

Forest Grove High School Portland Community College 10/22/19

Architecture & Construction Cluster

<u>Instructions</u>: 1) Enter the Program of Study name above. 2) Enter your high school name. 3) Enter the community college name. 4) Enter the date. 5) Click on the cell for Course 1 Name, Course 2 Name, etc., and replace with your POS course names-seco NCE Iden stan Note spec

secon NCE: Ident stand Note: speci	ndary and first S code for the fy those cours ards that are <u>t</u> The optional I fic industry foc	year of post-secondary. 6) Enter school course numbers. 7) Enter course (secondary only). 8) Enter number of credits awarded. 9) es that trigger the TSA for this POS. 10) Finally, check those aught with intent and purpose, and are assessed in each course. Focus Area tabs below are included for those POSs that have a very clusare using those skill sets for multiple options in a Progam of to use another set of industry validated standards	woods,	Moods2	Basic Construction	Advanced Building Cor	Woods 3: Cabinetry	Woodworking Project	Architectural Drafting	Architectural Draftin	32 (Course 9 Marrel	(Course to Name)
			170061	170062	170021	170022A/170022B	17007A/17007B	17006P	21103	211032	[Course Number]	[Course Number]
			17006	17006	17002	17002	17007	17006	21103	21103	[NCES Code]	[NCES Code]
	<u>Clu</u>	uster Knowledge and Skills (CTE standards)	0.5	0.5	0.5	2	1	0.5	0.5	0.5	[# of Credits]	[# of Credits]
ССТС	* Code Number	KS Statement	no	no	no	yes	no	yes	no	no	[TSAY or N?]	[TSAY or N?]
AC 1	AC01	Use vocabulary, symbols, and formulas commonly used in design and construction.	x	x	x	x	(х	X	x		
AC 2	AC02	Use architecture and construction skills to create and manage a project.	Х	х	х		(Х				
AC 3	AC03	Comply with regulations and applicable codes to establish and manage a legal and safe workplace/jobsite.										
AC 4	AC04	Understand the nature and scope of the Architecture &Construction Career Cluster [™] and the role architecture and construction play in society and the economy.										
AC 5	AC05	Understand the roles and responsibilities among trades and professions, including labor/management relationships.				,	(
AC 6	AC06	Read, interpret, and use technical drawings, documents, and specifications to plan a project.					(x		
AC 7	AC07	Evaluate a wide range of career pathway opportunities for success in architecture and construction careers.										



Skills-to-Course Matrix
[CTE Program of Study Name]
[High School Name]
[Community College Name]
[Date]

Carpentry Focus Area

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or Cour seconda NCES c dentify standard Note: The	rse 1 Name, Cary and first yearly and first yearly ode for the courses ds that are taune optional Foecific industry	community college name. 4) Enter the date. 5) Click on the cell course 2 Name, etc., and replace with your POS course namesear of post-secondary. 6) Enter school course numbers. 7) Enter curse (secondary only). 8) Enter number of credits awarded. 9) is that trigger the TSA for this POS. 10) Finally, check those aght with intent and purpose, and are assessed in each course. It can be also below are included for those POSs that have a fociusare using those skill sets for multiple options in a Progam of the purpose of industry validated standards.	Woods 170061	woods ²	Basic Construction	Advanced Building	netrction Noode 3: Cabinetry 17007A/17007B	Woodworking Project	Architectural Drafting	Architectural Drafting	Course Number	Course Number
			17006	17006	17002	17002	17007	17006	21103	21103	[NCES Code]	[NCES Code]
	Clust	er Knowledge and Skills (CTE standards)	0.5	0.5	0.5	2	1	0.5	0.5	0.5	[# of Credits]	[# of Credits]
CCTC*	Code Number	KS Statement	no	no	no	yes	no	yes	no	no	[TSAY or N?]	[TSAY or N?]
	ACCR01	Identify building materials, fasteners, adhesives, and their uses.	x	x	x	x	x	x	110	0	[10/(10/(1)	[10/1 0.111]
	ACCR02	Read plans and elevations.	X	x	X	x	X	X				
	ACCR03	Identify and install floor systems.				х						
	ACCR04	Indentify and install wall and ceiling framing.				х						
	ACCR05	Identify and install roof framing and roofing.				х						
	ACCR06	Install concrete reinforcing materials and forms.										
	ACCR07	Install windows and exterior doors.				Х						
	ACCR08	Complete basic stair layout and construction.				Х						
	ACCR09	Conduct distance measurement and leveling for site layout.										
	ACCR10	Describe properties and testing methods for concrete.										
	ACCR11	Prepare foundations and flatwork.										
	ACCR12	Handle and place concrete.										
	ACCR13	Install exterior finishing.				х						
	ACCR14	Install thermal and moisture protection.				х						
	ACCR16	Install interior doors.				х						
	ACCR17	Install interior trim.				х						
	ACCR18	Install cabinets.				х						



