

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

CCTC* Code Number

MN 1 MN01

MN 2 MN02

MN 3 MN03

MN 4 MN04

MN 5 MN05

Manufacturing 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 for Course 1 Name, Course 2 Name, etc., and replace with your POS cou secondary and first year of post-secondary. 6) Enter school course number NCES code for the course (secondary only). 8) Enter number of credits av Identify those courses that trigger the TSA for this POS. 10) Finally, check standards that are taught with intent and purpose, and are assessed in ea Note: The optional Focus Area tabs below are included for those POSs th very specific industry fociusare using those skill sets for multiple options ir of Study or if you want to use another set of industry validated standards

Cluster Knowledge and Skills (CTE standards)

manufacturing.

he ne, rst	cer the Program of Study name above. 2) Enter your high school community college name. 4) Enter the date. 5) Click on the cell Course 2 Name, etc., and replace with your POS course names-year of post-secondary. 6) Enter school course numbers. 7) Enter		n to welding	Nelding.			. 4	Welding Processe			
urse te <u>ta</u> al F ustr	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 y fociusare using those skill sets for multiple options in a Progament to use another set of industry validated standards	Metals 1: Introductio	Metale 2: Advanced	Metale 3: Machining	Metals A. Fabrication	Metale 5. Apprentice	Metals 6. Advanced	Course T Warnel	(Course 8 Harne)	(Course 9 Name)	Course to Hame!
		132021	132022	132023	132024	132025	132026	[Course Number]	[Course Number]	[Course Number]	[Course Number]
	!	13002	13052	13052	13053	13249	13202	[NCES Code]	[NCES Code]	[NCES Code]	[NCES Code]
lus	ter Knowledge and Skills (CTE standards)	0.5	0.5	0.5	0.5	0.5	0.5	[# of Credits]	[# of Credits]	[# of Credits]	[# of Credits]
ber	KS Statement	No	No	No	Yes	No	No	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]
	Evaluate the nature and scope of the Manufacturing Career Cluster TM and the role of manufacturing in society and in the economy.	x	x	x	x x	;	x				
	Analyze and summarize how manufacturing businesses improve performance.										
	Comply with federal, state and local regulations to ensure worker safety and										
	health and environmental work practices.	х	х	Х	x x		Х				
	Describe career opportunities and means to achieve those opportunities in										
	each of the Manufacturing Career Pathways.	Х	х	Х	X X		X				
	Describe government policies and industry standards that apply to										



Code Number

MNHS01

MNHS02

MNHS03

MNHS04

MNHS05

MNHS06

MNHS

MN-HSE 1

MN-HSE 2

MN-HSE 3

MN-HSE 4

MN-HSE 5

MN-HSE 6

MH-HSE 7

Health, Safety & Environmental Assurances

Focus Area

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Focus Area Knowledge and Skills (CTE standards)

environmental standards.

manufacturing environment.

health and safety regulations.

safety and/or environmental practices.

Demonstrate the safe use of manufacturing equipment.

projects, policies or procedures to determine compliance.

KS Statement

Develop safety plans for production processes that meet health, safety a

Demonstrate a safety inspection process to assure a healthy and safe

Evaluate a system of health, safety and/or environmental programs,

Evaluate continuous improvement protocols and techniques in health,

Conduct job safety and health analysis for manufacturing jobs, equipment

Develop the components of a training program based on environmental

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	[NCES Code]									
	[# of Credits]									
	[TSAY or N?]									
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Logistics & Inventory Control 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 <u>purpose</u>, and are <u>assessed</u> 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

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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]	

				[NCES Code]								
	Focus A	rea Knowledge and Skills (CTE standards)	[# of Credits]									
сстс*	Code Number	KS Statement	[TSAY or N?]									
MN-LOG 1	MNLG01	Demonstrate positive customer service skills in regard to logistics and inventory										
		control issues.										
MN-LOG 2	MNLG02	Demonstrate proper handling of products and materials in a manufacturing										
		facility.										
MN-LOG 3	MNLG03	Develop a safety inspection process to assure a healthy and safe manufacturing										
		facility.										
MN-LOG 4	MNLG04	Manage inventory using logistics and control processes and procedures.										



Machining & Metalforming 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.

