder's case, he does not hold a college degree. At present, he is working on a Bachelor's degree at CMU. This is, of course, a great concern.

As part of the review process, each professor was quizzed about this concern. Each instructor indicated that he would like to go back and finish a four year degree (Yon) or that he was going to school in his limited free personal time to complete his four year degree (Sluder). During these discussions, it became clear that other problems exist in the department that are in competition with either instructor being successful in pursuit of a four year degree. I asked them to discuss what their last year was like and how they had spent their time both on-campus and off-campus. It became obvious that these extremely dedicated professors have essentially been working themselves to burnout due to the requirements placed on their time by their programs and the lack of resources allocated to them by WCCC and CMU. Professor Yon indicated that he would enjoy pursuing a four year degree, but that he too had been working eighty hour weeks and did not have the time to take care of his credentials and his students at the same time. As was clear from my encounters with both men, each chose their students welfare and teaching/advising over their own health and/or credentialing concerns.

Based on this observation, it will be recommended (in the conclusion section) that another fulltime faculty member be hired as soon as possible to help with each of their course loads and a course release be given to each of them in order to allow them to pursue/complete the required 4 year degree in a timely fashion. This recommendation will be noted for the good of WCCC and CMU, as well as these two fine dedicated men.

Further, it is recommended that Professor Sluder be relieved of some of his highly diverse departmental responsibilities. As a department chair, he is responsible for far too many diverse programs. He is spread too thin and, as such, he cannot support the needs of each program sufficiently. It is <u>unconscionable</u> that a teaching professor be responsible for so many diverse areas. Surely, WCCC and CMU do not want set this kind of unhealthy precedent. A matrix of his responsibilities is listed in the table on the next page.

Western Colorado Community College (WCCC)

Business, Applied Science, and Information Services (BASIS) Department

Program	Cluster
Office Administration	Business and Public Administration
Marketing Education	Business and Fubile Administration
Agriculture	
Process Technology	Ag, Natural Resources, and Energy
Water Quality	
Graphics	
Media	STEM, Arts, Design, and IT
Animation	STEW, Arts, Design, and Tr
Technology Integration	

A further complication to Professor Sluder's situation is his budget (shown below). He indicates that this is what he has to manage the capital equipment in these technology programs. In the majority of the institutions that this reviewer is familiar with (including his own), these funds do not rise to the level of capital expenditures or repair and maintenance, these funds are at the level of classroom supplies.

BASIS Five-Year Budget							
	2011-2012	2012-2013					
Program Supplies			Cluster Supplies				
Office Administration	2,000	2,000	D				
Marketing Education	2,000	2,000	Business and Public Administration				
Agriculture	0	3,000					
Process Technology	3,500	3,500	Ag, Natural Resources, and Energy				
Water Quality	2,000	2,000	5,				
Graphics	2,000	2,000					
Media	2,500	2,500					
Animation	2,000	2,000	STEM, Arts, Design, and IT				
Technology Integration	3,500	3,500					

In order to take the department to the next level as is recommended by this review, budgets will have to be reviewed and curriculum development time will be needed for the faculty. This reviewer does not see how curriculum development time will be possible for Professors Yon and Sluder without the hiring of at least one new full time faculty member to balance the load. Finally, in order to achieve the new technology requirements, each faculty member will need to pursue the professional development. This constitutes attendance at a minimum of one high-level conference per year in order stay abreast of new technology trends. This time is not available under the current situation.

In summary, the state of the faculty needs to be addressed in order to consider the future proposed curriculum and equipment changes.

#### The Observed State of the Student Population

During the course of the program review, the reviewer had the opportunity to interview 13 students one-on-one and three class sections together, as a class. In all cases, the student interviews were done without the faculty present. The observed state of the students in the program was very good. The students are very supportive of their professors, in particular Professor Yon and Professor Sluder.

The students wanted to make me aware of how overworked they felt the faculty had become during the past few years. They expressed their concern for the well-being of the faculty. Specifically, the students worried that Professor Sluder would have health problems (they did not know about the mini-strokes) and that one day Professor Yon would just quit and use his CCNA to work in industry (or instruct in industry).

