Duluth Public Schools

Career and Technical Education

Minnesota Career Fields, Clusters & Pathways

■ Marketing, Sales, and Service
- > Buying and Merchandising
- > Distribution and Logistics
- > E-Marketing
- > Management and Entrepreneurship
- > Marketing Communications and Promotion
- > Marketing Information Management and Research
- > Professional Sales and Marketing

■ Business, Management, and Administration
- > Administrative and Information Support
- > Business Analysis
- > Business Financial Management and Accounting
- > Marketing
- > Human Resources
- > Management

■ Finance
- > Banking and Related Services
- > Business Financial Management
- > Financial and Investment Planning
- > Insurance Services

■ Hospitality and Tourism
- > Lodging
- > Recreation, Amusements and Attractions
- > Restaurants and Food/Beverage Services
- > Travel and Tourism

■ Agriculture, Food, and Natural Resources
- > Animal Systems
- > Agribusiness Systems
- > Environmental Service Systems
- > Food Products and Processing Systems
- > Natural Resources Systems
- > Plant Systems
- > Power, Structural, and Technical Systems

■ Arts, Audio/Video Technology, and Communications
- > Audio/Video Technology and Film
- > Journalism and Broadcasting
- > Performing Arts
- > Printing Technology
- > Telecommunications
- > Visual Arts

■ Information Technology
- > Information Support and Services
- > Network Systems
- > Programming and Software Development
- > Web and Digital Communications

CAREER FIELD — Agriculture, Food, & Natural Resources

CAREER FIELD — Business, Management, & Administration

CAREER FIELD — Arts, Communications, & Information Systems

Minnesota STATE COLLEGES & UNIVERSITIES

Minnesota Department of Education

Foundation Knowledge and Skills
Academic and Technical Literacy

Employability • Ethics • Systems
Teamwork • Career Development
Problem Solving • Critical Thinking
Information Technology Application
Legal Responsibilities • Communication
Safety, Health and Environment
Social Studies • Math • Science
English • Personal Finance

■ Law, Public Safety, Corrections, and Security
- > Correction Services
- > Emergency and Fire Management Services
- > Law Enforcement Services
- > Legal Services
- > Security and Protective Services

■ Human Services
- > Consumer Services
- > Counseling and Mental Health Services
- > Early Childhood Development and Services
- > Family and Community Services
- > Personal Care Services

CAREER FIELD — Human Services

CAREER FIELD — Engineering, Manufacturing, & Technology

CAREER FIELD — Health Science Technology

■ Government and Public Administration
- > Revenue and Taxation
- > Foreign Service
- > Governance
- > National Security
- > Planning
- > Public Management and Administration
- > Regulation

■ Education and Training
- > Administration and Administrative Support
- > Professional Support Services
- > Teaching/Training

■ Health Science
- > Biotechnology Research and Development
- > Diagnostic Services
- > Support Services
- > Health Informatics
- > Therapeutic Services

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

■ Architecture and Construction
- > Construction
- > Design/Pre-construction
- > Maintenance/Operations

■ Manufacturing
- > Production
- > Manufacturing Production Process Development
- > Maintenance, Installation, and Repair
- > Quality Assurance
- > Logistics and Inventory Control
- > Health, Safety, and Environmental Assurance

■ Science, Technology, Engineering, and Mathematics
- > Engineering and Technology
- > Science and Math (Investigative, Informational, and Educational)

Legend: ■ = Career Cluster   > = Career Pathway

Explanation provided on reverse side.

