



Post-Secondary & Workforce Readiness

Career & Technical Education

Scott Stump
Colorado Community College System
Career & Technical Education

21st Century Career Technical Education



COLORADO
Career & Technical
Education

For
Real

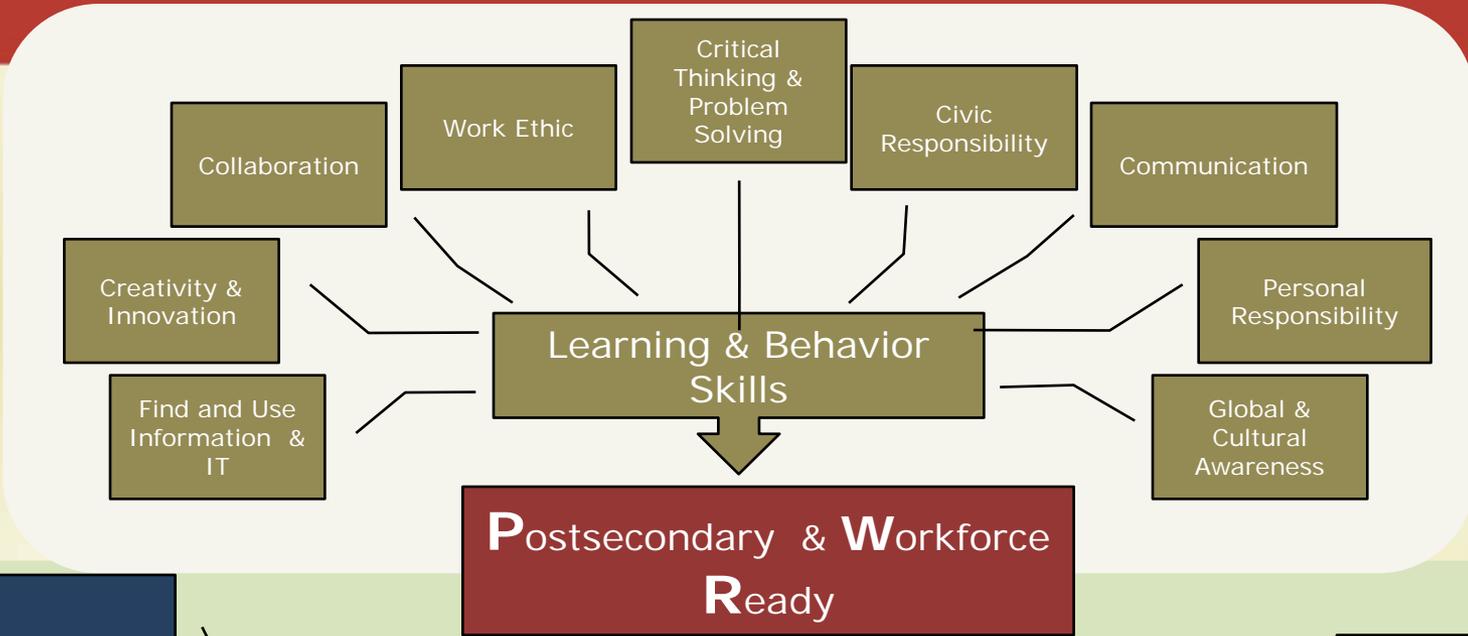
Scott Stump

Dean of Career & Technical Education, CCCS



For Real





Social Studies & Social Sciences

- Social, cultural, historical concepts
- Interpret sources, evaluate evidence, build conceptual frameworks
- Civic responsibility & political process
- Interpret from a global perspective

Arts & Humanities

- Shaping of culture
- Instruments of social & political thought
- Awareness of innovators

Mathematical Sciences

- Be quantitatively literate
- Algebraic & geometric principles
- Problem solving
- Data & statistics

Science

- Scientific method
- Draw conclusions
- Core concepts of disciplines
- Scientific concepts can be challenged

Literacy

- Read with understanding & write coherently
- Employ English properly & fluently
- Use logic & rhetoric
- Access primary & secondary sources

Content Knowledge



Joanna works in an office. Her computer is a stand-alone system. What is a stand-alone computer system?

It doesn't come with
a chair



Why would living close to a mobile phone mast cause ill health?

You might walk into it.



Steve is driving his car. He is travelling at 60 feet/second and the speed limit is 40 mph. Is Steve speeding?

He could find out by checking his speedometer.



Real Purpose

- Vision: Colorado CTE delivers proven pathways to lifelong career success!
- Mission: CTE ensures a thriving Colorado economy by providing relevant and rigorous education that is **connected, responsive** and **real**.



