SOESD Mechanical Design Assessment 2011

This assessment contains 85 items, but only 85 are used at one time.

Mechanical Design

Number of Correlations	Standard Type	Standard
0	Program	1) Mechanical Design
0	Duty	1) Ac MNZ01.01 Use mathematics in the manufacturing process.
0	Standard	1) MNZ01.01.01.01 Add, subtract and divide numbers. Beginning High School
0	Standard	2) MNZ01.01.01.02 Use percentages in order to make adjustments. Advanced High School
0	Standard	3) MNZ01.01.01.03 Make calculations to calibrate equipment. Advanced High School
0	Standard	4) MNZ01.01.01.04 Calculate scrap or waste materials. Advanced High School
0	Standard	5) MNZ01.01.03.01 Identify material cost to produce new part. Advanced High School
0	Standard	6) MNZ01.01.05.01 Understand geometry in order to interpret blueprints. Advanced High School
0	Standard	7) MNZ01.01.06.01 Measure product against specifications for quality assurance. (Tolerances) Beginning High School
0	Duty	2) Bc MNZ01.02 Understand the application of the principles of science used in manufacturing.
0	Standard	1) MNZ01.02.01.03 Describe appropriate disposal of chemicals Beginning High School
0	Standard	2) MNZ01.02.01.04 Identify potential chemical hazards Post-Secondary
0	Standard	3) MNZ01.02.02.05 Recognize how the principles of simple machines are being used in manufacturing equipment. Advanced High School
0	Standard	4) MNZ01.02.02.06 Apply principles of physics to new equipment Post-Secondary
0	Standard	5) MNZ01.02.02.07 Understand the mechanical principles of machinery Advanced High School
0	Duty	3) Cc MNZ05.01 Summarize and explain how manufacturing businesses operate to demonstrate an understanding of key functions within organizations in the industry.

0	Standard	1) MNZ05.01.05.02 Identify the mission, major internal functions and structure of manufacturing businesses. Advanced High School
0	Standard	2) MNZ05.01.05.03 Identify the customers, suppliers, and stakeholders of manufacturing businesses, their roles, and how they relate. Beginning High School
0	Standard	3) MNZ05.01.05.04 Explain the major competitive challenges faced by the manufacturing businesses. Advanced High School
0	Standard	4) MNZ05.01.05.06 Analyze current trends in manufacturing systems. Post-Secondary
0	Standard	5) MNZ05.01.05.07 Describe how manufacturing businesses measure or gauge business performance. Beginning High School
0	Duty	4) Dc MNZ05.02 Analyze and summarize how manufacturing businesses improve performance to demonstrate an understanding of various methods for enhancing production. Technical Content Skill
0	Standard	1) MNZ05.02.05.01 Identify needs and requirements of internal and external customers. Advanced High School
0	Standard	2) MNZ05.02.05.02 Describe customer satisfaction and fulfillment of customer requirements. Advanced High School
0	Standard	3) MNZ05.02.05.06 Explain how plans and budgets are revised to meet goals and objectives. Advanced High School
0	Duty	5) Ec MNZ06.01 Maintain safe and healthful working conditions and environment to ensure employee safety. Basic Career Related Learning Skill
0	Standard	1) MNZ06.01.05.01 Identify the types of risk of injury/illness at work. Beginning High School
0	Standard	2) MNZ06.01.05.02 Identify those who are susceptible to risk of injury/illness at work. Beginning High School
0	Standard	3) MNZ06.01.05.03 Describe ways to positively impact occupational safety and health. Beginning High School
0	Standard	4) MNZ06.02.05.01 Identify key rights of employees related to occupational safety and