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	Focus Are	a Knowledge and Skills (CTE standards)	[# of Credits]									
сстс*	Code Number	KS Statement	[TSAY or N?]									
	MNMF01	Perform skills necessary to operate metalforming equipment.										
	MNMF02	Handle materials used in metalforming operations.										
	MNMF03	Perform skills necessary in planning and controlling metalforming operations.										
		Perform bench operations related to machining.										
	MNMF05	Perform metal cutting operations on a lathe.										
	MNMF06	Perform metal cutting operations on a mill.										
	MNMF07	Perform metal cutting operations using contour sawing and electric discharge.										
	MNMF08	Perform metal cutting operations using a drill press.										
	MNMF09	Perform metal cutting operations using grinding equipment.										
	MNMF10	Perform inspection and quality assurance procedures in										
	MNMF11	Understand properties of materials and their relationship to										



CCTC* Code Number

MN-MIR 1 MNMR01

MIN-MIR 2 MNMR02

MN-MIR 3 MNMR03

MN-MIR 4 MNMR04

MN-MIR 5 MNMR05

MN-MIR 6 MNMR06

Maintenance, Installation & Repair 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 cours Note: The optional Focus Area tabs below are included for those POSs that have very specific industry fociusare using those skill sets for multiple options in a Progr of Study or if you want to use another set of industry validated standards.

Focus Area Knowledge and Skills (CTE standards)

equipment maintenance program.

Implement an effective, predictive and preventive manufacturing

manufacturing equipment, tools and workstations.

ugl ocu fo	ht with intent and purpose, and are <u>assessed</u> in each course. us Area tabs below are included for those POSs that have a ociusare using those skill sets for multiple options in a Progam to use another set of industry validated standards.	Course Marne	(Course 2 Marne)	(Course 3 Marne)	(Course A Marne)	(Course 5 Marne)	(Course 6 Harres	Course 1 Hames	(Course 8 Marie)	(Course 9 Warre)	Contre 10 Marie	
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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?]	
	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.											
	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.											
	Diagnose equipment problems and effectively repair manufacturing equipment.											
	Investigate and employ techniques to maximize manufacturing equipment performance.											
	Implement a preventative maintenance schedule to maintain											



Manufacturing Production Process Development

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

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	Focus A	rea Knowledge and Skills (CTE standards)	[# of Credits]									
CCTC*	Code Number	KS Statement	[TSAY or N?]									
MN-PPD 1	_	Produce quality products that meet manufacturing standards and exceed customer satisfaction.										
MN-PPD 2	MNXA02	Research, design and implement alternative manufacturing processes to manage production of new and/or improved products.										
MN-PPD 3		Monitor, promote and maintain a safe and productive workplace using techniques and solutions that ensure safe production of products.										
MN-PPD 4	_	Implement continuous improvement processes in order to maintain quality within manufacturing production.										
MN-PPD 5	MNXA05	Develop procedures to create products that meet customer needs.										



MNPJ09

Mechanical CAD/Drafting 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 t each co POSs t options

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n cou Ss tha	those standards that are <u>taught with intent and purpose</u> , and are <u>assessed</u> in course. Note: The optional Focus Area tabs below are included for those that have a very specific industry fociusare using those skill sets for multiple s in a Progam of Study or if you want to use another set of industry validated.		Conse Man	Course 2 Man.	Course 3 Man	(Course a Man	(Course 5 Man	Conteg & Man	(Course 1 Man	Course 8 Man	Course 9 Man	Course to Me
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	Focus Ar	rea Knowledge and Skills (CTE standards)	[# of Credits]									
TC*	Code Number	KS Statement	[TSAY or N?]									
	MNPJ01	Apply measurement and scale concepts in drafting and design.										
	MNPJ02	Interpret engineering documents and control documents.										
	MNPJ03	Create technical sketches using drafting procedures.										
	MNPJ04	Use a CADD system and procedures.										
	MNPJ05	Detail projection views/components.										
	MNPJ06	Explore mechanical drafting/design concepts and problems.										
	MNPJ07	Demonstrate drafting/design concepts as related to basic										
		manufacturing processes.									<u> </u>	
	MNPJ08	Incorporate geometric dimensioning and tolerancing (GDT)									'	



CCTC* Code Number

MN-PRO 1 MNPR01

MN-PRO 2 MNPR02

MN-PRO 3 MNPRO3

MN-PRO 4 MNPR04

MN-PRO 5 MNPR05

Production 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

Focus Area Knowledge and Skills (CTE standards)

production process audits and inspections.