Construction Management Focus Area

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Contra	Conte	(Course 3	Contee	Contee	Contre	Contra	Contre	Contre	Course

				[Course Number]								
			[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]
	<u>Cluste</u>	r Knowledge and Skills (CTE standards)	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]
CCTC*	Code Number	KS Statement	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]
AC-CST 1	I AU. (Understand contractual relationships with all parties involved in the building process to ensure successful build of a project.										
AC-CST 2	ACCS02	Understand approval procedures to ensure effective flow of information in the construction process.										
AC-CST 3	1 AU. U.SUS	Understand and implement testing and inspection procedures to ensure successful completion of a construction project.										
AC-CST 4	1 AU. U.SUZ	Understand the purpose of scheduling as it relates to the successful completion of a construction project.										
AC-CST 5	ACCS05	Understand and apply practices and procedures required to maintain jobsite safety.										
AC-CST 6	I ALLUSUN	Manage relationships with internal and external parties to successfully complete construction projects.										
AC-CST 7	ACCS07	Compare and contrast the building systems and components for a given project.										
AC-CST 8	ACCS08	Demonstrate the construction crafts required for each phase of a given project.										
AC-CST 9	ACCS09	Safely use and maintain appropriate tools, machinery, equipment, and										



ode Numbe

ACDP08 assemblies for project design.

CCTC*

AC-DES 1

AC-DES 2

AC-DES 3

AC-DES 4

AC-DES 5

AC-DES 6

AC-DES 7

AC-DES 8

Design/Pre-construction Focus Area

<u>Instructions</u>: 1) Enter the Program of Study name above. 2) Enter your high school name. 3) Enter the community college name. 4) Enter the date. 5) Click on the cell for Course 1 Name, Course 2 Name, etc., and replace with your POS course names-secondary and first year of post-secondary. 6) Enter school course numbers. 7) Enter NCES code for the course (secondary only). 8) Enter Identify those courses that trigger the TSA for this F standards that are taught with intent and purpose, Note: The optional Focus Area tabs below are inclu specific industry fociusare using those skill sets for or if you want to use another set of industry validate

or the count courses the at are taughtional Focustry focius	r of post-secondary. 6) Enter school course numbers. 7) Enter rse (secondary only). 8) Enter number of credits awarded. 9) hat trigger the TSA for this POS. 10) Finally, check those ht with intent and purpose, and are assessed in each course. It is Area tabs below are included for those POSs that have a very are using those skill sets for multiple options in a Progam of Study other set of industry validated standards	Architectural Dratting	Architectural Drafting	Course Number								
		21103	21103	[NCES Code]								
Cluste	er Knowledge and Skills (CTE standards)	0.5	0.5	[# of Credits]								
Code Numbe		no	no	[TSAY or N?]								
ACDP01	Justify design solutions through the use of research documentation and analysis of data. Use effective communication skills and strategies (listening, speaking, reading,											
	writing, and graphic communications) to work with clients and colleagues.											
ACDP03	Understand the integral systems that impact the design of buildings and structures.	x	x									
ACDP04	Apply building codes, laws, and rules in the design and construction of projects.											
ACDP05	Identify the diversity of needs, values, and social patterns in project design, including accessibility standards, to appropriately meet client needs.											
ACDP06	Apply the techniques and skills of modern drafting, design, engineering, and construction to projects.	x	х									
$\Lambda \cap D \cap A$	Employ appropriate representational media to communicate concepts and design.											
	Apply principles, conventions, standards, applications, and restrictions pertaining to the selection and use of construction materials, components, and											



