Date:

Portland Community College Construction 12/1/2016

Architecture & Construction Cluster

2016

Skills-to-Course Matrix

Instructions: 1) Enter your high school name above. 2) Enter the community college name. 3) Enter the Program of Study name. 4) Enter the date. 5) Click on Course 1, Course 2, etc. below and replace with your POS course names (or numbers). 6) Check those courses that trigger the TSA for this POS. 7) Finally, check those standards that are taught with intent and purpose, and are assessed in each course. Note: You only need to use the optional Focus Area tabs below if you are using those skill sets for multiple options in a Progam of Study or if you want to use another set

Cluster Knowledge and Skills (CTE standards)

	Cluste	er Knowledge and Skills (CTE standards)	8CL JOS	8C 103	8C JOA	&C106	ARCH 110	8C135	80727	80,30	80122	8C122	BC 123
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
AC 1	1 AU.(11	Use vocabulary, symbols, and formulas commonly used in design and construction.		х			х						
AC 2	I ACO2	Use architecture and construction skills to create and manage a project.											
AC 3	1 AC.113	Comply with regulations and applicable codes to establish and manage a legal and safe workplace/jobsite.				x							
AC 4	AC04	Understand the nature and scope of the Architecture &Construction Career ClusterTM and the role architecture and construction play in society and the economy.											
AC 5	ΔCOS	Understand the roles and responsibilities among trades and professions, including labor/management relationships.											
AC 6	I ALUD	Read, interpret, and use technical drawings, documents, and specifications to plan a project.	x				x						
AC 7		Evaluate a wide range of career pathway opportunities for success in architecture and construction careers.											

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Portland Community College Construction 12/1/2016

Carpentry Focus Area

2016

Skills-to-Course Matrix

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Focus Area Knowledge and Skills (CTE standards)

	Focus Ar	ea Knowledge and Skills (CTE standards)	8C1302	8C 103	BC 10A	BC1306	ARCH 210	8C1255	80127	BC120	80122	80122	80123
CCTC	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	ACCR01	Identify building materials, fasteners, adhesives, and their uses.		x	х				х		х		
	ACCR02	Read plans and elevations.			х					х	х		
	ACCR03	Identify and install floor systems.		х									
	ACCR04	Indentify and install wall and ceiling framing.								х	х		
	ACCR05	Identify and install roof framing and roofing.											
	ACCR06	Install concrete reinforcing materials and forms.											
	ACCR07	Install windows and exterior doors.											
	ACCR08	Complete basic stair layout and construction.											
	ACCR09	Conduct distance measurement and leveling for site layout.			х				х	х	х		
	ACCR10	Describe properties and testing methods for concrete.							х				
	ACCR11	Prepare foundations and flatwork.							х	х	х		ı
	ACCR12	Handle and place concrete.							х				
	ACCR13	Install exterior finishing.											
	ACCR14	Install thermal and moisture protection.									х		
	ACCR16	Install interior doors.											<u></u>
	ACCR17	Install interior trim.											
	ACCR18	Install cabinets.											

Portland Community College Construction 12/1/2016

Construction Management Focus Area

2016

Skills-to-Course Matrix

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Focus Area Knowledge and Skills (CTE standards)

Ē	ocus Area	Knowledge and Skills (CTE standards)	BCT102	8C1 103	BCT 10A	8C1106	RRCH 110	8C135	85127	BC 120	8C121	85722	8C1723
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
AC-CST	ACCS01	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.		х				х					
AC-CST	ACCS03	Understand and implement testing and inspection procedures to ensure successful completion of a construction project.						х					
AC-CST 4	1 AUU.504	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.		x		x							
AC-CST 6	ACCS06	Manage relationships with internal and external parties to successfully complete construction projects.											
AC-CST	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	1 AUU.3U.9	Safely use and maintain appropriate tools, machinery, equipment, and resources to accomplish construction project				x							

Portland Community College Construction 12/1/2016

Design & Pre-Construction Focus Area

2016

Skills-to-Course Matrix

<u>Fo</u>	cus Area	Knowledge and Skills (CTE standards)	8CT 302	8CT 103	8CT 104	8CT106	ARCH 110	8CT 135	BC1221	8C1720	8C122	8C1722	8C123
ССТС	ode Numb	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
AC-DES 1	ACDP01	Justify design solutions through the use of research documentation and analysis of data.											
AC-DES 2	ACDP02	Use effective communication skills and strategies (listening, speaking, reading, writing, and graphic communications) to work with clients and colleagues.											
AC-DES 3	ACDP03	Understand the integral systems that impact the design of buildings and structures.											
AC-DES 4		Apply building codes, laws, and rules in the design and						x					
AC-DES 5	ACDP05	Identify the diversity of needs, values, and social patterns in project design, including accessibility standards, to appropriately meet client needs.											
AC-DES 6	ACDP06	Apply the techniques and skills of modern drafting, design, engineering, and construction to projects.								x	x	x	x
AC-DES 7	ACDP07	Employ appropriate representational media to communicate concepts and design.											
AC-DES 8	ACDP08	Apply principles, conventions, standards, applications, and restrictions pertaining to the selection and use of construction		x									

