06 CNC Turning

WorldSkills Occupational Sta

Section	WSOS Marks
1	Work organization and management
2	Interpret engineering drawings
3	Process planning
4	Programming
5	Metrology
6	Setting and operating CNC lathe
7	Finalize and deliver work piece

Criteria

ID	Name
A	Conformity to drawing

B	Surface finish
C	Main dimensions
D	Secondary dimensions
E	Sustainability - Use of Material
F	
G	
H	
I	

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
A1	Conformity to drawing - Module 1	1			
			J	Part-A1 Visual conformity of part to drawing	0 1 2 3
			J	Part-A1 Part is free of burrs and chips	0 1 2 3
			J	Part-A2 Visual conformity of part to drawing	0 1 2 3

			J	Part-A2	Part is free of burrs and chips	0 1 2 3
			J	Part-A3	Visual conformity of part to drawing	0 1 2 3
			J	Part-A3	Part is free of burrs and chips	0 1 2 3
			J	Part-A4	Visual conformity of part to drawing	0 1 2 3
			J	Part-A4	Part is free of burrs and chips	0 1 2 3
			J	Part-A5	Visual conformity of part to drawing	0 1 2 3
			J	Part-A5	Part is free of burrs and chips	0 1 2 3
			J	Part-B1	Visual conformity of part to drawing	0 1 2

			J	Part-B1	Part is free of burrs and chips	3 0 1 2 3
			J	Part-B2	Visual conformity of part to drawing	0 1 2 3
			J	Part-B2	Part is free of burrs and chips	0 1 2 3
			J	Part-B3	Visual conformity of part to drawing	0 1 2 3
			J	Part-B3	Part is free of burrs and chips	0 1 2 3
			J	Part-B4	Visual conformity of part to drawing	0 1 2 3
			J	Part-B4	Part is free of burrs and chips	0 1 2 3
			J	Part-B5	Visual conformity of part to drawing	0 1

					2 3
			J	Part-B5 Part is free of burrs and chips	0 1 2 3
A2	Conformity to drawing - Module 2	3			
			J	Part-A Visual conformity of part to drawing	0 1 2 3
			J	Part-A Part is free of burrs and chips	0 1 2 3
			J	Part-B Visual conformity of part to drawing	0 1 2 3
			J	Part-B Part is free of burrs and chips	0 1 2 3
A3	Conformity to drawing - Module 3	5			
			J	Visual conformity of part to drawing	0 1 2 3
			J	Part is free of burrs and chips	0 1 2 3

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
B2	Surface finish - Module 2	3			
			M	On taper	
			M	Face at left shoulder	
			M	Left face	
			M	Internal Ø 22	
B3	Surface finish - Module 3	5			
			M	On external Ø 40	
			M	On milled width 50 (Side 1)	
			M	On milled width 50 (Side 2)	

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
C1	Main Dimensions - Module 1	1			
			M	Profile tolerance on left side (Go-Nogo Gage)	
			M	Profile tolerance on left side (Go-Nogo Gage)	
			M	Profile tolerance on left side (Go-Nogo Gage)	
			M	Profile tolerance on left side (Go-Nogo Gage)	
			M	Profile tolerance on left side (Go-Nogo Gage)	
			M	Runout on assembled product	
			M	Runout on assembled product	
			M	Runout on assembled product	
			M	Runout on assembled product	
			M	Runout on assembled product	
			M	Assembly Length	
			M	Assembly Length	
			M	Assembly Length	
			M	Assembly Length	
			M	Assembly Length	

				M	Total Length Part A		
				M	Total Length Part A		
				M	Total Length Part A		
				M	Total Length Part A		
				M	Total Length Part A		
				M	Total Length Part B		
				M	Total Length Part B		
				M	Total Length Part B		
				M	Total Length Part B		
				M	Total Length Part B		
				M	Pitch Ø of Thread		
				M	Pitch Ø of Thread		
				M	Pitch Ø of Thread		
				M	Pitch Ø of Thread		
				M	Pitch Ø of Thread		
C2	Main Dimensions - Module 2	3					
				M	Depth of internal Ø rigth side		
				M	Depth of Insert-Ø (Location 1)		
				M	Depth of Insert-Ø (Location 2)		
				M	Depth of Insert-Ø (Location 3)		
				M	Depth of Insert-Ø (Location 4)		
				M	Assembly Length		
				M	Location of groove		
				M	Internal depth		
				M	Depth to shoulder (left)		
				M	Depth of milled face (right)		
				M	Depth of internal Ø left side		
				M	Width of shoulder		
				M	Width of groove		
				M	Ø of groove		
C3	Main Dimensions - Module 3	5					
				M	Width of groove 1		
				M	Width of groove 2		
				M	Location of groove 1		
				M	Location of groove 2		
				M	Location of milled pocket 1 in middle		
				M	Width of milled pocket 1 in middle		
				M	Length of milled pocket 1 in middle		
				M	Location of milled pocket 2 in middle		