CCTC* Code Number

ACLV11

Low Voltage Electricity Focus Area

<u>Instructions</u>: 1) Enter the Program of Study name above. 2) Enter your high school name. 3) Enter the community college name. 4) Enter the date. 5) Click on the cell for Course 1 Name, Course 2 Name, etc., and replace with your POS course names-secondary and first year of post-secondary. 6) Enter school course numbers. 7) Enter NCES code for the course (secondary only). 8) Enter number of credits awarded. 9) Identify those courses that trigger the TSA for this POS. 10) Finally, check those standards that are taught with intent and purpose, and are assessed in each course. Note: The optional Focus Area tabs below are included for those POSs th specific industry fociusare using those skill sets for multiple options in a P or if you want to use another set of industry validated standards

Install rack systems for electronic equipment.

optional Fodustry focit	ocus Area tabs below are included for those POSs that have a very usare using those skill sets for multiple options in a Progam of Study	169"	Course 2 M	Course 3 M	Course A M	Contes & W.	Contes & W.	Conte 1 M	Contee 8 M	Conteg of	Contes 10.
ant to use	another set of industry validated standards	[Course Number]									
		[NCES Code]									
Focus	Area Knowledge and Skills (CTE standards)	[# of Credits]									
ode Number	KS Statement	[TSAY or N?]									
ACLV01	Install pathways and spaces for low-voltage electrical systems.										
ACLV02	Prepare and install low-voltage cabling.										
ACLV03	Understand semiconductors and integrated circuits.										
ACLV04	Use test equipment.										
ACLV05	Understand power quality and grounding.										
ACLV06	Understand switching devices and timers.										
ACLV07	Prepare wire and cable terminations.										
ACLV08	Understand codes and standards related to low-voltage electrical.										
ACLV09	Use computer applications in low-voltage electrical systems.										
ACLV10	Conduct maintenance and repair on low-voltage electrical systems.										



Maintenance & Operations Focus Area

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		ociusare using those skill sets for multiple options in a Progam to use another set of industry validated standards	Contr	Cont	Contr							
			[Course Number]									
			[NCES Code]									
	Focus Ar	<u>ea</u> Knowledge and Skills (CTE standards)	[# of Credits]									
сстс*	Code Number	KS Statement	[TSAY or N?]									
AC-MO 1	COMO01	Recognize and employ universal construction signs and symbols to function safely in the workplace.										
AC-MO 2	COMO02	Use troubleshooting procedures when solving a maintenance problem to maintain buildings and structures.										
AC-MO 3	COMO03	Apply construction skills when repairing, restoring, or renovating existing structures.										
AC-MO 4	COMO04	Determine work required to repair or renovate an existing building or structure.										
AC-MO 5	COMO05	Plan and practice preventative maintenance activities to service existing structures.										
A C NA C C	0014000	Maintain and inspect building systems to achieve safe and efficient	_	_		_		_				