In terms of the curriculum, the students voiced the following concerns:

- 1. The program is technically behind.
- 2. The Technology Integration Degree is too "befuddled" or "general" as it is presently configured to produce for them marketable skills for the job market.
- 3. CCNA Security is viewed as a needed course after CCNA 4 and before graduation.
- 4. Security + is a credential that was needed as a part of the program.
- 5. Local businesses need to be made aware of the Technology Integration Program at WCCC.
- 6. The Advisory Board is too small. Professor Yon does not have time to recruit new Advisory Board members and advertise the program.
- 7. Microsoft Server Technology should go past Active Directory concepts.
- 8. Internships are needed to support after college student employment.
- 9. The program does not include any discussion of Virtualized Machines, Storage Technology, or Cloud Computing concepts.

In the eye of the reviewer, these comments were in-line with the new direction that the program should take and were pretty much right on target. The students clearly had a good idea of what they would need to bring from WCCC as they enter the marketplace.

As a note of concern, <u>unanimously</u>, the students felt completely disconnected from CMU. They felt that it was "the shining city on the hill" and that they were at best the "orphaned step-child." This was so pervasive a feeling that the administrations of WCCC and CMU must to address this issue in the near future. As it was outside of the scope of this review, only the recommendation to consider that a potential problem exists is made by this reviewer.

#### The Observed State of the Health, Quality and Stakeholdership of the Industrial Advisory Board

Given the importance of this workforce program, the Industrial Advisory Board of the Technology Integration program must be very competent in the subject area and offer strong leadership. Shown below are the current members of the Advisory Board.

Bob Eggen St. Mary's Hospital
Bob Byars St. Mary's Hospital
Mark Swain Networks Unlimited
Preston Thornburg Networks Unlimited

Merrill Kiddle comCables
Odus Harwood MSCVSD#51

Richard White Sr. City of Grand Junction

Todd Goro Hill Top Ryan Lee IT Solutions

#### WCCC Technology Integration- Current Advisory Board

In Attachment #4, the reviewer has attached minutes of the Industrial Advisory Board meeting for 11/15/2012. This was the last advisory meeting prior to the reviewer's visit. As can be seen from the notes, some of the same concerns that the reviewer has noted in this review are noted by the Industrial Advisory Board.

The reviewer was able to meet with members of the Industrial Advisory Board at lunch on the second day of the visit and was allowed to contact them (privately) after the visit. A few points became clear from these interactions.

- 1. The board is well intentioned and has a degree of passion about the program.
- There are not enough local/regional businesses represented.
   (Professor Yon stated that he needs release time to build a stronger and larger board. This reviewer is in complete agreement.)
- 3. As students are allowed to participate in board meetings, the reviewer recommends caution. Student participation is good at some level. However, the reviewer found that at lunch the students did not treat the Industrial Advisory Board members with the decorum that allowed the Board member's ideas to dominate the meeting. This can be a problem as there is a fixed amount of time for each meeting. The Industrial Advisory Board member has taken time out of their business day to serve the institution and should be engaged with the utmost respect. (The reviewer notes that this was a lunch meeting and, possibly, not a good representation of standard levels of decorum.)

Although the reviewer found no fault with members of the Industrial Advisory Board during the lunch, the reviewer is concerned about the level of passion and ability to advise/execute on the present board. If the recommendations of this review are to be executed, the Industrial Advisory Board must be a group of engaged, energetic, passionate stakeholders with "skin in the game." By that it is meant that they must help craft and execute a viable transition/implementation plan for the program which results in their businesses hiring WCCC graduating students. It was not clear to this reviewer that the present membership had the appropriate energy level to carry forward the task at hand. Hopefully, the new recruits that Professor Yon spoke of will be able to fulfill this need/requirement moving forward.

#### Recommendations for Substantive Curriculum Changes

As stated earlier, the Technology Integration Program at WCCC has numerous challenges ahead. Substantive Curriculum changes are required to bring the program to where it needs to be in the context of the technology trends today. During the reviewer's visit, the reviewer confirmed for Professors Yon and Sluder their thoughts for what needed to be changed, the inputs from the Industrial Advisory Board as to what local business' needs were, and what has worked at the reviewer's home institution. While it is beyond the scope of this review to help reconfigure the program (that is best left to the local faculty), discussions of future program direction were engaged. The reviewer offered to help in that process by providing insight in to what had worked at his home institution, if needed.