Portland Community College Construction 12/1/2016

Low Voltage Electrical Focus Area

2016

Skills-to-Course Matrix

	Focus Are	a Knowledge and Skills (CTE standards)	8CT 302	8C1 103	BCT 10A	8C1206	ARCHILL	8C135	BC127	8C120	BC 121	8C122	8C123
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	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.											
	ACLV11	Install rack systems for electronic equipment.	<u> </u>										

Portland Community College Construction 12/1/2016

Maintenance & Operations Focus Area

2016

Skills-to-Course Matrix

<u>F</u>	ocus Area	Knowledge and Skills (CTE standards)	BC 102	8C1 103	BCT TOW	8CT106	ARCHIL	8C135	8C1221	8C120	8C122	8C1722	8C1223
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
AC-MO 1	1 () () () () () ()	Recognize and employ universal construction signs and symbols to function safely in the workplace.											
AC-MO 2		Use troubleshooting procedures when solving a maintenance problem to maintain buildings and structures.											
AC-MO 3	1 (1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1	Apply construction skills when repairing, restoring, or renovating existing structures.											
AC-MO 4		Determine work required to repair or renovate an existing building or structure.											
AC-MO 5	1 ()()()()()()()	Plan and practice preventative maintenance activities to service existing structures.											
AC-MO 6		Maintain and inspect building systems to achieve safe and											

Date:

Portland Community College Construction 12/1/2016

Masonry Focus Area

2016

Skills-to-Course Matrix

<u>F</u>	ocus Area I	(nowledge and Skills (CTE standards)	BC 102	8CT 103	8CT 10A	8C1106	ARCHILU	8C 135	8C127	8C120	8C122	8C172	8C123
CCTC	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	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 techniques and moisture control.											
	ACMS12	Apply appropriate masonry construction techniques to a variety of materials and conditions.											
	ACMS13	Repair and restore masonry structures.											

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Portland Community College Construction 12/1/2016

Plumbing Focus Area

2016

Skills-to-Course Matrix

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Focus Area Knowledge and Skills (CTE standards)

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ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	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.											

Date:

Portland Community College Construction 12/1/2016

Residential Electric Focus Area

2016

Skills-to-Course Matrix

	Focus Are	a Knowledge and Skills (CTE standards)	8C1 102	8C1 103	8CT 104	8C1706	ARCH 110	8CT 135	8C1221	BC1220	8C122	8C122	8C123
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	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 components.											
	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.									-		

Portland Community College Construction 12/1/2016

Sheet Metal HVAC Focus Area

2016

Skills-to-Course Matrix

	Focus Are	ea Knowledge and Skills (CTE standards)	8C1 102	8CT 103	BCT 10A	8C1306	ARCH 110	8C135	8C127	8C120	8C122	8C122	8C123
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	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.											

Portland Community College Construction 12/1/2016

Sustainable Building Focus Area

2016

Skills-to-Course Matrix

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Focus Area Knowledge and Skills (CTE standards)

		The strict go and online (012 standards)	&c,	\ ^{&} C.	\ ^{&} C.	\ ^{&} C,	ARE	\ \shc_c,	&C,	&C.	&C.	&C.	&C,
ССТС	Code Number	KS Statement	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?	TSA?
	ACGR01	Understand how fundamental science concepts and strategies are applied through building science.											
	ACGR02	Understand the rationale for sustainability and green building.											
	ACGR03	Explain the issues, concepts, strategies, and practices of sustainable site planning and land use.											
	ACGR04	Identify water-efficiency and management issues, concepts, strategies, and practices associated with green building.											
	ACGR05	Understand how energy is used in buildings and how energy-saving materials, systems, and techniques are utilized in green buildings.											
	ACGR06	Identify indoor environmental quality (IEQ) issues, concepts, strategies and practices associated with green building.											
	ACGR07	Understand how materials selection and use is applied in green building.											
	ACGR08	Identify green building industry tools and resources.											
	ACGR09	Understand how industry accepted practices associated with design, construction and certification impact green building.											