Masonry Focus Area

<u>Instructions</u>: 1) Enter the Program of Study name above. 2) Enter your high school name. 3) Enter the community college name. 4) Enter the date. 5) Click on the cell for Course 1 Name, Course 2 Name, etc., and replace with your POS course names-secondary and first year of post-secondary. 6) Enter school course numbers. 7) Enter NCES code for the course (secondary only). 8) Enter number of credits awarded. 9) Identify those courses that trigger the TSA for this POS. 10) Finally, check those standards that are taught with intent and purpose, and are assessed in each course. Note: The optional Focus Area tabs below are included for those POSs that have a very specific industry fociusare using those skill sets for multiple options in a Progam of Study or if you want to use another set of industry validated

n Ss s	(Course 1 Warne)	(Course 2 Warre)	(Course 3 Warne)	(Course A Harne)	(Course 5 Marne)	(Course 6 Marne)	Course T Warrel	(Course 8 Marne)	(Course 9 Marne)	(Course to Marne)
	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]					

			[Codise Number]			[Codise Number]	[Codise Namber]		[Codise Namber]			
			[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]
	Focus Area	Knowledge and Skills (CTE standards)	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]
CCTC*	Code Number	KS Statement	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]
	ACMS01	Understand safe use of equipment in elevated masonry work.										
	ACMS02	Perform appropriate construction inspection and quality control.										
	ACMS03	Understand the safe use of equipment and materials in high-rise construction work.										
	ACMS04	Use appropriate masonry tools and equipment.										
	ACMS05	Understand the components of mortar and how to mix those components properly.										
	ACMS06	Understand masonry units and installation techniques.										
	ACMS07	Apply masonry techniques to residential construction.										
	ACMS08	Understand and use appropriate techniques for reinforced masonry.										
	ACMS09	Understand how metal work is used in masonry.										
	ACMS10	Apply advanced masonry laying techniques.										
	ACMS11	Understand the relationships between masonry construction										
	ACMS12	Apply appropriate masonry construction techniques to a variety of										
	ACMS13	Repair and restore masonry structures.										



Plumbing Focus Area

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Course	Contes	Contes	Course	Contra	Contes	Contre	Contre	Contees	Conte
Course Number	[Course Number]	Course Numbe							

			[Course Number]									
			[NCES Code]									
	Focus A	rea Knowledge and Skills (CTE standards)	[# of Credits]									
сстс*	Code Number	KS Statement	[TSAY or N?]									
	ACPL01	Perform general plumbing practices.										
	ACPL02	Prepare and install building drainage systems.										
	ACPL03	Prepare and install vents.										
	ACPL04	Prepare and install traps.										
	ACPL05	Join pipes and fittings.										
	ACPL06	Install plumbing fixtures.										
	ACPL07	Layout and install water supply lines.										
	ACPL08	Install hot water systems.										
	ACPL09	Perform safety inspections.										
	ACPL10	Conduct plumbing service and repair.										



Residential Electric Focus Area

<u>Instructions</u>: 1) Enter the Program of Study name above. 2) Enter your high school name. 3) Enter the community college name. 4) Enter the date. 5) Click on the cell for Course 1 Name, Course 2 Name, etc., and replace with your POS course names-secondary and first year of post-secondary. 6) Enter school course numbers. 7) Enter NCES code for the course (secondary only). 8) Enter number of credits awarded. 9) Identify those courses that trigger the TSA for this POS. 10) Finally, check those standards that are taught with intent and purpose, and are assessed in each course. Note: The optional Focus Area tabs below are included for those POSs that have a very specific industry fociusare using those skill sets for multiple options in a Progam of Study or if you want to use another set of industry validated standards.