			M	Width of milled pocket 2 in middle	
			M	Length of milled pocket 2 in middle	
			M	Internal Ø (front)	
			M	Internal Thread M 30 x 1,5	
			M	Milled width of entire part	
			M	External Ø (right-front)	
			M	External Ø (right side)	
			M	Ø right of milled square	
			M	Ø left of milled square	
			M	Depth of milled pocket 1 in middle	
			M	Depth of milled pocket 2 in middle	
			M	Depth of facegroove	
			M	Width of milled square in the middle (where M10 is)	
			M	Ø of groove 1	
			M	Ø of groove 2	

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
D1	Secondary dimensions - Module 1	1			
			M	depth of mill-cut Ø6 (use provided Gauge)	
			M	depth of mill-cut Ø6 (use provided Gauge)	
			M	depth of mill-cut Ø6 (use provided Gauge)	
			M	depth of mill-cut Ø6 (use provided Gauge)	
			M	depth of mill-cut Ø6 (use provided Gauge)	
			M	External Ø 33	
			M	External Ø 33	
			M	External Ø 33	
			M	External Ø 33	
			M	External Ø 33	
			M	Ø 12 (at thread)	
			M	Ø 12 (at thread)	
			M	Ø 12 (at thread)	
			M	Ø 12 (at thread)	
			M	Ø 12 (at thread)	
			M	Width of Hexagon	

			M	Width of Hexagon
			M	Width of Hexagon
			M	Width of Hexagon
			M	Width of Hexagon
			M	AF 36 - Hex Dimension (All 3 sides must be in tolerance)
			M	AF 36 - Hex Dimension (All 3 sides must be in tolerance)
			M	AF 36 - Hex Dimension (All 3 sides must be in tolerance)
			M	AF 36 - Hex Dimension (All 3 sides must be in tolerance)
			M	AF 36 - Hex Dimension (All 3 sides must be in tolerance)
			M	Internal Ø 21
			M	Internal Ø 21
			M	Internal Ø 21
			M	Internal Ø 21
			M	Internal Ø 21
D2	Secondary dimensions - Module 2	3		
			M	Depth of milled slot (Location 1)
			M	Depth of milled slot (Location 2)
			M	Width of milled slot (Location 1)
			M	Width of milled slot (Location 2)
			M	Depth of milled slot (Location 1)
			M	Depth of milled slot (Location 2)
			M	Width of milled slot (Location 1)
			M	Width of milled slot (Location 2)
			M	Location of hole Ø8 (Location 1)
			M	Location of hole Ø8 (Location 2)
			M	Total Length part A
			M	Total Length part B
			M	Width of milled nose (Location 1)
			M	Width of milled nose (Location 2)
			M	External Ø 42
			M	External Ø 42
			M	Internal Ø left side (Location 1)
			M	Internal Ø left side (Location 2)
			M	Internal Ø left side
			M	Internal Ø right side
			M	Thread M5 (must go all the way through)
			M	Thread M5 (must go all the way through)
			M	Thread M5 (must go all the way through)
			M	Thread M5 (must go all the way through)

D3	Secondary dimensions - Module 3	5	M	Thread M8 (Front of Part A)
			M	Ø62 internal (round milled pocket 1)
			M	Ø62 internal (round milled pocket 2)
			M	depth of Ø62 (round milled pocket 1)
			M	depth of Ø62 (round milled pocket 2)
			M	Internal Ø 16 in middle pocket 1
			M	Internal Ø 16 in middle pocket 2
			M	Witdth of small slot 1
			M	Witdth of small slot 2
			M	Witdth of small slot 3
			M	Witdth of small slot 4
			M	Location of hole Ø4 in small slot 1
			M	Location of hole Ø4 in small slot 2
			M	Location of hole Ø4 in small slot 3
			M	Location of hole Ø4 in small slot 4
			M	External Sphere Ø 90
			M	External Ø 60
			M	Square - side 1
			M	Square - side 2
			M	M10 on square side 1
			M	M10 on square side 2