Colorado CTE Snapshot: Secondary Programs

- 112,400+ student enrollments
 - 1,200+ programs in 160 school districts
- One out of every three Colorado high school students is gaining valuable experiences through CTE (38% and increasing)
- 94% of respondents who completed secondary CTE programs were employed in related jobs and/or continuing their education one year later



Colorado CTE Snapshot: Postsecondary Programs

- 34,600 student enrollments
 - 600 programs delivered via
 - 13 system community colleges
 - 2 local district colleges
 - 1 four-year college
 - 3 area technical colleges
 - State correctional facilities



Statutory Authority

Coordination of K-14 Career Education System

- Approval and review of programs
- Distribution of State CTA Funds
- Distribution of Federal Perkins Funds
- Defining Instructor Requirements



Colorado's Pipeline

100

In Colorado,
for every 100 ninth
grade students

70

students graduate
from high school
four years later

44

students
immediately
enter college

26

students are still
enrolled in their
second year

22

students graduate with either an associate's
degree within three years or a bachelor's
degree within six years

Source: NCES 2006



Vocational Education vs. Career & Technical Education

Vocational Education "Then"	Career and Technical Education "Now"
For <i>Some</i> Students	For <i>All</i> Students
For a Few <i>Jobs</i>	For <i>All Careers</i>
6 to 7 "Program Areas"	17 Clusters – 81 Pathways
In Lieu of Academics	Aligns and Supports Academics
High School Focused	High School and College Partnerships



Colorado Career Cluster Model



COLORADO COMMUNITY COLLEGE SYSTEM

Management and Administration

- Administrative Services
- Business Information Technology
- Corporate/General Management
- Human Resource Management
- Operations Management

Marketing

- Marketing Communications
- Marketing Management
- Marketing Research
- Merchandising
- Professional Sales/Sales Management

Finance

- Accounting
- Banking Services
- Corporate Finance
- Insurance
- Securities & Investments

Government & Public Administration

- Foreign Service
- Governance
- Legal Services
- Planning
- Public Management & Administration
- Regulation
- Revenue & Taxation

Business, Marketing & Public Administration

Hospitality, Human Services & Education

Hospitality & Tourism

- Lodging
- Recreation, Amusements & Attractions
- Restaurants, Food & Beverage Services
- Travel & Tourism

Human Services

- Consumer Services
- Counseling & Mental Health Services
- Early Childhood Development
- Family & Community Services
- Personal Care Services

Education & Training

- Administration and Administrative Support
- Professional Support Services
- Teaching and Training

Agriculture, Food & Natural Resources

- Animal Science*
- Agribusiness Systems
- Food Products & Processing Systems*
- Natural Resource & Environmental Systems*
- Plant Science*
- Power, Structural & Technical Systems*

Energy

- Electromechanical Generation & Maintenance*
- Electrical Energy Transmission & Distribution*
- Energy Efficiency & Environmental Technology*
- Fossil Energy Extraction, Processing & Distribution*
- Renewable Energy Production*

* STEM affiliated pathway

Agriculture, Natural Resources & Energy

Postsecondary & Workforce Readiness

Foundation knowledge & skills for all career pathways include:

- Academic Content Knowledge
- Civic Responsibility
- Collaboration
- Communication
- Creativity & Innovation
- Critical Thinking/Problem Solving
- Find/Use Information Technology
- Global & Cultural Awareness
- Personal Responsibility
- Work Ethic

Specialized CTE Pathways include:

Alternative Cooperative Education (ACE), FACS CORE & World of Work

Health Science, Criminal Justice & Public Safety

Health Science

- Biotechnology Research & Development*
- Diagnostic Services*
- Health Informatics
- Supportive Services
- Therapeutic Services*

Law, Public Safety, Corrections & Security

- Correction Services
- Emergency & Fire Management Services*
- Law Enforcement Services
- Security & Protective Services

* STEM affiliated pathway

STEM (Science, Technology, Engineering & Math)

See also STEM affiliated pathways noted by *

- Research, Exploration & Innovation
- Design, Development & Application

Arts, A/V Technology and Communication

- Audio/Video Technology & Film
- Journalism & Broadcasting
- Performing Arts
- Printing/Publishing
- Visual & Design Arts

Information Technology

- Information Support and Services
- Interactive Media
- Network Systems & Telecommunications*
- Programming & Software Engineering*

STEM, Arts, Design & Information Technology

Skilled Trades & Technical Sciences

Architecture & Construction

- Construction
- Design & Pre-construction*
- Maintenance & Operations

Manufacturing

- Health, Safety & Environmental Assurance
- Logistics & Inventory Control
- Manufacturing Production
- Maintenance, Installation & Repair
- Production/Process Technology*
- Quality Assurance

