Skills-to-Course Matrix

Engineering and Design

Mountainside High School **Portland Community College** Mar-19

CCTC* Code Number

EN01

EN02

EN03

EN04

EN05

EN06

EN07

EN08

EN09

EN10

regulations.

Engineering Technology 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-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.

Cluster Knowledge and Skills (CTE standards)

Understand and adhere to safety, health, and environmental standards and

Χ

t year of post-secondary. 6) Enter school course numbers. 7) Enter course (secondary only). 8) Enter number of credits awarded. 9) ses that trigger the TSA for this POS. 10) Finally, check those taught with intent and purpose, and are assessed in each course. Focus Area tabs below are included for those POSs that have a very ciusare using those skill sets for multiple options in a Progam of Study se another set of industry validated standards.	Introduction to Engine	ering trajneering & Design	Engineering & Design	Engineering & Design	is Design Technology	a Robolics	Robotics 2	ca ^{D^}	CADI
	A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA
	21006	21006	21006	21006	21006	21009	21009	21107	21107
uster Knowledge and Skills (CTE standards)	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5
er KS Statement	N	N	N	Y	Υ	N	N	N	N
Use effective communication skills with a variety of audiences.	X	Х	X	X	Х	Х	Х		
Exhibit integrity and professionalism in engineering cluster occupations.	Х	Х	Х	Х	Х	Х	Х	Х	Х
Use technology such as computers and design software to solve engineering problems.	Х	х	Х	Х	Х	Х	Х	Х	Х
Understand and use applied mathematics and science for engineering cluster careers.	X	Х	Х	Х	X				
Develop and implement a career plan within the engineering cluster occupations.				Х	X				
Use teamwork, critical thinking and problem solving skills to address complex problems in engineering.	X	Х	Х	Х	Х	Х	Х		
Understand the role of engineering in society throughout history and how it is affected by economics, regulations, politics, and corporate culture.			Х	Х	X				
Apply design principles and life-cycle methodology to create products, systems, and processes using appropriate technology.	X	Х	Х	Х	Х				
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	Х	Х	Х	Х				

Χ

Χ

Skills-to-Course Matrix

Engineering and Design

Mountainside High School Portland Community College Mar-19

Code Number

ENCS01

ENCS02

ENCS03

CCTC*

Chemical Engineering Systems Focus Area

Instructions: 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.

Focus Area Knowledge and Skills (CTE standards)

analysis of chemical engineering problems.

Understanding of chemical engineering processes.

engineering problems.

KS Statement

Understand the laws of thermodynamics and their application in the

Understand and apply knowledge of chemistry in the solving of chemical

at - w	Introduction to Engine	erind Design	Engineering & Design	Engineering & Design	B Design Technology	st Robotics	Robotics 2	cao^	CADZ
	A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA
	21006	21006	21006	21006	21006	21009	21009	21107	21107
	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5
	N	N	N	Y	Υ	N	N	N	N
		Х	Х	X	X				
			Х						
							1		

Skills-to-Course Matrix

Engineering and Design

Mountainside High School **Portland Community College** Mar-19

Code Number

ENCV01

ENCV02

ENCV03

ENCV04

ENCV05

ENCV06

ENCV07

CCTC*

Civil &Infrastrucure Engineering Systems 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 Course 2 Name, etc., and replace with your POS course names--secondary and first secondary. 6) Enter school course numbers. 7) Enter NCES code for the course (sec 8) Enter number of credits awarded. 9) Identify those courses that trigger the TSA fo 10) Finally, check those standards that are taught with intent and purpose, and are a each course. Note: The optional Focus Area tabs below are included for those POS very specific industry fociusare using those skill sets for multiple options in a Progam you want to use another set of industry validated standards.

Focus Area Knowledge and Skills (CTE standards)

d ts st	ge name. 4) Enter the date. 5) Click on the cell for Course 1 Name, replace with your POS course namessecondary and first year of post-l course numbers. 7) Enter NCES code for the course (secondary only). awarded. 9) Identify those courses that trigger the TSA for this POS. andards that are taught with intent and purpose, and are assessed in otional Focus Area tabs below are included for those POSs that have a sare using those skill sets for multiple options in a Progam of Study or if et of industry validated standards.	Introduction to Engine	eeing Engineeing & Design	A Legineering & Design	Engineering & Design	B Design Technology	al Robotics 1	20botics 2	CADA	CAD2
		A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA
		21006	21006	21006	21006	21006	21009	21009	21107	21107
JS	Area Knowledge and Skills (CTE standards)	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5
er	KS Statement	N	N	N	Υ	Υ	N	N	N	N
	Understand and use material science to solve problems appropriate to civil engineering.		Х	х						
	Demonstrate knowledge of fluid dynamics.			X						
	Demonstrate knowledge of structural dynamics.		Х	X	X	X				
	Understand and apply basic principles of environment quality.			Х	Χ	Χ				
	Understand and apply knowledge of soil structure and mechanics to solve problems in civil engineering.									
	Understand and use local, regional, national and global spatial data infrastructures.									
	Understand and apply the principles of surveying in civil engineering.									