October 2007

ISD 709 Career and Technical Education
aligned with Minnesota Career Fields, Clusters & Pathways
Proposed Scope and Sequence

Revised, 12/3/2009

Business Management & Administration	Human Services	Engineering, Manufacturing & Technology

Middle School Tracks (Both Middle Schools)

Computers 6 Business Education (9 weeks – Grade 6)	FACS 6 Family, Community, Diversity & Tolerance (9 weeks – Grade 6)	Pre Engineering 6 (Project Lead the Way) (9 weeks – Grade 6)
Computers 7 Business Education (9 weeks – Grade 7)	FACS 7 Family, Community, Diversity & Tolerance (9 weeks – Grade 7)	Pre Engineering 7 (Project Lead the Way) (9 weeks – Grade 7)

Computer Topics 8 *Tech & Your Future with Office 2007* (Semester)	Computer Applications 8 *Graphics, Presentation & Web Design* (Semester)	Family, Food, Diversity & Tolerance (FACS 8) (Semester)	Food Science & Nutrition (FACS 8) (Semester)	Pre –Engineering Design & Modeling 8 (PLTW) (Semester)	Pre –Engineering Prototype Fabrication 8 (PLTW) (Semester)

High School Tracks (Both High Schools)

Economics Courses	Business Management Courses		Marketing Courses	Family & Community Service Courses	Food Science Wellness & Nutrition Courses	Manufacturing. & Fabrication Courses	Engineering & Architecture Courses		
Economics & Pers. Finance I Semester	Computer Essentials Semester	Accounting I Year Long	Marketing I Year Long	Child Development & Child Psychology Semester	Food Science & Nutrition Semester	Manuf. & Fabric. For Industry I Semester	Intr to Engineering & Design (PLTW) Year Long	Civil Engineering & Architect. (PLTW) Year Long	Principles of Engineer. (PLTW) Year Long
Economics & Pers Finance II Semester	Computer Graphics Semester	Accounting II Year Long	Marketing II Year Long	Sustainable Housing Design & Technology Semester	Foods & Healthy Living Semester	Manuf. & Fabric. For Industry II Year Long	CAD for Engineer. & Industry I Semester	CAD for Architecture I Semester	
	Computer Applications Semester			Independent Living Semester	Global Cuisine & Cultural Appreciation Semester	Manuf. & Fabric. For Industry III Year Long	CAD for Engineer. & Industry II Semester	CAD for Architecture II Semester	
	Advanced Computers I Year Long								
	Advanced Computers II Year Long								

Career Development Internship - TBD	Career Development Internship - TBD	Career Development Internship - TBD

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Proposed Scope and Sequence

Revised, 12/3/2009

| Business Management & Administration | Human Services | Engineering, Manufacturing & Technology |

STC Programming

Culinary Arts Courses (Both High Schools)

Artistry of Foods I – Bakery Focus Semester	Deli - Management Semester	Introduction to Foods Semester	Waiter / Waitress Semester
Artistry of Foods II – Design Elements Semester	Advanced Deli Management Semester	International Cooking Semester	Restaurant Management Semester
		Classical Cooking Semester	

Early Childhood & Educ. Profession Courses (Western High School)

Early Childhood and Education Professions Year Long

Automotive Courses (Western High School)

Automotive Systems I Year Long	Automotive Technology I Year Long
Automotive Systems II Year Long	Automotive Technology II Year Long
	Power Sports Proposed Course

Construction Technology (Eastern High School)

Construction Technology I Year Long
Construction Technology II Year Long
Construction Technology III Year Long

STC Programming

| Arts, Communications & Information Systems | Health Science Technology | Agriculture Food & Natural Resources |

Graphic Arts / Digital Design Courses @ Both High Schools

Graphic Arts & Digital Design I Year Long
Graphic Arts & Digital Design II Year Long
Graphic Arts & Digital Design III Year Long

Medical Occupations Courses @ Both High Schools)

CITS Honors Intro to Nursing/ Home Health Aide Semester
CITS Honors Medical Occupations Semester
ARC: First Aide & CPR/ARD For Professional Rescuer Semester
Bio Medical Occupations Proposed Course

Agriculture, Forestry & Natural Resources Courses @ Eastern High School

Plant Science & Greenhouse Semester	Forestry, Fish & Wildlife Semester	Field Biology Semester
Landscape & Horticulture Semester	Green Tech. & The Environment Semester	

The Good News

- **We have many great CTE programs with space being planned for in the LRFP**

- **Many CTE programs offer college credit and industry certification**

- **Technical Education Pathways =**
  Academic Rigor, Real World Experience, and Professional Job Skills.
  CTE Pathway makes students college and career ready.