Transportation, Distribution & Logistics

- Facility & Mobile Equipment Maintenance
- Health, Safety & Environmental Management
- Logistics, Planning & Management Services
- Planning, Management & Regulation
- Sales & Service
- Transportation Operations
- Transportation/Systems Infrastructure
- Warehousing & Distribution Center Operations

* STEM affiliated pathway

Health Science Postsecondary Plans of Study

	High School Diploma, On-the-Job Training	License/Certificate	Associate's	Bachelor's	Masters, Doctoral, Professional
Therapeutic Services	<ul style="list-style-type: none"> • Clinical Rotation • Dental Assisting • Health Aide • Medical Assisting 	<ul style="list-style-type: none"> • Certified Nurses Aide • Dental Assisting • Emergency Medical Technician • Massage Therapy • Physical Therapy Assisting 	<ul style="list-style-type: none"> • Dental Hygiene • Licensed Practical Nurse • Pre-medicine • Surgical Technology 	<ul style="list-style-type: none"> • Athletic Training/Exercise Science • Dietetics • Pre-medicine • Recreational Therapy 	<ul style="list-style-type: none"> • Clinical Nutrition • Dentistry • Medicine • Nurse Anesthetist • Pharmaceutical Services
Support Services	<ul style="list-style-type: none"> • Central Services Assisting • Dietary Management • Electrical/Electronic Equipment Repair • Admissions 	<ul style="list-style-type: none"> • Dietary Management • Electrical/Electronic Equipment Repair • Medical Office Management 	<ul style="list-style-type: none"> • Dietary Management • Medical Office Management • Registered Dietetic Technician 	<ul style="list-style-type: none"> • Biomedical Technology • Environmental Health & Safety • Prosthetic Therapies 	<ul style="list-style-type: none"> • Environmental Health Sciences • Industrial Operations Engineering • Public Health
Health Informatics	<ul style="list-style-type: none"> • Coding Experience • Data Entry • Community Service 	<ul style="list-style-type: none"> • Health Records Technology • Medical Assisting • Medical Librarian • Medical Transcription 	<ul style="list-style-type: none"> • Health Information Technology • Medical Coding • Medical Office Services • Medical/Clinical Assisting 	<ul style="list-style-type: none"> • Community Health • Health Care Administration • Health Education 	<ul style="list-style-type: none"> • Health care Administration • Library Science • Nursing Administration • Public Health
Diagnostic Services		<ul style="list-style-type: none"> • Electrocardiograph Technology • Nuclear Medical Technology • Radiologic Technology • Phlebotomy 	<ul style="list-style-type: none"> • Cardiovascular Technology • Medical Laboratory Assisting • Nuclear Medical Technology • Nutritionist 	<ul style="list-style-type: none"> • Biology • Medical Imaging Technology • Nuclear Laboratory Science • Nutrition • Psychology 	<ul style="list-style-type: none"> • Cardiovascular Technology • Diagnostic Radiology • Medical Laboratory Science • Nuclear Medicine • Pathology
Biotechnology Research & Development		<ul style="list-style-type: none"> • Quality Assurance Technology • Quality Control Technician • Pharmacy Technician 	<ul style="list-style-type: none"> • Clinical Laboratory • Medical Laboratory • Clinical Laboratory Technician • Medical Laboratory Technician 	<ul style="list-style-type: none"> • Biochemistry • Immunology • Medical Pharmaceutical Chemistry • Microbiology 	<ul style="list-style-type: none"> • Anatomy • Biochemistry • Oncology Biology • Pharmaceutical Sciences



Pathway: Health Informatics

Plan of Study: Medical Administration

Career Goal (O*Net Code): Healthcare Administrator (11-9111), Medical and Health Services Manager (11-9111), Medical Assistant (31-9092), Medical Records & Health (29-2071), Medical Secretary (43-6013)

Suggested High School Courses

High School * Default includes CDHE Higher Education Admission Requirements	9 th	Core Academic Courses*:	English I, Algebra I, Earth, Life or Environmental Science, State History/Civics	Suggested Electives: Physical Education or Business Foundations
		Career Path Courses:	Health Science (HS) I: Intro to Health Science*	
	10 th	Core Academic Courses*:	English II, Geometry, Biology, US History, Foreign Language I	Suggested Electives: Nutrition & Wellness or Information Technology Applications
		Career Path Courses:	HS II: Health, Safety and Ethics in the Health Environment*	
11 th	Core Academic Courses*:	English III, Algebra II or other, Chemistry, World History	Suggested Electives: Sociology, Speech or Accounting	
	Career Path Courses:	HS III: Employment in Health Occupations*		
12 th	Core Academic Courses*:	English IV, Trigonometry or Statistics, Physics or Anatomy & Physiology or other lab based science, Economics/Government	Suggested Electives: Psychology or Business Management	
	Career Path Courses:	HS IV: Medical Office Emphasis*		