There are a number of important inputs from the reviewer that were discussed during the review:

- 1. The program should move towards Information Technology (IT) and Cyber Security.
- 2. There is no need for Electronics or Circuits courses in the program as it moves towards IT.
- 3. The VOIP course should be removed (as VOIP is now a purchased commodity).
- 4. In order for the students to have the ability to take higher level IT Server and Cyber Security courses, students should get their CCNA certification courses completed in the first year. This can and should be accomplished by using an eight week express format that would allow for CCNA 1 and CCNA 2 to be taken in eight week increments during the Fall Semester. During the Spring Semester, students would complete CCNA 3 and CCNA 4 in the same eight week format. At this point, students would have a year left in the program in which they could work on higher level course work. At present, CCNA 4 is one of the last courses taken in the degree plan which limits the level of the curriculum that can be taught in the upper level courses.
- 5. In that there is not much direct Math content in the new proposed area of focus, the specific Math component of the program should be reviewed.
- Curriculum concept maps should be drawn up for each course to ensure that instructional time is used in teaching new concepts and that minimal and necessary concept overlap occurs between courses.
- 7. The updated program should focus on getting students the certifications that they need from the DOD 8570 triangle. Obviously, this implies that there must be A+ (or Cisco based ITE), Network+, and Security + training early in the coursework. The students should be highly encouraged to take and pass the certification exams in the summer of the first year of the program.
- 8. By following the above approach, the second year of the program is left open to work through all of the new megatrend course work. This would include, but not be limited to:
  - a. Microsoft Server 2008 or 2012 Technology
  - b. Linux
  - Advanced Cyber Security
    - i. Incident Response
    - ii. Firewall Technology
    - iii. Forensics
    - iv. Effective Security Management Practices
  - d. CCNP
  - e. CCNA Security
  - f. Cloud Essentials or Cloud +
  - g. Virtualization (VM Ware)
  - h. Cloud Based (SANS) Storage

## Recommendations for Class Scheduling Changes/Format Changes That Will Build Upon Existing Strengths and Aid in Recruiting New Student Populations

During discussion with the students and faculty, course scheduling came to light as a potential area of improvement. In order to attract new student populations, a number of suggestions are made:

- 1. Incorporate evening classes so that working students can participate in greater numbers than at present.
- Offer classes in two eight week semesters within the 16 week regular semester, thereby, making
  it possible to get a CCNA Certification in <u>less than one year</u> instead of the two year pathway at
  present.
- Offer classes that are taught completely on-line, thereby allowing students to take more classes simultaneously with the same in class time commitment.
- 4. Teach Hybrid classes (50% face-to-face/ 50% on-line). In this case, the lab component could be completed during the class time.
- 5. As the updated program is put in place, consideration should be given to "Flipped Classes" and the advantages for students that they allow.
- 6. The program should aggressively reach into the high schools with Technical Dual Credit courses that show the student community the advantages of coming to WCCC.

While not all of these approaches can be done at once, it is the recommendation of the reviewer that students be polled as to which scheduling idea might be best for their employment schedule.

#### Conclusions of the Reviewer

The Technology Integration program has been reviewed by the reviewer in as specific a way as possible within the time constraints. In the face of the Megatrends noted at the outset, the program can be updated and upgraded to fulfill the needs of business. The faculty was found to be energetic and competent (albeit needing to fix some credentialing issues). Further, as was discussed in detail, the physical state of the faculty is a concern. Clearly, based on the observed state of the faculty members, it is strongly recommended that two additional full-time faculty members be hired to absorb part of the load carried by Professors Yon and Sluder. These two new faculty members would need to be responsible for an appropriate portion of the new curriculum development required. Finally, by adding these two faculty members, it becomes possible to strongly recommend that Professors Yon and Sluder be given course release time to pursue their respective four year degrees. The students were found to be engaged and knowledgeable in terms of what industry needs. The program's Industrial Advisory Board was found to have a small, but stable base on which to build the kind of board that is required moving forward. While some equipment upgrades are necessary during the course of this transition, these upgrades should be manageable if the program is given sufficient resources by CMU/WCCC.

In summation, as the reviewer, I find that the basic building blocks are in place for a lively program with a three or four fold (or more) increase in the student population. It is the opinion of the reviewer that this is not only possible, but likely if the recommendations of this review are adopted.