The Bad News

- **Sections and enrollment in CTE programs have had severe declines due to budget reductions**

- **Many CTE programs are near elimination**

- **Current High School requirements limit CTE registration opportunities for our Duluth Public School students**

05-06 Count of Sections by Department

Department	Central	Denfeld	East	Total
Art	9	20	14	43
Business	15	22	21	58
Cadet	34	52	23	109
Elective	7	13	7	27
Family Consumer	10	6	8	24
Health	10	10	8	28
Industrial Ed	11	16	20	47
Intl Studies	4	10	15	29
Lang Arts	76	85	95	256
MATH	66	64	70	200
Music	22	20	26	68
OLL				
Phy Ed	22	13	9	44
PSEO	12	16	2	30
Science	58	64	71	193
SNTS	85	54	32	171
Social Studies	61	60	68	189
SPED	58	89	75	222
Sport				
STC	135	106	101	342
Study Hall	28	28	21	77
Teacher Helper	67	85	29	181
Work Experience	12	16	2	30
World Language	42	48	65	155
Total	844	897	782	2523

08-09 Count of Sections by Department

Department	Central	Denfeld	East	Total
Art	15	15	28	58
Business	3	8	7	18
Cadet	28	36	17	81
Elective	8	5	4	17
Family Consumer	9	2	7	18
Health	6	8	12	26
Industrial Ed	4	17	8	29
Intl Studies				
Lang Arts	63	63	86	212
MATH	51	56	80	187
Music	24	20	28	72
OLL		3	5	8
Phy Ed	12	8	12	32
PSEO	12	9	9	30
Science	46	50	81	177
SNTS	57	103	27	187
Social studies	49	62	76	187
SPED	81	139	61	281
Sport	20	18	12	50
STC	69	57	60	186
Study Hall	19	20	19	58
Teacher Helper	35	33	17	85
Work Experience	1	8		9
World Language	39	34	51	124
Total	651	774	707	2132

05-06 Count of Students by Department

Department	Central	Denfeld	East	Total
Art	251	371	288	910
Business	157	327	499	983
Cadet	56	147	24	227
Elective	45	49	87	181
Family Consumer	253	126	204	583
Health	296	288	244	828
Industrial Ed	118	210	216	544
Intl Studies	108	240	427	775
Lang Arts	1663	1898	2435	5996
MATH	1660	1499	1927	5086
Music	806	691	965	2462
OLL				
Phy Ed	315	358	327	1000
PSEO	121	29	58	208
Science	1459	1527	2056	5042
SNTS	163	143	57	363
Social Studies	1591	1599	2020	5210
SPED	378	631	343	1352
Sport				
STC	601	352	317	1270
Study Hall	512	655	951	2118
Teacher Helper	111	123	31	265
Work Experience	126	227	5	358
World Language	787	969	1481	3237
Total	11577	12459	14962	38998

08-09 Count of Students by Department

Department	Central	Denfeld	East	Total
Art	291	389	490	1170
Business	74	188	243	505
Cadet	54	81	18	153
Elective	47	62	38	147
Family Consumer	238	56	231	525
Health	182	255	395	832
Industrial Ed	89	130	119	338
Intl Studies				
Lang Arts	1607	1689	2553	5849
MATH	1401	1435	2224	5060
Music	775	720	1091	2586
OLL		4	27	31
Phy Ed	276	256	466	998
PSEO	53	20	67	140
Science	1371	1479	2258	5108
SNTS	81	153	64	298
Social studies	1496	1822	2331	5649
SPED	443	804	374	1621
Sport	401	338	365	1104
STC	324	184	225	733
Study Hall	305	705	1032	2042
Teacher Helper	47	39	20	106
Work Experience	3	46		49
World Language	652	727	1488	2867
Total	10210	11582	16119	37911