Secondary to Postsecondary Linkages & Certifications

Recognition for Advanced Learning	Postsecondary Credit Options: Advanced Credit Pathway: *HPR100 Intro to Health, HPR 101 Customer Service in Health Care, HPR 104 Health Career Options, HPR 108 Law & Ethics, HPR 178 Medical Terminology, MOT 138 Intro to Clinical Skills
	Industry Recognized Certificate(s) or License(s): Certified Nursing Assistant (CNA) First Responder

Postsecondary Education Opportunities	Postsecondary Programs Available in Colorado		Colorado Institutions	Entrance Exam/ Requirements
	Certificate	Medical Office Technologies Medical Office Management/Administration Medical Administrative Assistant	Pickens Technical College, EGOS, Community Colleges: Aims, Arapahoe, Denver, Front Range, Lamar, Morgan, Pikes Peak, Red Rocks, TSJC	High School diploma/GED Accuplacer
Associate Degree	Medical Administrative Assistant Medical Office Technologies	Community Colleges: Aims, Arapahoe, Morgan, Pikes Peak, Red Rocks Mesa State College	High School diploma/GED Accuplacer	
Bachelor Degree	Health Care Management	Metropolitan State College of Denver	See MSCD Admissions website. ACT	
Graduate Degree	Health Care Administration, MS International Health Management and Policy, MS Health Administration, MS Executive MBA (Health Administration) Public Health, MPH	University of Colorado-Colorado Springs University of Colorado-Denver University of Colorado-Denver Health Sciences Center University of Northern Colorado	See each school's Admissions website.	

Cluster Overview: The **Health Science Career Cluster** prepares students for careers in planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

Extended Learning Experiences

Curricular Experiences: Example: Health Occupations Students of America	Extracurricular Experiences: Examples: National Youth Leadership Forum on Medicine Medical Mission Trips Special Olympics
Work-Based Learning Experiences: Career Preparation – Paid and Unpaid, Job Shadowing, Internships	Program Accreditation and/or Professional Association(s): Examples: American Association of Medical Assistants Association of University Programs Health Administration National Commission for Health Education Credentialing American Public Health Association
Service Learning Experiences: Example: Community Service Volunteer	

Career Options:

Salary Range*:

	Career Options:	Salary Range*:
Certificate	Medical Billing Clerk Medical Office Assistant	\$ - \$\$
Associate Degree	Medical Secretary	\$ - \$\$
Bachelor Degree	Healthcare Administrator, Medical and Health Services Manager Public Health Educator, Patient Advocate, Data Analyst	\$\$\$ - \$\$\$\$
Graduate Degree	Researcher, Healthcare System Manager Medical Consultant, Public Health Administrator	\$\$\$ - \$\$\$\$

* \$ = \$15-25,000; \$\$ = \$25-55,000; \$\$\$ = \$55-90,000; \$\$\$\$ = Above \$90,000

"Insert Institution Name Here" does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities. Please direct inquiries to: Insert name, address and telephone number of AA/EEO officer

Insert Institution Logo
Here

(Insert Institution Name and Program Name)
Postsecondary Plan of Study



	Pathway: Visual & Design Arts	<i>Plan of Study: Multimedia Graphic Design</i>
Career Goal (O*Net Code): (Click the code to access education, skills, and employment outlook information) Multimedia Arts and Animator (27-1014) * Photographer (27-4021) Artist (27-1019) * - High Demand Career		Relevant Occupational Experience (Your Life Experiences may be worth College Credit!): CCCS Credit for Prior Learning Guide (Insert relevant occupations/skills/Military experience here and include Institution policy on Credit for Prior Learning) LMI Gateway Link to Related Occupations

Possible Pathways to your Career!

	Programs Available	Program Length (*Based on meeting Program Entrance Requirements)	Estimated Tuition	Career Options	Salary Range
Certificate Options	Digital Image Design to Print	15 credits (1 Sem) 21 credits (2 Sem)		Graphic Designer/ Illustrator, Multimedia Graphic Designer, Web Designer, Professional Photographer	\$ - \$\$
Associate Degrees	Multimedia Graphic Design	65 credits (4 Sem)		Graphic Designer/Illustrator, Multimedia Graphic Designer/Animator, Web Designer, Professional Photographer	\$ - \$\$\$
Articulation Opportunities to Advanced Degrees:					
Advanced Degrees	Bachelors Degree: Art & Design, with Graphic Design Emphasis	Associates Degree + 60 Credits	University of Northern Colorado	Artist, Art Director, Creative Director, Painter & Illustrator, Multimedia Artist, Animator, Art Gallery Manager, Art Teacher, Photographer, Fine Artist, Career Teacher	\$ - \$\$\$
	Graduate Degree: Art & Design, with Graphic Design Emphasis	Bachelors Degree + ?? Credits		Artist, Art Director, Creative Director, Painter & Illustrator, Multimedia Artist, Animator, Art Gallery Manager, Art Teacher, Photographer, Fine Artist, Career Teacher	\$-\$\$\$\$
College Tuition Comparison Guide					