			[Course Number]									
			[NCES Code]									
	Focus Are	ea Knowledge and Skills (CTE standards)	[# of Credits]									
сстс*	Code Number	KS Statement	[TSAY or N?]									
	ACRE01	Apply electrical theory to circuits including concepts of alternating current.										
	ACRE02	Use electrical test equipment.										
	ACRE03	Understand how to use the National Electrical Code®										
	ACRE04	Prepare electrical conduit for installation.										
	ACRE05	Indentify and Install fasteners and anchors.										
	ACRE06	Install raceways, boxes, cable trays, and fittings.										
	ACRE07	Install Conductors										
	ACRE08	Read and understand electrical blueprints.										
	ACRE09	Install wiring in switches and enclosures in commercial settings.										
	ACRE10	Install wiring in residential settings.										
	ACRE11	Understand the principles of grounding.										
	ACRE12	Install boxes and fittings.										
	ACRE13	Prepare conductor terminations and splices.										
	ACRE14	Install electrical services.										
	ACRE15	Understand circuit breakers and fuses.										
	ACRE16	Understand contactors and relays.										
	ACRE17	Install electric lighting										
	ACRE18	Calculate loads for branch and feeder circuits.										
	ACRE19	Select appropriate conductors.										
	ACRE20	Determine appropriate overcurrent protection.										
	ACRE21	Understand requirements for raceway, box, and fitting fill.										
	ACRE22	Understand requirements for wiring devices.										
	ACRE23	Understand and inspect distribution equipment.										
	ACRE24	Understand the purpose and function of lamps, ballasts, and their										
	ACRE25	Use appropriate wiring methods for hazardous locations.										
	ACRE26	Identify practical lighting requirements.										
	ACRE27	Identify and install heat tracing and freeze protection systems.										
	ACRE28	Complete high voltage terminations and splices.										



Sheet Metal/HVAC Focus Area

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n	Course	Conse	Course	Course	Course	Conte	Course.	Contes	Course	Course	
	[Course Number]	ı									

	[Course Number]									
	[NCES Code]									
Focus Area Knowledge and Skills (CTE standards)	[# of Credits]									
CCTC* Code Number KS Statement	[TSAY or N?]									
ACSM01 Understand the safe use of equipment and tools used in sheet metal and HVAC.										
ACSM02 Perform proper piping practices.										
ACSM03 Perform soldering and brazing operations.										
ACSM04 Identify fasteners, hangers, and supports and their use in sheetmetal and HVAC.										
ACSM06 Understand the fundamental concepts related to heating systems.										
ACSM07 Understand the fundamental concepts related to air distribution systems.										
ACSM08 Read and interpret blueprints related to HVAC and sheetmetal projects.										
ACSM09 Understand fundamental sheet metal planning and layout.										
ACSM10 Understand principles of sheet metal fabrication.										
ACSM11 Maintain heating and cooling systems.										_
ACSM12 Understand the relationship between indoor air quality and HVAC.										
ACSM13 Design heating and cooling systems.										



CCTC* Code Number

ACGR01

ACGR02

ACGR03

ACGR06

ACGR07

ACGR08

ACGR09

Sustainable Building Focus Area

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Focus Area Knowledge and Skills (CTE standards)

Identify green building industry tools and resources.

practices associated with green building.

Identify indoor environmental quality (IEQ) issues, concepts, strategies and

Understand how materials selection and use is applied in green building.

Understand how industry accepted practices associated with design,

Understand how energy is used in buildings and how energy-saving materials, systems, and techniques are utilized in green buildings.

oc y f	that trigger the TSA for this POS. 10) Finally, check those ght with intent and purpose, and are assessed in each course. Cus Area tabs below are included for those POSs that have a fociusare using those skill sets for multiple options in a Progam to use another set of industry validated standards.	[Course Warnel	(Course 2 Warne)	(Course 3 Name)	Course a Name 1	(Course 5 Name)	(Course & Name)	Course 1 Warnes	(Course & Name)	(Course 9 Name)	(Course to Warne)
		[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]	[Course Number]
		[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]
A	rea Knowledge and Skills (CTE standards)	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]
er	KS Statement	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]
	Understand how fundamental science concepts and strategies are applied										
	through building science.										
	Understand the rationale for sustainability and green building.										
	Explain the issues, concepts, strategies, and practices of sustainable site										
	planning and land use.										
	Identify water-efficiency and management issues, concepts, strategies,										
	and practices associated with green building.										