

## CTE Course Description and Standards Crosswalk

### Course Information

Course Name	Technical Drafting 4
Course Number	86040
Number of High School Credits	.5
Sequence or CTEPS (You must first have the Sequence or CTEPS entered into the EED-CTE system.)	Architect, Cabinetry, Carpenter, Pre-Engineering, Welder
Date of district Course Revision	September 2014

### Career & Technical Student Organization (CTSO)

CTSO embedded in this sequence	SkillsUSA
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### Occupational Standards

Source of Occupational Standards	National CAD Standards Version#6 (NCS) / SkillsUSA
Names/Numbers of Occupational Standards	National CAD Standards #6 Mod 0-8 (NCS) Technical Drafting (TD)1-12

### Registration Information

Course Description (brief paragraph – as shown in your student handbook or course list)	Technical Drafting 4 covers the advanced drawing methods and techniques related to engineering design, basic descriptive geometry and computer-assisted drawing. It is recommended for students exploring the career fields of engineering or other design drafting-related occupations or educational programs. This course would also be helpful for a student who is exploring careers in electricity, electronics, computers, welding, or machining. Technical Drafting 4 refines the skills learned in Technical Drafting 3 on an individual project related to the student's interest.
Instructional Topic Headings (please separate each heading by a semi-colon)	Introduction to Advanced Drafting Tools and Techniques; Advanced CAD Techniques; Basic Descriptive Geometry; Threads and Fasteners; Electricity and Electronic Engineering Symbols; Welding Symbols; Mechanical Engineering Symbols; Civil Engineering Drawings and Symbols; Data Storage and Transfer in a Group Environment; Careers in Drafting and Design; School to Work Internships; Encourage Career and Technical Student Organization (CTSO) Involvement

### Summative Assessments and Standards

Technical Skills Assessment (TSA)	SkillsUSA
Course addresses:	Technical Drafting
New Alaska ELA and Math Standards	Yes
Alaska Cultural Standards	Yes
All Aspects of Industry (AAI)	Yes
Core Technical Standards	Yes
Employability Standards	Yes

### Employability Standards

Source of Employability Standards	State of Alaska
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### Tech Prep

Current Tech Prep Articulation Agreement? (Y/N)	Yes – With combo of Tech Drafting 3
Date of Current Agreement	12/2014

**DISTRICT NAME: Mat-Su Borough School District**

Postsecondary Institution Name	University of Alaska – Anchorage
Postsecondary Course Name	Fundamentals of CAD for Building Construction
Postsecondary Course Number	AET 101
# of Postsecondary Credits	4

### Additional CTE Course Information

Author	
Course developed by	Ray Jensen, Tom Lord, Paul Moma, Revised by: Justin Aulie, Bryan Kirby, Chris Taylor, Brad Drake, Bryan Kirby, Ray Jensen
Course adapted from	Technical Drafting 4
Date of previous course revision	June 2006
Course Delivery Model	
Is the course brokered through another institution or agency? (Y/N)	No

Standards Alignment
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Student Performance Standards (Learner Outcomes or Knowledge & Skill Statements)	Specific Occupational Skills Standard	Common Technical Core Standards	New Alaska ENG/LA Standards	New Alaska Math Standards	Alaska Cultural Standards	Employability/ Career Readiness Standards	All Aspects of Industry/ Systems	Assessment
Utilize advanced drafting and design tools such as AutoCAD drafting programs, and plotters.	TD1, 2,3.3, 9.3, 11	AC-DES 6	RST 9-12; 10, 12	GCO 1,2,5,12	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Develop layout templates for use with various drawing activities.	NCS 4.2.4 NCS 1.3 TD 1, 2, 3.3, 9.3	AC 2, 6 AC-DES 6, 7	RST 9 – 10; 7, 10, 12	GCO 2, 12 NQ 2,3 SID 2,3	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Have a working knowledge of advanced and user defined menu options available with the CAD program the student is using.	NCS 1.0 TD 1, 2,3.3, 9.3, 11	AC 6	SL 9-10; 5 L 11-12; 6	SID 2, 3, 5	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Utilize the advantages of advanced CAD functions to solve design problems.	NCS 4.0 TD 1, 2,3.3,	AC 6	RST 9 - 12; 7 L 9-12; 6	SID 7 AREI 1	B1, 4	A2	Planning Mgmt Technical Skills	SkillsUSA TD Assessment

