#### **Skills-to-Course Matrix**

### Civil Engineering

[High School Name]
Portland Community College Jan-19

### **Engineering Technology Cluster**

	,												Analytic Ge		,	arrentals	.de <sup>s</sup>			
Portunal Desired England Desired Fred Production of the England Produc	id Technoles audic Speaking dane Surveying (ninonnental Syst	dis	thenoth of Materials	chengh of M	trength of Materials	angth of Materials	n of Materials	ath of Materials	ength of Materials	H of Materials	Global Energy Physics	cechnical Algebra with	oplied Calculus	Cuid Mchanics	oplied Electricity Fund	au angganic Chemistr	Princip Asterial Technology	outhic speaking	nane Surveying	ovitonnental syst

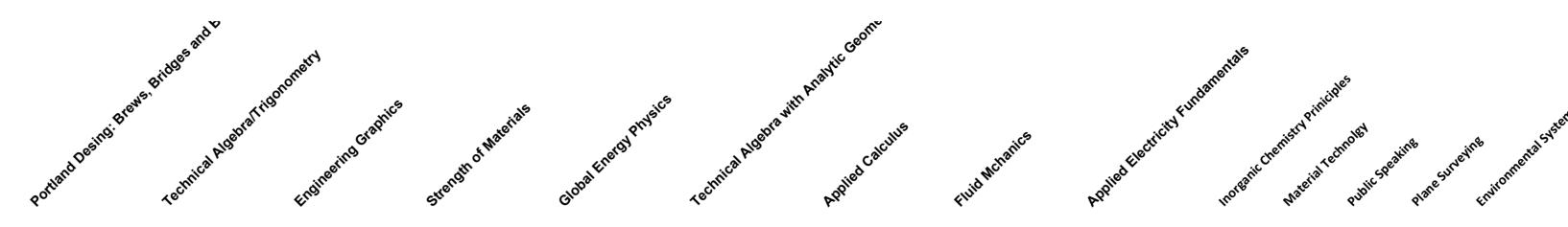
		<b>CMET 110</b>	<b>CMET 111</b>	<b>CMET 112</b>	<b>ENGR 102</b>	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101	<b>CMET 133</b>	COMM 11	1 ENGR 226	<b>CMET 221</b>
<u>Clu</u>	ster Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5	3	4	4	3
CCTC* Code Number	KS Statement	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	TSAY or	N?TSAY or N?	/TSAY or N?]									
EN01	Use effective communication skills with a variety of audiences.	х	х	х	х	х	х	х	х	х	х					
EN02	Exhibit integrity and professionalism in engineering cluster occupations.															
EN03	Use technology such as computers and design software to solve engineering problems.							x			x	x	x			
EN04	Understand and use applied mathematics and science for engineering cluster careers.	х	x	x	x	x	x	x	x	x	x					
EN05	Develop and implement a career plan within the engineering cluster occupations.													x		
EN06	Use teamwork, critical thinking and problem solving skills to address complex problems in engineering.	x	x	x	x	x	x	x	x	x	x					
EN07	Understand the role of engineering in society throughout history and how it is affected by economics, regulations, politics, and corporate culture.															
EN08	Apply design principles and life-cycle methodology to create products, systems, and processes using appropriate technology.														x	
EN09	Understand the impact personal characteristics, such as creativity, resourcefulness, the ability to visualize and the ability to think abstractly have on engineers and their ability to design.	x	x	x	x	x	x	x	x	x	x					
EN10	Understand and adhere to safety, health, and environmental standards and regulations.														x	х

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			<b>CMET 110</b>	<b>CMET 111</b>	<b>CMET 112</b>	ENGR 102	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101	CMET 133	<b>COMM 11</b>	I ENGR 226	<b>CMET 221</b>
	<u>Cluste</u>	r Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5	3	4	4	3
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?]	SAY or N	AY or N	SAY or I	SAY or N	6AY or N?]
	ENCS01	Understand the laws of thermodynamics and their application in the analysis of chemical engineering problems.															
	ENCS02	Understand and apply knowledge of chemistry in the solving of chemical engineering problems.															
	ENCS03	Understanding of chemical engineering processes.															