* \$ = \$15-25,000; \$\$ = \$25-55,000; \$\$\$ = \$55-90,000; \$\$\$\$ = Above \$90,000

Insert Institution Logo
Here

**(Insert Institution Name and Program Name)
Postsecondary Plan of Study**



Extended Learning Experiences

Support Structures:

(Insert support services for nontraditional students that exist at your institution here)

Examples: Childcare facilities, Counseling services, Tutoring services, Academic Advising

Financial Aid:

(Insert Financial Aid Opportunities for students here)

Professional Affiliations

(Insert professional organizations here)

Examples:

Media Communications Association-International

National Academy of Television Arts & Sciences

National Association of Minorities in Communications

Screen Actors Guild

World Wide Web Artists' Consortium

Practical Learning Experiences:

(Insert non-classroom learning experiences here – ie internships, job shadowing, etc...)

Insert Institution Name is accredited by the Higher Learning Commission and a member of the North Central Association of Colleges and Schools.

Insert Institution Name Here does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities. Please direct inquiries to: Insert name, address and telephone number of AA/EEO officer

*** This document is a guide only. It does not act as a legally binding contract.

“Earn and Learn” Pathway - Health

Certified
Nursing
Assistant

\$15-25,000

Licensed
Practical
Nurse

\$25-41,000

Registered
Nurse
(ADN)

\$40-70,000

Nurse
(BSN)

\$50-80,000

Director
of Nursing
(MSN)