Skills-to-Course Matrix

Engineering and Design

Mountainside High School Portland Community College Mar-19

Code Number

ENES01

ENES02 ENES03

ENES04

ENES05

ENES06

ENES07

ENES08

ENES09

graphic images.

CCTC*

Electrical Engineering Systems Focus Area

Instructions: 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.

Focus Area Knowledge and Skills (CTE standards)

Understand and apply electrical theory and laws.

Demonstrate knowledge and application of transistors.

Understand and apply circuit concepts and analysis techniques.

Demonstrate knowledge of power sources and power supplies.

Understand and perform skills for system integration and amplification.

Communicate using symbols, measurements, conventions, icons, and

Demonstrate knowledge of circuit design and fabrication.

Understand and apply digital concepts and circuitry.

Demonstrate knowledge of communication systems.

KS Statement

IISt										
nat <u>t</u> ow	Introduction to Engine	Engineering & Design	Engineering & Design	Engineering & Design	B Design Technology	\$`	.∿			
•	Introduct	Endineer	Endineer	Engineer	IB Design	Robotics 1	Robotics 2	CAD	CAD2	
	A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA	
	21006	21006	21006	21006	21006	21009	21009	21107	21107	
	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5	
	N	N	N	Υ	Υ	N	N	N	N	
		X	X	X	X					
			X							
		X	X	X	Х					
		X	X	X	Х					
		X	X	X	Х					
								Х	Х	
			х	Х	х			х	x	

Skills-to-Course Matrix

Engineering and Design

Mountainside High School Portland Community College Mar-19

Code Number

ENMN01

ENMN02

ENMN03

ENMN04

ENMN05

ENMN06

CCTC*

Manufacturing Engineering Systems Focus Area

Instructions: 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.

Focus Area Knowledge and Skills (CTE standards)

Demonstrate an understanding of quality control.

manufacturing engineering.

manufacturing engineering.

KS Statement

Understand and apply knowledge of manufacturing processes and practices.

Use knowledge of material science to solve problems appropriate to

Demonstrate knowledge of planning and logistics requirement in

Demonstrate basic knowledge of packaging within manufacturing.

Understand and apply basics of supply chain management.

	Introduction to Engine	ering to be sign	Engineering & Design	L Engineering & Design	B Design Technology	st Robotics	Robotics 2	cao^	caQ ²
	A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA
	21006	21006	21006	21006	21006	21009	21009	21107	21107
	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5
	N	N	N	Υ	Υ	N	N	N	N
				Х	х				
			X	X	X				
			X	X	X	Х	X	Х	Х
S.									

Skills-to-Course Matrix

Engineering and Design

Mountainside High School Portland Community College Mar-19

Code Number

ENMS01

ENMS02 ENMS03

ENMS04

ENMS05

CCTC*

Mechanical Engineering Systems Focus Area

Instructions: 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.

Focus Area Knowledge and Skills (CTE standards)

Understand and use principles of machine theory.

Demonstrate knowledge of thermal dynamics.

Demonstrate knowledge of fluid dynamics.

manufacturing engineering.

KS Statement

Demonstrate knowledge of statics and dynamics in mechanical systems.

Use knowledge of material science to solve problems appropriate to

ls	Introduction to Engine	erind Design	Engineering & Design	Engineering & Design	B Design Technology	st addotics 1	Robotics2	CAD^	CAD ²
	A554Q	A560X	A5611, A5612	A5671, A5672	C8901, C8902	A562XA	A563XA	A521XA	A522XA
	21006	21006	21006	21006	21006	21009	21009	21107	21107
	0.25	0.5	1	1	1	0.5	0.5	0.5	0.5
	N	N	N	Υ	Υ	N	N	N	N
		X	X	Х	Х				
		Х	Х	Х	Х				
\neg			V						