		Check the	appropriate s	Provide explanation if not	
<b>Program Review Element</b>	Agree	Not Agree	Unable to Evaluate	Not Applicable	agree with element and/or why unable to evaluate
The program's self-study is a realistic and accurate appraisal of the program.	Yes				The self-study shows accurately where the program is at present. It shows the limitations in terms of faculty, equipment and plans toward future direction. Further, it shows the tremendous efforts of those involved to move the program forward against formidable challenges.
The program's mission and its contributions are consistent with the institution's role and mission and its strategic goals.	Yes				The program is technically behind. However, the way that the program is executed and taught is consistent with the institution's role and mission and its strategic goals.
The program's goals are being met.	Yes				As shared with this reviewer, the goals of the program are being met. The new class laboratory environment has allowed for the immediate goals to be met. Changes will be needed in the future to ensure that future industry based goals can be attained.
The curriculum is appropriate to the breadth, depth, and level of the discipline.		No			The curriculum must be updated. Only the Cisco CCNA curriculum is at the industry standard level (Prof. Yon).
The curriculum is current, follows best practices, and/or adheres to the professional standards of the discipline.		No			The curriculum must be updated. Only the Cisco CCNA curriculum is at the industry standard level (Prof. Yon).

Student demand/enrollment is at an	1	No		The number of completers is low
expected level in the context of the		140		and could be easily doubled (or
institution and program's role and				more) if program improvements
mission.				are made. It is difficult to
mission.				"make" classes with the limited
	į			number of students in the
			1	program. On-line classes and
				scheduling changes must be
				considered that favor the
	163			student's work schedules.
				Students confirmed to this
	Ī			reviewer that they would take
				more classes per student if
				schedules were different and if
				on-line courses existed. In
		1		addition, the students indicated
				that there is a new student
				population source. Night classes
				were said to attract new students
				that could help in terms of
				student numbers in the program.
				We discussed "Hybrid" (50 %
				F2F/50% Web) and "Flipped
				Classes" that would have the
				lectures on-line and the class
				The state of the s
				time as lab time. The "Flipped-
				Classes" only take 50% of the
mi la de la	V			lab capacity.
The program's teaching-learning	Yes			The new laboratory room is very
environment fosters success of the				nice. Student's commented on
program's students.				this during interviews. However,
F8				given the single lab space. It is
				hard or nearly impossible to run
				simultaneous classes. A
				lecture/lab approach is
				suggested.
Program faculty members are		No		Generally, faculty teaching at an
appropriately credentialed.				Associate's Degree level should
St. 20 150 150				have a Bachelor's Degree. When
				quizzed about this requirement
				faculty were willing to get the
				additional credentials, but were
				stretched so thin that they did
				not know how they would find
				the time. (Later, I learned that
				Professor Sluder was pursuing a
				Bachelor's Degree during his
				limited personal time.)
				minted personal time.)

Program faculty members actively contribute to scholarship, service and advising.	Yes		Given the overwhelming time requirements required of the faculty, it was hard to see how they could be so involved with their students. During student interviews, it became clear that the faculty finds the (personal) time to help each student. This is true dedication and is commendable.
Campus facilities meet the program's needs.	Yes		At present, the needs are met. With the recommended program upgrades, resources will need to be committed.
Equipment meets the program's needs.		No	The equipment must be updated. Only the Cisco CCNA equipment is at the industry standard level (Jack Yon).
Instructional technology meets the program's needs.	Yes		It was adequate.
Current library resources meet the program's needs.	Yes		The students do not use the library. They use many on-line resources. With the recommended curriculum updates, resources will need to be purchased. During meetings with the library staff, they committed that these resources will be forthcoming upon request.
Student learning outcomes are appropriate to the discipline, clearly stated, measurable, and assessed.	Yes		The curriculum needs to be updated in order for the learning outcomes to be consistent with the state of the discipline.  Examples of Assessments were reviewed. The reviewed Assessments were clearly stated and measureable.
Program faculty members are involved in on-going assessment efforts.	Yes		Absolutely.
Program faculty members analyze student learning outcome data and program effectiveness to foster continuous improvement.	Yes		As stated, the faculty is short on staffing and over-burdened. To the extent that they have the time, they discussed continuous improvement ideas. Some of those ideas have been implemented, but this is a time-limited effort.

The program's articulation of its strengths and challenges is accurate/appropriate and integral to its future planning.	Yes	The faculty was very open about strengths and challenges. In addition, they were open about their concerns in updating their curriculum as required by the industry with the sparse resources that they have, at
		present.

Attachment #2- Classroom Expectations Form

#### Collin College

#### STEM Division

NOTE: Please provide me this completed form prior to the day and time of your class visit.

#### PREPARATION FOR CLASS VISITATION

INSTRUCTOR'S N	JAME	- In-		4
COURSE		SEC	CAMPUS	
DAY	TIME		ROOM	
TOPIC: Please desc	cribe briefly the top	oic for that day.		
1. What are the goa	ls for the class that	I will observe?		
2. What are your pla	ans for achieving th	hese goals?		
3. What teaching/le	arning activities wi	Il take place?		
Revised 9/26/11				Dave Galley

- 4. What have the students been asked to do in preparation for this class?
- 5. Will this class be typical of your teaching style? If not, why?
- 6. What would you like me to focus on during the observation?