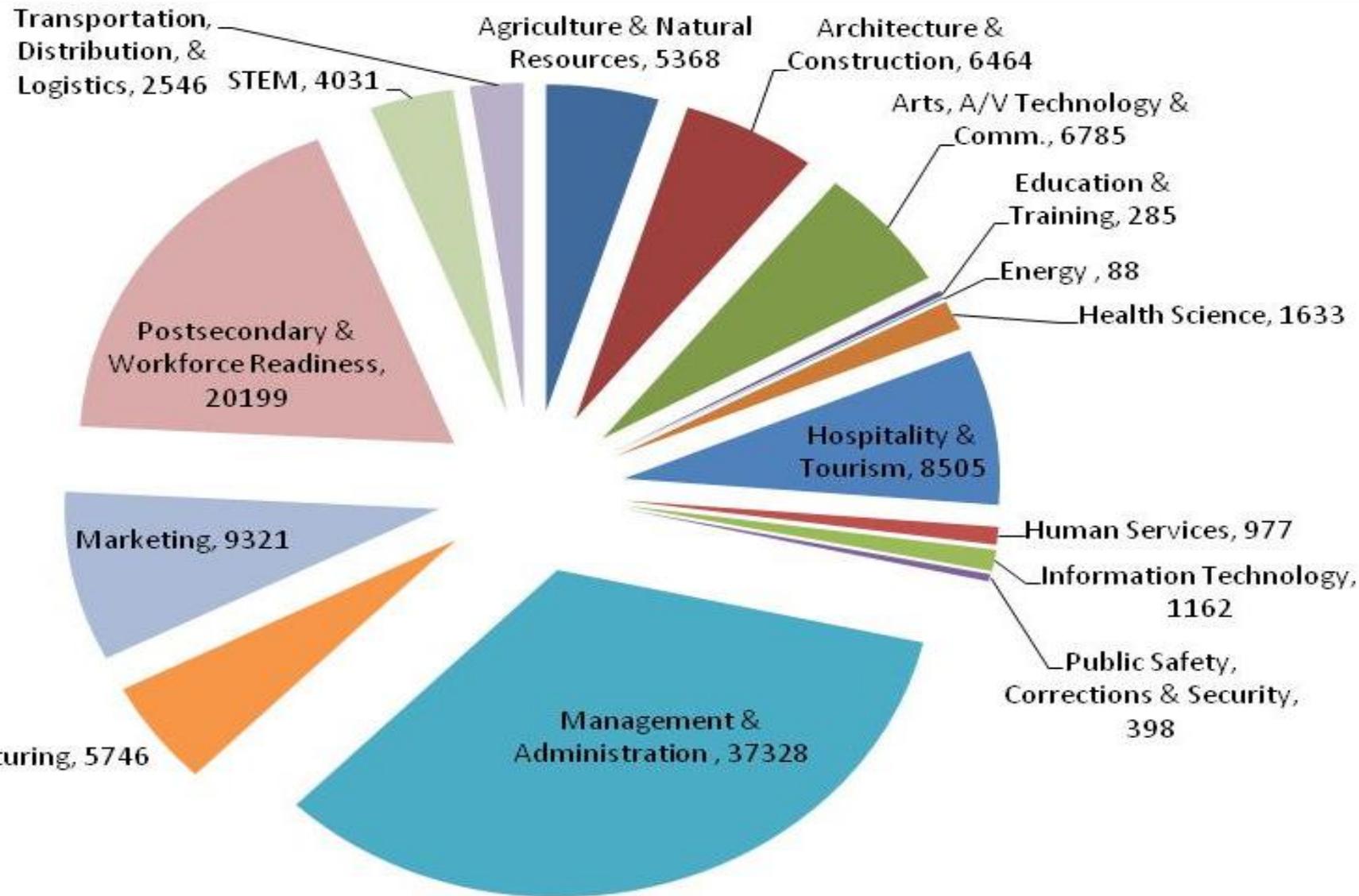
\$60-90,000



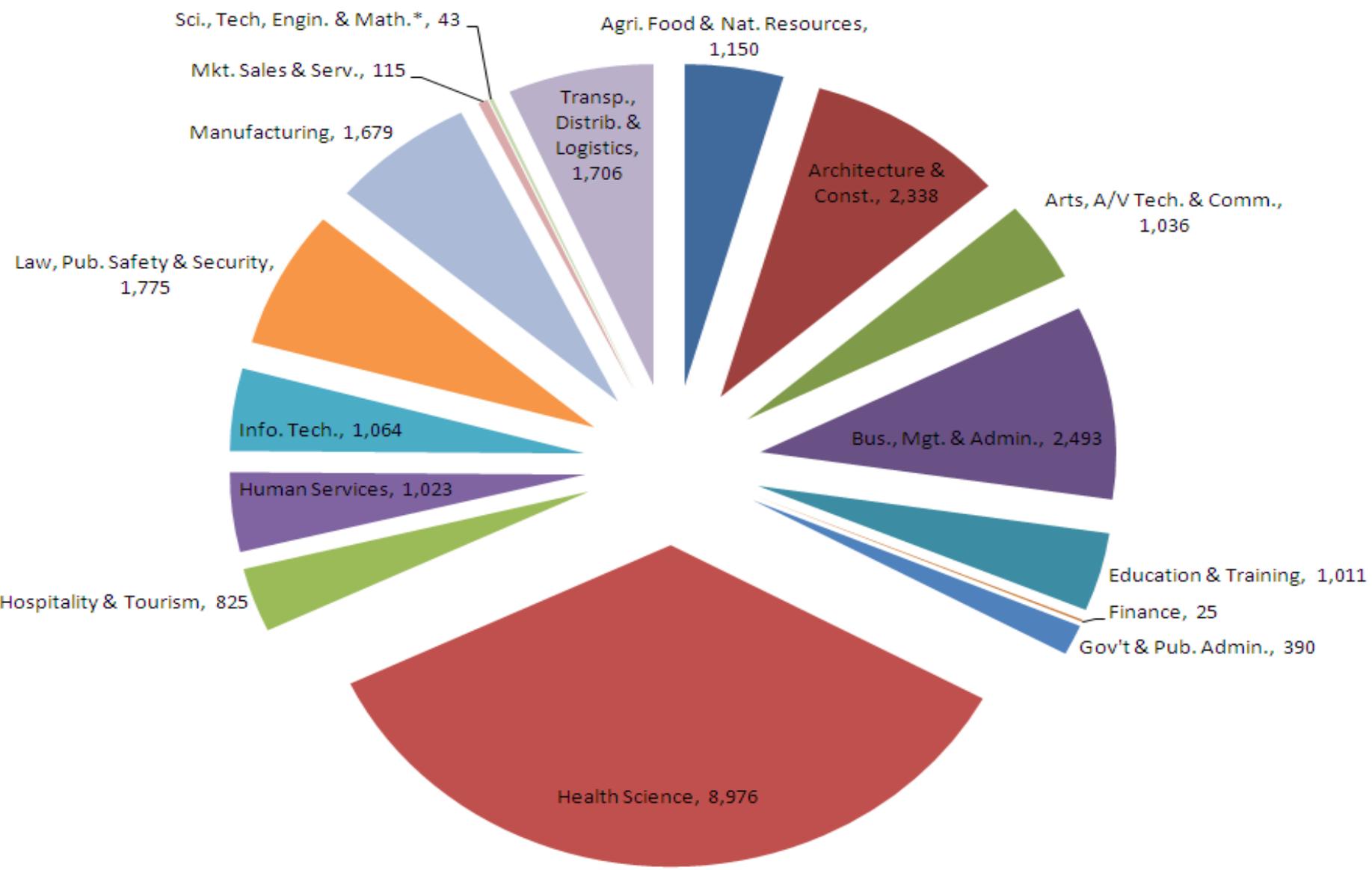
Secondary Program Requirements

- 3.01 Employment Potential/Occupational Demand**
- 3.02 Sufficient Size and Scope
- 3.03 Technical Advisory Committee**
- 3.04 Facilities
- 3.05 Student Rights & Other Compliance Factors
- 3.06 Allowable Courses & Academic Alignment**
- 3.07 Evaluation and Continuous Improvement
- 3.08 Articulation
- 3.09 Colorado Career and Technical Student Organizations (CTSOs)
- 3.10 Qualified & Credentialed Instructors
- 3.11 Non-Duplicative
- 3.12 Specific Program Requirements





2010-11 High School CTE Enrollment by Career Cluster



2010-11 College CTE Enrollment by Career Cluster

Top Ten Occupations by Number of Job Ads August 1 through 31, 2012

Occupation	Volume
Registered Nurses	5,635
Retail Salespersons	3,116
Customer Service Representatives	2,431
First-Line Supervisors/Managers of Retail Sales Workers	2,395
Web Developers	2,191
Computer Software Engineers, Applications	2,100
Computer Systems Analysts	2,026
Computer Support Specialists	2,019
Network and Computer Systems Administrators	1,814
Executive Secretaries and Administrative Assistants	1,663
Source: Help Wanted Online September 20, 2012	



Senate Bill 08-212: CAP4K

22-7-1005. Preschool through elementary and secondary education - aligned standards - adoption - revisions.

2(b): In developing the preschool through elementary and secondary education standards, the State Board shall also **take into account any Career & Technical Education standards** adopted by the State Board for Community Colleges and Occupational Education, created in Section 23-60-104, C.R.S., and, **to the extent practicable, shall align the appropriate portions of the preschool through elementary and secondary Education standards with the Career and Technical standards.**



Colorado Career and Technical Education