Possible Solutions

- **Continued balance of the Middle Level curriculum**

- **Expand alternative credit opportunities in CTE courses**

- **Allow for more student registration opportunity in High School CTE courses**

Restructuring of Middle Level Electives

Proposed 8th Grade Electives for Middle School

Draft

Music	Each choice is a full year elective for the 8th grade

Choir (Full Year)
Band (Full Year)
Orchestra (Full Year)

World Language	Each choice is a full year elective for the 8th grade

Spanish (Full Year)
German (Full Year)
Mandarin Chinese (Full Year)

Career & Technical Education — *Each choice is a semester elective for the 8th grade. A student may take a second semester elective in Business, Family & Consumer Science and Industrial Technology*

Business Management & Computer Education

Computer Topics	Computer Applications
Technology & Your Future with Office 2007	*Computer Graphics, Presentation & Web Design*
(Semester)	(Semester)

Family & Consumer Science

Family, Food, Diversity & Tolerance	Food Science & Nutrition
Family & Consumer Science (FACS)	*Family & Consumer Science (FACS)*
(Semester)	(Semester)

Industrial Technology

Pre-Engineering - *Design & Modeling*	Pre-Engineering - *Prototype Fabrication*
(PLTW)	*(PLTW)*
(Semester)	(Semester)

8th Grade Electives
for Year 2010 - 2011

Business Management And Computer Education

- Computer Topics
- Computer Applications

FACS (Family and Consumer Science)

- Family, Community, Diversity And Tolerance
- Food, Science and Nutrition

Industrial Technology

- Pre-Engineering Design Modeling (PLTW)
- Pre-Engineering Prototype Fabrication (PLTW)

Art

- Computer Graphics

Music

- Band
- Choir
- Orchestra

Physical Education

- Weight Training

World Language

- German
- Mandarin Chinese
- Spanish

Are We A "One Size" Fits All Curriculum?

Is it "Turf"
Or
Options for Students

High School Potential Opportunities to Meet Graduation Credit Requirements

Course	Required Course Fulfilled	Credit
Construction Technology	Math	1.0
Advanced Placement Accounting	Math	1.0
Personal Finance – Economics	Economics	.5
CAD For Architecture	Art	.5
Manufacturing and Fabrication for Industry	Art	.5
CAD for Engineering and Industry	Art	.5
PLTW	Math – Science – Art	1.0 Each
Honors Medical Occupations	Health	.5
Business Communications	Language Arts	1.0
Culinary Arts – Food Science	Science (Michigan)	1.0

Additional Options to Meet Graduation Credit Requirements

Course	Required Course Fulfilled	Credit
Literature and Business Communications (STC)	English 11 and 12	1.0
Literature and Interpersonal Communications (STC)	English 11 and 12	1.0
Literature and College Composition I (STC)	English 11 and 12	1.0
Naval Science I (STC)	American History 9	.5
Naval Science II (STC)	American History I and II	1.0
Naval Science III (STC)	International Studies/World History	1.0
Naval Science IV (STC)	Government	.5
Forestry, Fish, and Wildlife (STC)	Science Elective	1.0
Field Biology (STC)	Biology	1.0
Plant Science – Greenhouse (STC)	Science Elective	1.0
Landscape Horticulture (STC)	Science Elective	1.0
Marketing I and II	Economics	.5
Computer Graphics	Media Arts	.5
Computer Graphics and Applications	Media Arts	1.0
Graphic Arts/Digital Design I, II, and III	Media Arts	1.0

Delivering Media Arts Standards

- Colleen Bryant, Business Education; Denfeld

- Peggy Ehlert, Business Education; Woodland, STC, Central

- Jennifer Miller, Graphic Arts – Digital Design; STC

Standards/Credits/Licensure

The Minnesota Legislature has enacted M.S. 120B.024 which states in part:

(c) A career and technical education course may fulfill a science, mathematics, or arts credit requirement in addition to the specified science, mathematics, or arts credits under paragraph (a), clause (2), (3), or (5).