Attachment #3- Classroom Observation Form

## **COLLIN COLLEGE EVALUATION FORM FOR CLASSROOM VISIT** FACULTY NAME: CLASS/SECTION: TIME: CAMPUS: DATE OF VISIT: ROOM: EVALUATOR: EVALUATE THE INSTRUCTOR BASED ON THE FOUR CRITERIA LISTED BELOW BY DESCRIBING YOUR OBSERVATIONS OF THEIR CLASSROOM PRESENTATION/ACTIVITIES CONDUCTED DURING YOUR VISIT. CRITERION 1. PREPARATION: THE INSTRUCTOR PROVIDED EXAMPLES TO REINFORCE CONCEPTS, PROVIDED CLEAR ANSWERS TO STUDENTS' QUESTIONS, EXPANDED UPON THE TEXTBOOK; CRITERION 2. CONTENT: THE INSTRUCTOR USED APPROPRIATE MATERIALS, PREVIEWED UPCOMING COURSE MATERIAL, PRESENTED IN A LOGICAL SEQUENCE; CRITERION 3. METHODOLOGY: THE INSTRUCTOR RESPECTED THE STUDENTS, PRESENTED ENTHUSIASTICALLY, USED VARIETY OF PRESENTATION METHODS, AND MOVED FROM PODIUM; CRITERION 4. STUDENT INVOLVEMENT: THE INSTRUCTOR SOLICITED QUESTIONS, COMMENTS AND EXAMPLES, PROVIDED OPPORTUNITIES FOR GROUP OR INDIVIDUAL DISCUSSION ON THE MATERIAL, AND STUDENTS PARTICIPATED IN EXPERIENTIAL ACTIVITIES. THE INSTRUCTOR WAS PREPARED FOR CLASS. THE CONTENT OF THE CLASS SESSION WAS APPROPRIATE FOR ACHIEVING INSTRUCTIONAL GOALS. THE INSTRUCTOR EFFECTIVELY PRESENTED THE MATERIAL.

4. The s	FUDENTS WERE APPROPRIATELY INVOLVED IN THE LEARNING PROCESS.
Evaluator's	S COMMENTS/RECOMMENDATIONS; (PLEASE USE REVERSE SIDE IF ADDITIONAL SPACE IS
Instructor'	S COMMENTS/RESPONSE:
	CHONATURES
	SIGNATURES
Instructor	DATE
EVALUATOR	DATE
DIVISION DEA	DATE

Attachment #4- November 2012 Advisory Board Minutes



2508 Blichmann Avenue • Grand Junction, CO 81505-970.255 2600 (o) • 970 255 2626 (f) • 1.888.455.;

#### **Technology Integration (TECI) Advisory Committee**

Meeting Minutes

11/15/2012

Present: Bob Byars, St. Mary's Merrill Kiddle, ComCables Ryan Lee, IT Solutions Cody ???, Crum

> Faculty: John Sluder, TECI Jack Yon, TECI Carolyn Lillo, PROS

Students: John Loibl Jennifer Ross Travus James

Next meeting: TBA,,

#### I. Announcements

Student Showcase(s), Student Case study presentations in December ( $2^{nd}$  week), Presentations in Spring 2013, another meeting in the spring time.

#### II. Discussion

- > Certifications:
- Student Internships:
- Field Trip Possibilities':
- Real world experience options:
- Four of the NOC and Classroom facilities:
- Future needs for change to curriculum
- Needs for technical competencies
- VoIP and Whether Cisco Call manager was viable
- > Donations of equipment materials, etc...
- Smart Residential systems
- Wireless security
- New technologies in B & I
- Wireless bio-equipment becoming more prevalent.

#### III. Roundtable

Skills needed by prospective employees:
Strong knowledge of wireless technology
Knowledge of Cloud computing
Understanding of basic electronics
Knowledge of Security
Ability to run cabling
Troubleshooting skills a must
Merging of IT and Process Tech in current business environment

Prospective employers looking for; (local area)
A+ Certification
Net+ Certification
Convergence
Not as much emphasis on CCNA in this business and industry local area

GittimasiyoniAppOrtest coal/Temp/XPgrpmortiAC Meeting Minutes 11-15-12\_1 docx