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<b>Student Performance Standards (Learner Outcomes or Knowledge &amp; Skill Statements)</b>	<b>Specific Occupational Skills Standard</b>	<b>Common Technical Core Standards</b>	<b>New Alaska ENG/LA Standards</b>	<b>New Alaska Math Standards</b>	<b>Alaska Cultural Standards</b>	<b>Employability/ Career Readiness Standards</b>	<b>All Aspects of Industry/ Systems</b>	<b>Assessment</b>
	9.3, 11						Technology	
Create user defined menus for specific types of drawings.	NCS 2.0 TD1, 2,3.3, 9.3, 11	AC2 AC-DES 6	RST 9 – 12; 3 L9-12; 6	SID 2, 5 NQ 2,3	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Utilize interactive CAD databases.	NCS 3.0 TD1, 2,3.3, 9.3, 11	AC2 AC-DES 6	RST 9-12; 3 L 9-12; 6 WHST 9- 12; 8	NQ 2, 3	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Dimension drawings using advanced appropriate symbols and tolerances.	NCS 4.2.8 TD 1, 6	AC2 AC-DES 6	RST 9-12; 3, 8	NQ 1 – 3 SID 2, 3	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Using the CAD program perform basic descriptive geometry activities.	NCS 6.0 TD 9.3, 12	AC2 AC-DES 6	RST 9-10; 7	NQ 2, 3 GCO 1, 2	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Determine the slope, grade, bearing, true length and point projection of a line.	NCS 4.0 TD 11	AC2 AC-DES 6	RST 9-10; 4, 7	SID 7 GCO1	B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Utilize electricity and electronic symbols appropriately on a working drawing.	NCS 6.4.18 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4, 7		B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Develop an electricity/electronic symbol library.	NCS 6.4.18 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4,		B1, 4	A2	Planning Mgmt Technical Skills	SkillsUSA TD Assessment

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Student Performance Standards (Learner Outcomes or Knowledge & Skill Statements)	Specific Occupational Skills Standard	Common Technical Core Standards	New Alaska ENG/LA Standards	New Alaska Math Standards	Alaska Cultural Standards	Employability/ Career Readiness Standards	All Aspects of Industry/ Systems	Assessment
							Technology	
Utilize welding symbols Appropriately on a working drawing.	NCS 6.4 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4,		B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Develop a welding symbol library.	NCS 6.4 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4,		B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Utilize mechanical symbols appropriately on a working drawing	NCS 6.4 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4,		B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Develop a mechanical symbol library.	NCS 6.4 TD 6.2, 10	AC 1, 3, 6 AC-CES 6	RST 9-10; 4,		B1, 4	A2	Planning Mgmt Technical Skills Technology	SkillsUSA TD Assessment
Follow professional ethics including software licensing, copyright and intellectual property laws in producing and monitoring web pages and sites.		AC 2, 3 AC-DES 4, 6	WHST 9-12; 8		B 3	A 1, 2, 6	Wk Habits Mgmt	SkillsUSA TD Assessment
Encourage CTSO involvement	EAD 1, 2	AC 1, 3, 4, 5, 7	L9-12;6	GCRO 1, 2, 4, 5	C 4	A 2, 5	Technical Skills	

**Instructional Resources**

**List the major instructional resources used for this course: (websites, textbooks, essential equipment, reference materials, supplies)**

**Books and Resources**

Mechanical Drawing, French, Svenson, Hesel , McGraw Hill

Hands-On AutoCAD, Timothy Looney, Glenco

AutoCad 004

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Alaska Department of Education and Early Development

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Exercise Workbook for Beginning AutoCAD , Cheryl Shrock, Shrock Publishing

**Resources:** Architectural Graphic Standards, Wiley, Ramsey-Sleeper, 8<sup>th</sup> Edition (or newest edition)

AutoCAD for Architecture, James E Fuller

Architecture Drafting and Design, Donald E. Hepler, Paul Wallach, Dana Hepler

Skills USA, <http://www.skillsusa.org/contests.html>

NAWIC - National Association of Women in Construct