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
E2	Sustainability - Use of Material - Module 2	3			
			M	No additional material used - Part A	
			M	No additional material used - Part B	
E3	Sustainability - Use of Material - Module 3	5			
			M	No additional material used	

Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score
Sub Criterion ID	Sub Criterion Name or Description	Day of Marking	Aspect Type M = Meas J = Judg	Aspect - Description	Judg Score

ndards			
	WSOS Marks	Aspect Marks	Variation
	5.00	4.95	0.05
	10.00	10.00	0.00
	10.00	10.00	0.00
	10.00	10.05	0.05
	5.00	5.00	0.00
	55.00	55.00	0.00
	5.00	5.00	0.00
	Total Variation		0.10

	Mark
	10.00

	10.00
	50.00
	25.00
	5.00

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				

Criterion A Total Mark 10.00

Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				

Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		0.20
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				

Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.13
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		1		1.00
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		1		0.65
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		4		1.00
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		4		0.65
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge percentage of conform features and Intensity of dar		4		2.00
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				
Judge Intensity of burrs and cleanliness of product		4		1.40
Result is not acceptable				
Result is acceptable, but many suggestions for improveme				
Result is good, only minor suggestions for improvement				
Result is excellent and applies to Industry Standard				

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Part A	Ra 0,4	2		1.50
Part A	Ra 0,4	2		1.50
Part B	Ra 0,8	2		1.00
Part B	Ra 0,8	2		1.00
	Ra 0,6	2		1.40
Side 1	Ra 1,6	2		1.80
Turn around / Side 2	Ra 1,6	2		1.80

Criterion B Total Mark 10.00

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Part B1	0.2	6		0.60
Part B2	0.2	6		0.60
Part B3	0.2	6		0.60
Part B4	0.2	6		0.60
Part B5	0.2	6		0.60
Assembly Part A1+B1	0.03	3		0.70
Assembly Part A2+B2	0.03	3		0.70
Assembly Part A3+B3	0.03	3		0.70
Assembly Part A4+B4	0.03	3		0.70
Assembly Part A5+B5	0.03	3		0.70
Assembly Part A1+B1	61.6	3		0.70
Assembly Part A2+B2	61.6	3		0.70
Assembly Part A3+B3	61.6	3		0.70
Assembly Part A4+B4	61.6	3		0.70
Assembly Part A5+B5	61.6	3		0.70

Criterion C Total Mark 50.00

Part A1	65	3		0.60
Part A2	65	3		0.60
Part A3	65	3		0.60
Part A4	65	3		0.60
Part A5	65	3		0.60
Part B1	36	6		0.60
Part B2	36	6		0.60
Part B3	36	6		0.60
Part B4	36	6		0.60
Part B5	36	6		0.60
Part A1	23.03	5		0.60
Part A2	23.03	6		0.60
Part A3	23.03	6		0.60
Part A4	23.03	6		0.60
Part A5	23.03	6		0.60
Part B (Use provided gauge)	15	6		1.25
Part B	4	4		1.00
Part B	4	4		1.00
Part B	4	4		1.00
Part B	4	4		1.00
Assembly Part A+B	131	6		2.00
Part A	50	6		1.25
Part A	55	6		1.25
Part A	32	6		0.75
Part A	20	6		0.75
Part B	30	6		1.25
Part A	26	6		1.00
Part A	3.5	6		1.00
Part A	55	6		1.00
Groove 1	4	6		0.50
Groove 2	4	6		0.50
Groove 1	18	6		0.75
Groove 2	43	6		0.75
Pocket on Side 1	12.5	6		0.75
Pocket on Side 1	25	6		0.75
Pocket on Side 1	40	6		0.75
Turn around / Pocket on Side 2	12.5	6		0.75