- To get started, login by clicking the Login button.
- If you don't have a login and would like to create one, click [here to register](#).
- Creating an account and logging-in gives you access to more of the features of the site, such as:
 - Creating, viewing, saving, and editing course outlines;
 - Copying other saved courses.
- Next, click one of the industry sectors below to get started.

Alternative Cooperative Education

Agricultural, Natural Resources & Energy

Business, Marketing & Public Administration

Health Science, Criminal Justice & Public Safety

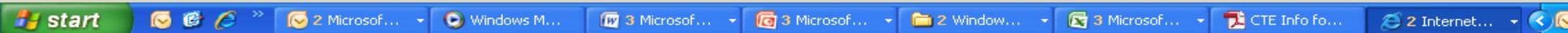
Hospitality, Human Services & Education (FACS Core)

Skilled Trades & Technical Sciences

STEM, Arts, Design & Information Technology

Done

Trusted sites



Agricultural Business

AGBS.01 Describe agribusinesses, the relationship of agribusiness to the industry of agriculture and will identify opportunities in the agribusiness systems pathway

AGBS.01.01 Understand the history and global significance of agribusinesses

AGBS.01.01.a Define major components of agribusiness systems

AGBS.01.01.b Define the major trends and relationship of agribusiness to global agriculture production

MA10-GR.HS-S.1-GLE.2-EO.a Reason quantitatively and use units to solve problems (CCSS: N-Q)

MA10-GR.HS-S.3-GLE.2-EO.b Make inferences and justify conclusions from sample surveys, experiments, and observational studies. (CCSS: S-IC)

AGBS.01.01.c Identify various cultural perspectives in agriculture and the impact on agribusiness systems

MA10-GR.HS-S.3-GLE.2-EO.b Make inferences and justify conclusions from sample surveys, experiments, and observational studies. (CCSS: S-IC)

AGBS.01.01.d Understand current cultural perspectives, global trade, and environmental impact of agriculture and the impact on agribusiness systems

AGBS.01.02 Understand the history and future response in agribusiness systems to agriculture