		health. Beginning High School
0	Standard	5) MNZ06.02.05.02 Identify the responsibilities of employers related to occupational safety and health. Advanced High School
0	Standard	6) MNZ06.02.05.03 Explain the role of government agencies in providing a safe workplace. Advanced High School
0	Duty	6) Fc MNZ06.03 Assess types and sources of workplace hazards in order to maintain safe working conditions in a manufacturing business environment.
0	Standard	1) MNZ06.03.05.01 Identify and describe common hazards in the workplace. Beginning High School
0	Standard	2) MNZ06.03.05.03 Identify sources of combustible/flammable materials, fire and emergencies to establish a fire safe environment. Beginning High School
0	Duty	7) Gc MNZ06.04 Control workplace hazards in order to maintain safe working conditions in a manufacturing business environment.
0	Standard	1) MNZ06.04.05.01 Identify procedures necessary for maintaining a safe work area. Beginning High School
0	Standard	2) MNZ06.04.05.02 Identify methods to correct common hazards. Beginning High School
0	Standard	3) MNZ06.04.05.03 Identify methods for disposing of hazardous materials. Beginning High School
0	Standard	4) MNZ06.04.05.04 Demonstrate principals of safe physical movement to avoid slips, trips, and spills. Beginning High School
0	Standard	5) MNZ06.04.05.05 Inspect and use protective equipment (PPE). Beginning High School
0	Duty	8) Hc MNZ08.01 Summarize safety, health, and environmental management systems to build an understanding of compliance with governmental policies and procedures for manufacturing businesses.
0	Standard	1) MNZ08.01.05.08 Follow organizational policies and procedures. Advanced High School
0	Standard	2) MNZ08.01.05.09 Educate and orient other workers. Advanced High School

0	Standard	3) MNZ08.01.05.10 Maintain a safe work area. Beginning High School
0	Standard	4) MNZ08.01.05.11 Identify, describe, and report workplace hazards. Beginning High School
0	Duty	9) Ic MNZ10.01 Describe and employ technical skills and knowledge required for careers in manufacturing in order to perform basic workplace activities common to manufacturing. Technical Content Skill
0	Standard	1) MNZ10.01.05.01 Demonstrate the planning and layout processes (e.g., designing, print reading, measuring) used in manufacturing. Beginning High School
0	Standard	2) MNZ10.01.05.02 Read prints and use the information to play, lay out, and produce parts or products. Beginning High School
0	Standard	3) MNZ10.01.05.03 Summarize how materials can be processed using tools and machines. Beginning High School
0	Standard	4) MNZ10.01.05.04 Use tools and the processes of cutting, shaping, combining, forming, etc., of materials to manufacture a part or product. Beginning High School
0	Standard	5) MNZ10.01.05.05 Describe various types of assembling processes (e.g., mechanical fastening, mechanical force, joining, fusion bonding, adhesive bonding) used in manufacturing. Beginning High School
0	Standard	6) MNZ10.01.05.06 Apply appropriate fastening or joining procedure to the design and production of a manufactured part or product. Beginning High School
0	Standard	7) MNZ10.01.05.07 Explain finishing processes (e.g., types of finishing materials, surface preparation, methods of application) used in manufacturing. Advanced High School
0	Standard	8) MNZ10.01.05.08 Select a finishing process for a product appropriate to the job it must perform environment in which it functions, and its aesthetic appeal. Advanced High School
0	Standard	9) MNZ10.01.05.09 Explain the processes of inspection and quality control used in manufacturing. Beginning High School

0	Standard	10) MNZ10.01.05.10 Perform continuous on line inspections to ensure that parts or products meet design specifications. Beginning High School
0	Duty	10) UNIT A: PERFORMING WORK SAFETY PRACTICES
0	Standard	1) 1. Apply safety policies and procedures.
0	Standard	2) 2. Maintain a clean, orderly, safe work area.
0	Standard	3) 3. Operate a fire extinguisher.
0	Duty	11) UNIT B:DEMONSTRATING FREEHAND SKETCHING SKILLS
0	Standard	1) 1. Sketch straight lines.
0	Standard	2) 2. Sketch circles and arcs.
0	Standard	3) 3. Sketch curved lines.
0	Standard	4) 4. Sketch multi-view drawings.
0	Standard	5) 5. Sketch pictorial drawings.
0	Standard	6) 6. Draw freehand technical lettering.
0	Standard	7) 7. Indicate overall dimensions.
0	Duty	12) UNIT C: DEMONSTRATING BASIC DESIGN TECHNIQUES (STANDARD AND METRIC)
0	Standard	1) 1. Select proper drawing instruments and equipment to complement the design media.
0	Standard	2) 2. Measure using standard scales/measuring devices.
0	Standard	3) 3. Draw straight lines and angles.
0	Standard	4) 4. Draw circles and arcs.
0	Standard	5) 5. Draw irregular curved lines.
0	Standard	6) 6. Demonstrate proper use, care, and adjustment of design instruments and equipment.
0	Standard	7) 7. Draw line symbols using alphabet of lines.
0	Standard	8) 8. Draw geometric figures using straight and curved lines.
0	Standard	9) 9. Draw borderlines and title block.
0	Standard	10) 10. Perform drawing setup to applicable standards (e.g., setting layers, line type, and width).
0	Standard	11) 11. Identify and use view and display commands (e.g., zoom, pan, viewports, and rotation).
0	Standard	12) 12. Format, enter, and edit text on a