Turn around / Pocket on Side 2	40	6		0.75
Turn around / Pocket on Side 2	25	6		0.75
	21	6		0.50
	Go / No-Go	4		1.00
	50	6		1.75
	28	6		0.50
	40	6		0.50
Right Side (where Length 86 is)	42	6		0.50
Left Side (between Square and Ø60)	42	6		0.50
Pocket on Side 1	6	6		0.50
Turn around / Pocket on Side 2	6	6		0.50
Front	13	6		0.50
	16	6		0.75
Groove 1	52	6		0.50
Groove 2	52	6		0.50

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Part B1 (If Gauge does not fit, zero marks)	33	6		0.40
Part B2 (If Gauge does not fit, zero marks)	33	6		0.40
Part B3 (If Gauge does not fit, zero marks)	33	6		0.40
Part B4 (If Gauge does not fit, zero marks)	33	6		0.40
Part B5 (If Gauge does not fit, zero marks)	33	6		0.40
Part B1	33	6		0.40
Part B2	33	6		0.40
Part B3	33	6		0.40
Part B4	33	6		0.40
Part B5	33	6		0.40
Part A1	12	6		0.30
Part A2	12	6		0.30
Part A3	12	6		0.30
Part A4	12	6		0.30
Part A5	12	6		0.30
Part A1	8	6		0.40

Criterion D Total Mark 25.00

Part A2	8	6		0.40
Part A3	8	6		0.40
Part A4	8	6		0.40
Part A5	8	6		0.40
Part A1 / if only one side is out, ZERO marks	36	6		0.30
Part A2 / if only one side is out, ZERO marks	36	6		0.30
Part A3 / if only one side is out, ZERO marks	36	6		0.30
Part A4 / if only one side is out, ZERO marks	36	6		0.30
Part A5 / if only one side is out, ZERO marks	36	6		0.30
Part B1	21	6		0.40
Part B2	21	6		0.40
Part B3	21	6		0.40
Part B4	21	6		0.40
Part B5	21	6		0.40
Part A (Side 1)	6.2	6		0.25
Part A (Side 2)	6.2	6		0.25
Part A (Side 1)	12.5	6		0.25
Part A (Side 2)	12.5	6		0.25
Part B (Side 1)	6.5	5		0.25
Part B (Side 2)	6.5	5		0.25
Part B (Side 1)	10.5	5		0.25
Part B (Side 2)	10.5	5		0.25
Part A (hole 1)	23.5	6		0.30
Part A (turn around - hole 2)	23.5	6		0.30
Part A	88	5		0.30
Part B	63	5		0.30
Part A / Side 1	10	6		0.50
Part A / Side 2	10	6		0.50
Part A	42	5		0.25
Part B	42	5		0.25
Part A (Front)	34	6		0.40
Part A (Back)	34	6		0.40
Part B	22	5		0.25
Part B	20	5		0.25
Part B (Thread 1)	Use provided Scre	6		0.20
Part B (Thread 2)	Use provided Scre	6		0.20
Part B (Thread 3)	Use provided Scre	5		0.20
Part B (Thread 4)	Use provided Scre	5		0.20

Part A	Use provided Scre	6		0.20
Side 1	62	5		0.35
Turn around / Side 2	62	5		0.35
Side 1	15	5		0.35
Turn around / Side 2	15	5		0.35
Side 1	16	6		0.35
Turn around / Side 2	16	6		0.35
Side 1	8	6		0.35
Turn 90 degree … Slot 2	8	6		0.35
Turn 90 degree … Slot 3	8	6		0.35
Turn 90 degree … Slot 4	8	6		0.35
Side 1	31.5	6		0.35
Turn 90 degree … Slot 2	31.5	6		0.35
Turn 90 degree … Slot 3	31.5	6		0.35
Turn 90 degree … Slot 4	31.5	6		0.35
	90	6		0.35
	60	6		0.35
	44	6		0.35
	50	6		0.35
	Use provided Nut	6		0.35
	Use provided Nut	6		0.35

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
		7		1.50
		7		1.50
		7		2.00

Criterion E Total Mark 5.00

Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark
Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only)	Requirement (Measurement Only)	WSOS Section	Calculation Row (Export only)	Max Mark

Criterion F	Total Mark	0.00
Criterion G	Total Mark	0.00
Criterion H	Total Mark	0.00
Criterion I	Total Mark	0.00
Competition	Total Mark	100.00