Demonstrate the safe use of manufacturing equipment.

production quality standards.

KS Statement

Diagnose production process problems and take corrective action to meet

Manage safe and healthy production working conditions and environmental

Make continuous improvement recommendations based on results of

Coordinate work teams when producing products to enhance production

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	[# of Credits]									
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Quality Assurance 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

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			[NCES Code]									
Focus Area Knowledge and Skills (CTE standards)			[# of Credits]									
CCTC*	Code Number	KS Statement	[TSAY or N?]									
MN-QA 1	MNQA01	Evaluate production operations for product and process quality.										
MN-QA 2		Recommend and implement continuous improvement in manufacturing processes.										
MN-QA 3	MNQA03	Coordinate work teams to create a product that meets quality assurance standards.										
MN-QA 4		Employ project management processes using data and tools to deliver quality, value-added products.										
MN-QA 5	-,	Perform safety inspections and training to ensure a safe and healthy workplace.										
MN-QA 6	MNQA06	Implement continuous improvement processes to maintain quality products.										
MN-QA 7		Identify inspection processes that ensure products meet quality										



Code Number

MNWP01

MNWP02

MNWP03

CCTC*

Secondary Wood Products 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 specific industry fociusare using those skill sets for multiple options in a Progam of or if you want to use another set of industry validated standards.

Focus Area Knowledge and Skills (CTE standards)

Use appropriate techniques in manufacturing of secondary wood products.

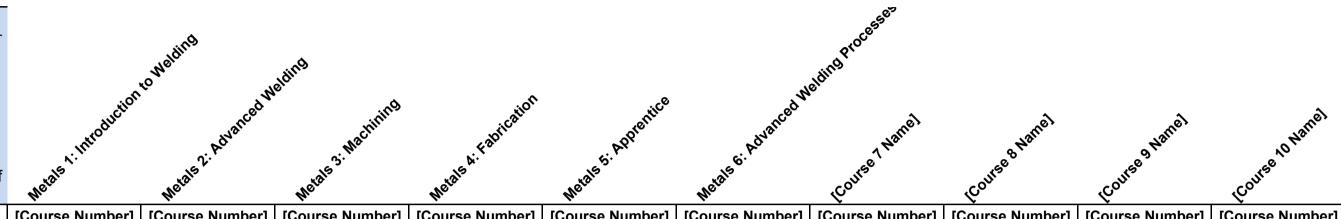
Cl	us Area tabs below are included for those POSs that have a very are using those skill sets for multiple options in a Progam of Study other set of industry validated standards.	(Course 1 Man	Course 2 Man.	(Course 3 Man.	Course a Man	Course 5 Man	Course 6 Man.	Course	/ War.	& War.	9 Han Contes 10	Y a
	Ţ ⁽	Course Numbe	ırse Num	ırse Num	rse Num	ırse Numbe	r]					
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r	KS Statement	[TSAY or N?]	AY or N	AY or N	AY or I	6AY or N?]	j					
	Understand manufacturing processes related to secondary wood products.											
	Understand characteristics and properties of materials used in manufacturing											
	secondary wood products.											



Portland Community College 10/22/19

Welding 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]									
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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	no	no	no	Yes	no	no	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]	[TSAY or N?]
		Perform safety, health, inspection, and repair processes related to welding and thermal cutting.	x	x	x	x	x	x				
		Perform entry level welding processes using a variety of welding technologies including shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux cored arc welding (FCAW), and gas tungsten welding (GTAW).	x	x		x	x	x				
		Perform thermal cutting process using a variety technologies including manual oxyfuel gas cutting (OFC), mechanized oxyfuel gas cutting (track burner), plasma arc cutting (PAC), and air carbon arc cutting (CAC-A).	х	x		x	x	x				
	MNWL04	Interpret drawing and welding symbols.				х		х				
		Perform advanced level welding processes using a variety of welding technologies including shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux cored arc welding (FCAW), and gas tungsten welding (GTAW).				x		x				
		Perform operations related to shop equipment used in welding, layout, and part preparation.				х	x					
	MNWL07	Understand basic welding metallurgy.		х		х	х	x				