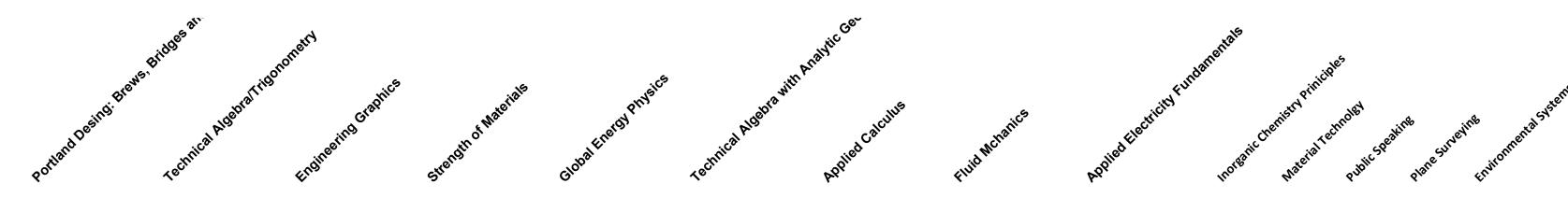
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# Civil Engineering [High School Name]

Portland Community College

Jan-19

#### **Engineering Technology Cluster**



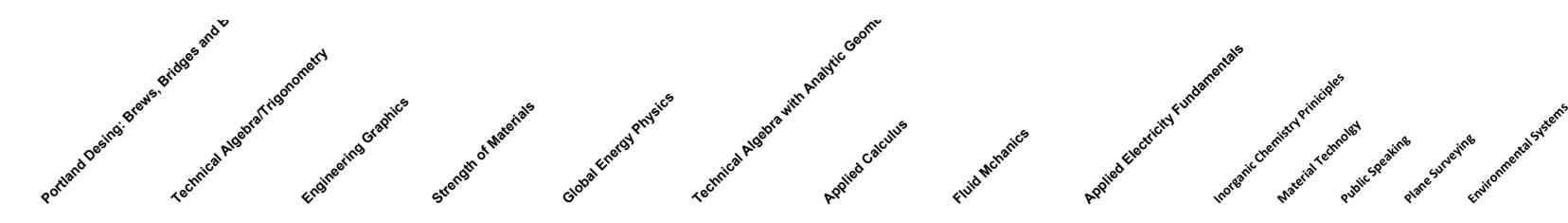
			<b>CMET 110</b>	<b>CMET 111</b>	<b>CMET 112</b>	ENGR 102	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101 CMET 133 COMM	111 ENGR 226	CMET 221			
	<u>Clu</u>	uster Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5 3 4	4	3			
CCTC*	Code Number	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?]	SAY or NSAY or NSAY	or NSAY or	NSAY or N	1?]		
	ENCV01	Understand and use material science to solve problems appropriate to civil engineering.																
	ENCV02	Demonstrate knowledge of fluid dynamics.									х		x			х		
	ENCV03	Demonstrate knowledge of structural dynamics.																
	ENCV04	Understand and apply basic principles of environment quality.																
	ENCV05	Understand and apply knowledge of soil structure and mechanics to solve problems in civil engineering.															х	
	ENCV06	Understand and use local, regional, national and global spatial data infrastructures.														x		
	ENCV07	Understand and apply the principles of surveying in civil engineering.													Х		х	
															х		х	