Delivering Academic Credit In CTE

Licensure
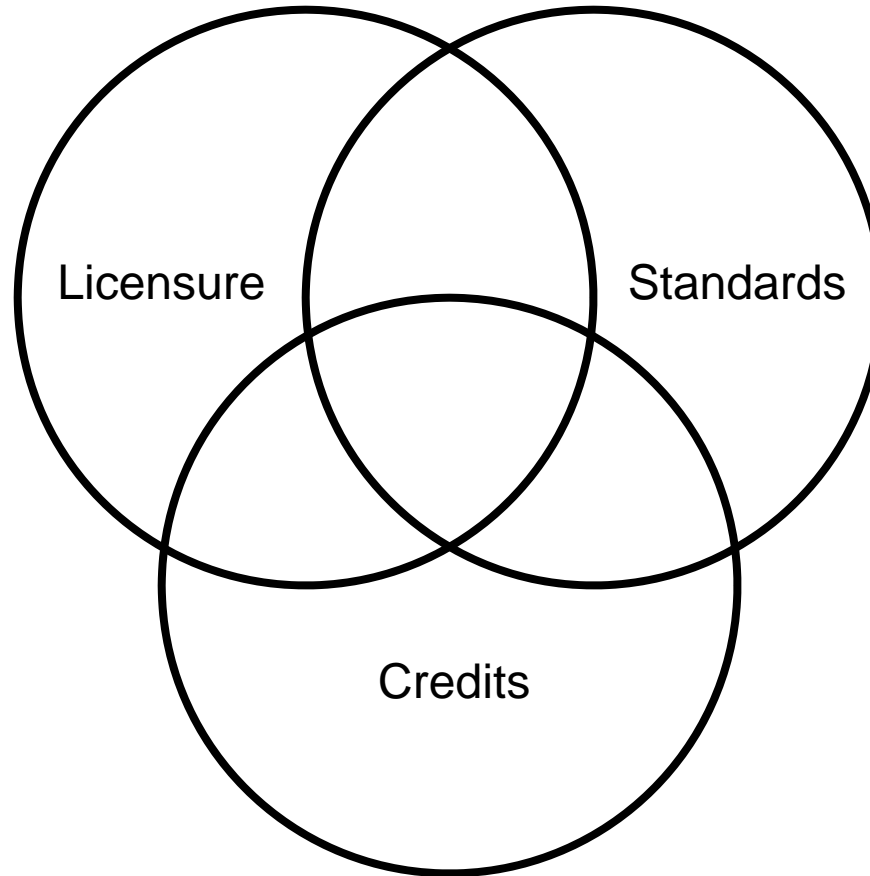
Standards

Credits

Delivering Academic Credit In CTE

The district must assure that students have opportunities to meet all standards and shall place standards in courses where the standards will be met with integrity

The district determines the credits that students shall earn for participation in its courses and when the student has met requirements for graduation