		drawing.
0	Standard	13) 13. Edit, copy, and manipulate drawing entities (e.g., properties, stretch, trimming, and scaling).
0	Duty	13) UNIT D: DEMONSTRATING GEOMETRIC CONSTRUCTION SKILLS (STANDARD AND METRIC)
0	Standard	1) 1. Draw straight lines.
0	Standard	2) 2. Bisect lines, arcs, and angles.
0	Standard	3) 3. Draw parallel lines.
0	Standard	4) 4. Divide lines and circles equally.
0	Standard	5) 5. Draw tangent lines, arcs, circles, and curves.
0	Standard	6) 6. Construct regular polygons.
0	Standard	7) 7. Construct circles and ellipses.
0	Duty	14) UNIT E: DEMONSTRATING DIMENSIONING SKILLS (STANDARD AND METRIC)
0	Standard	1) 1. Place dimensions on a drawing.
0	Standard	2) 2. Set and control dimensioning styles.
0	Standard	3) 3. Dimension using aligned and unidirectional dimensioning systems.
0	Standard	4) 4. Dimension using leaders for notes, arcs, and circular features.
0	Standard	5) 5. Dimension using dual dimensioning skills (standard and metric).
0	Standard	6) 6. Dimension using tolerances.
0	Standard	7) 7. Identify and apply geometric dimensioning and tolerancing.
0	Duty	15) UNIT F: DEMONSTRATING ORTHOGRAPHIC PROJECTIONS (STANDARD AND METRIC)
0	Standard	1) 1. Draw regular orthographic views.
0	Standard	2) 2. Draw regular, inclined, and oblique surfaces.
0	Standard	3) 3. Draw curved surfaces.
0	Standard	4) 4. Draw using standard line symbols.
0	Standard	5) 5. Draw surface intersections.
0	Standard	6) 6. Draw detailed size description.
0	Standard	7) 7. Draw to scale and dimension.
0	Standard	8) 8. Identify 1st- and 3rd-angle projection drawings.
0	Standard	9) 9. Draw a 3rd-angle projection drawing.
0	Duty	16) UNIT G: DEMONSTRATING SKILLS AND

		KNOWLEDGE REQUIRED TO PRODUCE TECHNICAL ILLUSTRATIONS (STANDARD AND METRIC)
0	Standard	1) 1. Draw an isometric projection.
0	Standard	2) 2. Draw an isometric section.
0	Standard	3) 3. Draw an oblique projection.
0	Duty	17) UNIT H: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE SECTIONAL VIEWS AND APPLYING STANDARD CONVENTIONAL DESIGN PRACTICES
0	Standard	1) 1. Demonstrate section line and symbol techniques.
0	Standard	2) 2. Identify various types of sectional views.
0	Standard	3) 3. Draw half and full sections.
0	Standard	4) 4. Draw broken-out sections.
0	Duty	18) UNIT I: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE AUXILIARY VIEWS
0	Standard	1) 1. Demonstrate the ability to rotate a point, a line, and a surface.
0	Standard	2) 2. Demonstrate the ability to determine the true length of a line.
0	Standard	3) 3. Draw a primary auxiliary view.
0	Duty	19) UNIT J: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE DETAILED MACHINE DRAWINGS
0	Standard	1) 1. Identify use and applications of threads and fasteners.
0	Standard	2) 2. Draw bolt, nut, and thread styles.
0	Standard	3) 3. Draw screws, screw heads, pins, and keys.
0	Standard	4) 4. Identify a fillet and a round, and tell where and why each is used.
0	Standard	5) 5. Produce a set of detail drawings applying standard machine fits, finishes, and tolerances.
0	Standard	6) 6. Create a detailed parts list.
0	Standard	7) 7. Select appropriate drawing layout and scale.
0	Standard	8) 8. Extract attribute data.
0	Standard	9) 9. Produce a machine assembly drawing.
0	Standard	10) 10. Identify various manufacturing processes.