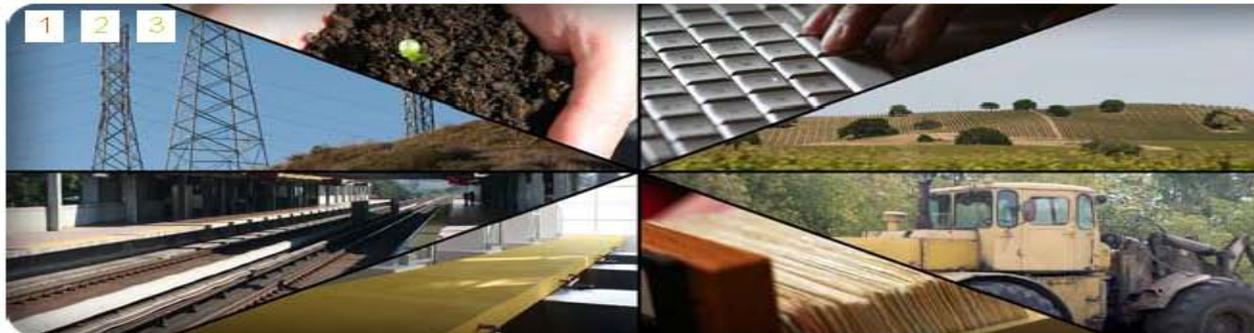
AGBS.01.02.a Determine important historical trends in agribusiness systems

AGBS.01.02.b Describe evolution and technological advances in agribusiness systems

AGBS.01.02.c Analyze trends (population, societal, income, health, environmental) and their impact on agribusiness

MA10-GR.HS-S.1-GLE.2-EO.a Reason quantitatively and use units to solve problems (CCSS: N-Q)





CPC PATHWAYS

The Career Pathways Assessment System currently consists of nine pathways in high-wage, high-pay, and high-demand areas.

[Read More >>](#)

The Career Pathways Assessment System (cPass) offers a way to measure high school students' readiness for post-secondary education or entry into the workforce.

Rather than focusing on academic skills alone, cPass also measures the knowledge and skills needed for specific career pathways. With a mix of multiple choice questions, technology enhanced items, and performance based tasks, cPass measures skills both in the classroom and in real-world situations. [Read More >>](#)



[Printable Brochure >>](#)

Currently Planned Pathways:

- Comprehensive Agriculture
- Animal Systems
- Plant Systems
- Production
- Maintenance
- General Business
- Finance
- Marketing
- Education

[View a List of All Pathways >>](#)



Common Course Numbering System

Searching Current Courses For Fall 2012

Search For Courses By The Following Prefixes

Prefix Description

- CAD** Computer Assisted Drafting
- CAG** Colorado AG Leadership
- CAR** Carpentry
- CCN** Critical Care Nursing
- CDF** Career Development Facilitator
- CHE** Chemistry
- CHI** Chinese
- CHW** Community Health Work
- CIS** Computer Information System
- CMA** Casino Management
- CMD** Communication Disorders
- CNE** Transfer enter CCCS Com Title
- CNG** Computer & Networking Tech
- CNN** Critical Care Nursing
- COM** Communication
- CON** Construction Technology
- COS** Cosmetology

Done

Trusted sites



Common Course Numbering System

Your current Institution is CCCS

Searching Current Courses For Fall 2012

Course: CON 130
Title: Blueprint Reading
Long Title: Blueprint Reading
Course Description: Focuses on the techniques for reading and using blueprints and specifications with an emphasis placed on those drawing and types of information that are relevant to the carpentry craft.
Min Credit: 2
Max Credit:

Status Notes: Course offered to fill gap and meet needs of students desiring an intro to blueprint reading and utilize this class to fulfill requirements for estimation class. Also revised from CTE201

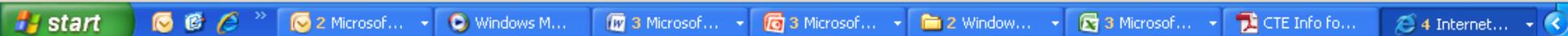
Origin Notes: RRCC

STANDARD COMPETENCIES:

- I. Demonstrate an understanding of blueprint terminology
- II. Understand various views used to interpret/define a building
- III. Create small drawing which reflect portions or sections of the blueprints
- IV. Identify the different types of lines used on construction drawings. Identify selected architectural symbols commonly used to represent materials on plans.
- V. Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.
- VI. Identify selected abbreviations commonly used on plans.

Done

 Trusted sites



CTE Advisory Committees



CTE program advisory committee's are good to have. They provide valuable input to what the businesses needs are. Committee members, if chosen correctly, (and by correctly, I mean members from businesses that would provide jobs to those in the field we are teaching) can even offer experience of equipment that an instructor may want to purchase. For example, the instructor may be looking into purchasing a new machine; one of the members in the committee may have had an experience with the machine you are looking at purchasing, and can give you the pro's and con's of the machine. A good advisory committee should also be knowledgeable about how best to use resources. I was looking at purchasing a transmission flushing machine. With the input of the committee they recommended that the purchase would be better used in something else, and after some thought, that's true. The members also inform me of the needs that their shop requires, and out of this I can blend those needs into my instruction.

James A. Brunelli, Automotive Technology, Trinidad State Junior College



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