Licensure

Standards

Teaching Assignment
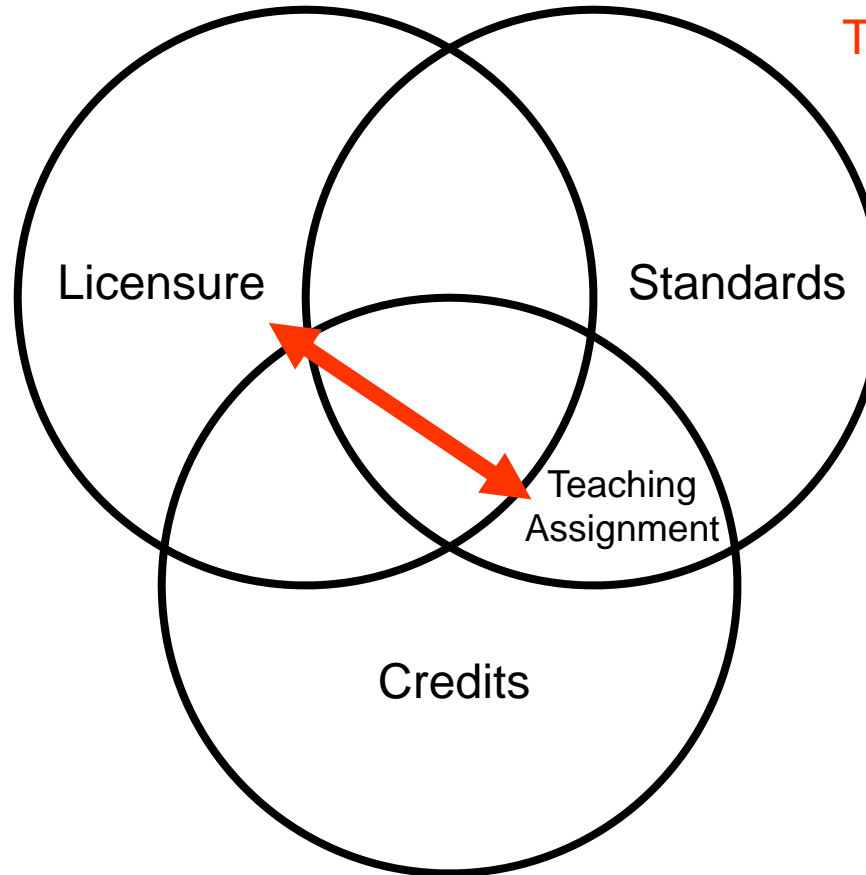
Credits

The teaching assignment presumes that credit is given where standards are met. Teaching assignments must be connected to appropriate licensure

At The Secondary Level, Minnesota Recognizes Five Areas Of The Arts:

- Visual Arts
- Music (Vocal And Instrumental)
- Theatre Arts
- Dance
- Media Arts

Minnesota Maintains Teacher Licensure In Four Of The Five Areas Of The Arts:

- Visual Arts
- Music (Vocal And Instrumental)
- Theatre Arts
- Dance
- Media Arts

There is no license in media arts, districts may determine who is qualified to deliver the content. CTE delivers the media art standards!

M.S. 120B.024 requires students to complete one credit in the arts. The statute does <u>not</u> specify which of the arts, nor is there any relationship between highly qualified provisions and the requirement that students complete a credit in the arts. The arts credit can be fulfilled in any way the district determines.

State Definition Of Media Arts

The study and practice of human communication through photography, film or video, audio, computer or digital arts, and interactive media

Media Arts Has Standards/Benchmarks

Computer Graphics
Graphic Arts – Digital Design
Computer Graphics and Applications

Deliver the Minnesota Academic Media Art Standards

Minnesota Department of Education State Rules Relating to Education

3505.1150 Awarding Science, Mathematics or Arts Credits Through Career and Technical Education.

Subpart 1. Ability to grant credit. A school district may grant a science, mathematics, or arts credit to a student who meets appropriate standards as part of a career and technical education program when:

- The school board concludes that the standards will be delivered with integrity in the career and technical education program

Outcome of CTE and Art meeting

It was agreed that the departments will continue to meet and share and compare how each delivers the Media Art Standards.

Conclusion & Recommendation

- **Continued balance of the Middle Level curriculum**

- **Expand alternative credit opportunities in CTE courses**

- **Allow for more student registration opportunity in High School CTE courses**

"We keep moving forward, opening NEW doors and doing NEW things. Our curiosity keeps taking us down NEW paths."

Walt Disney

Questions