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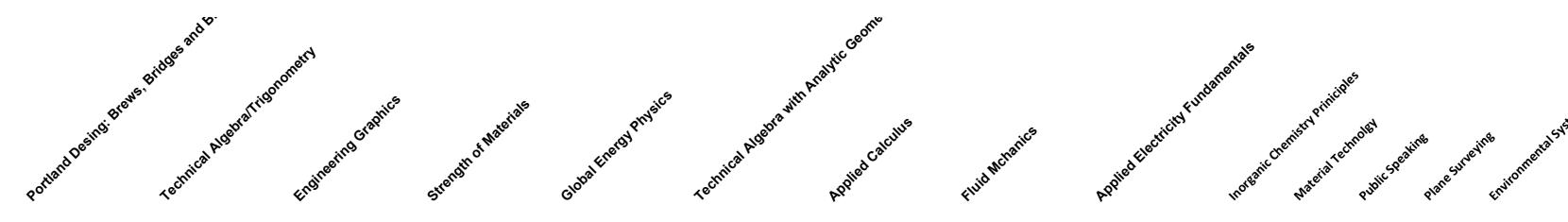


			<b>CMET 110</b>	<b>CMET 111</b>	<b>CMET 112</b>	ENGR 102	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101	<b>CMET 133</b>	<b>COMM 111</b>	1 ENGR 226 CMET 2	<b>221</b>
	Cluste	r Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5	3	4	4	3
CCTC*	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?]	SAY or N	SAY or N	SAY or N	SAY or ISAY c	√r N?]
	ENES01	Understand and apply electrical theory and laws.															х
	ENES02	Demonstrate knowledge and application of transistors.															х
	ENES03	Understand and apply circuit concepts and analysis techniques.															х
	ENES04	Demonstrate knowledge of circuit design and fabrication.															
	ENES05	Understand and apply digital concepts and circuitry.															
	ENES06	Demonstrate knowledge of power sources and power supplies.															
	ENES07	Demonstrate knowledge of communication systems.															
	ENES08	Understand and perform skills for system integration and amplification.															
	ENES09	Communicate using symbols, measurements, conventions, icons, and graphic images.															

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			<b>CMET 110</b>	<b>CMET 111</b>	<b>CMET 112</b>	ENGR 102	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101	<b>CMET 133</b>	3 COMM 111 ENGR 226	CMET 221		
	Clusto	er Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5	3	4 4	3		
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?]	SAY or	SAY or I	NSAY or NSAY or N	SAY or N	<b>!</b> ?]	
	ENMN01	Use knowledge of material science to solve problems appropriate to														T	(	
		manufacturing engineering.												Х	<u> </u>	<u></u> /		
	ENMN02	Demonstrate knowledge of planning and logistics requirement in														,	1	
		manufacturing engineering.												<u> </u>		<u>                                     </u>	Х	
	ENMN03	Demonstrate an understanding of quality control.														Ţ	х	х
	ENMN04	Understand and apply basics of supply chain management.														Ţ	х	·
	ENMN05	Understand and apply knowledge of manufacturing processes and practices.															x	x
	ENMN06	Demonstrate basic knowledge of packaging within manufacturing.															(	

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**Engineering Technology Cluster** 

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Portland Desing: Brews, Bridges and b	rigot Engineering Graphics	Strength of Materials	Global Energy Physics	Technical Algebra with	Applied Calculus	Fluid Mchanics	Applied Electricity Fur	Indeprent

			CMET 110	<b>CMET 111</b>	<b>CMET 112</b>	ENGR 102	<b>CMET 121</b>	<b>CMET 122</b>	<b>CMET 123</b>	<b>CMET 131</b>	<b>CMET 213</b>	<b>CMET 227</b>	CH 101	CMET 133 CON	M 111 ENGR 226	5 CMET 221			
	Clust	er Knowledge and Skills (CTE standards)	4	3	4	3	4	4	4	8	3	2	5	3	4 4	3			
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?]	SAY or I	NSAY or NSA	Y or NSAY or I	NSAY or N?]			
	ENMS01	Understand and use principles of machine theory.														х			
	ENMS02	Demonstrate knowledge of fluid dynamics.									х								
	ENMS03	Demonstrate knowledge of statics and dynamics in mechanical systems.																	
			x																Х
	ENMS04	Use knowledge of material science to solve problems appropriate to																	
		manufacturing engineering.												х					
	ENMS05	Demonstrate knowledge of thermal dynamics.															х	x	