0	Duty	20) UNIT K: COMPUTER LITERACY
0	Standard	1) 1. Identify hardware components of a CAD computer system.
0	Standard	2) 2. Format disks and copy, delete, rename, save, and back up files and folders.
0	Standard	3) 3. Identify, create, and use folders and directory structures.
0	Standard	4) 4. Identify various file formats (e.g., .wmf, .bmp, and .jpeg).
0	Standard	5) 5. Import and export data files between formats (e.g., IGES and DXF).
0	Standard	6) 6. Use software help features.
0	Duty	21) UNIT L: DEMONSTRATING CAD-SPECIFIC SKILLS
0	Standard	1) 1. Use the graphical user interface.
0	Standard	2) 2. Create, retrieve, edit, and use symbol libraries.
0	Standard	3) 3. Use inquiry commands to extract drawing data (list distance and area).
0	Standard	4) 4. Control entity properties.
0	Standard	5) 5. Plot/Print drawing to appropriate scale.
0	Duty	22) UNIT M: DEMONSTRATING BASIC SKILLS TO PRODUCE 3-D MODELS
0	Standard	1) 1. Create solid models.
0	Standard	2) 2. Modify solid models.
0	Standard	3) 3. Produce 2-D projections from 3-D models.

0 Correlations

0	Program	1) Mechanical Design
0	Duty	null) UNIT A: PERFORMING WORK SAFETY PRACTICES
0	Standard	1) 1. Apply safety policies and procedures.
0	Standard	2) 2. Maintain a clean, orderly, safe work area.
0	Standard	3) 3. Operate a fire extinguisher.
0	Duty	null) UNIT B:DEMONSTRATING FREEHAND SKETCHING SKILLS
3	Standard	1) 1. Sketch straight lines.
0	Standard	2) 2. Sketch circles and arcs.
0	Standard	3) 3. Sketch curved lines.
0	Standard	4) 4. Sketch multi-view drawings.
0	Standard	5) 5. Sketch pictorial drawings.

2	Standard	6) 6. Draw freehand technical lettering.
1	Standard	7) 7. Indicate overall dimensions.
0	Duty	null) UNIT C: DEMONSTRATING BASIC DESIGN TECHNIQUES (STANDARD AND METRIC)
2	Standard	1) 1. Select proper drawing instruments and equipment to complement the design media.
2	Standard	2) 2. Measure using standard scales/measuring devices.
2	Standard	3) 3. Draw straight lines and angles.
0	Standard	4) 4. Draw circles and arcs.
0	Standard	5) 5. Draw irregular curved lines.
0	Standard	6) 6. Demonstrate proper use, care, and adjustment of design instruments and equipment.
4	Standard	7) 7. Draw line symbols using alphabet of lines.
0	Standard	8) 8. Draw geometric figures using straight and curved lines.
2	Standard	9) 9. Draw borderlines and title block.
1	Standard	10) 10. Perform drawing setup to applicable standards (e.g., setting layers, line type, and width).
0	Standard	11) 11. Identify and use view and display commands (e.g., zoom, pan, viewports, and rotation).
2	Standard	12) 12. Format, enter, and edit text on a drawing.
0	Standard	13) 13. Edit, copy, and manipulate drawing entities (e.g., properties, stretch, trimming, and scaling).
0	Duty	null) UNIT D: DEMONSTRATING GEOMETRIC CONSTRUCTION SKILLS (STANDARD AND METRIC)
0	Standard	1) 1. Draw straight lines.
1	Standard	2) 2. Bisect lines, arcs, and angles.
1	Standard	3) 3. Draw parallel lines.
0	Standard	4) 4. Divide lines and circles equally.
0	Standard	5) 5. Draw tangent lines, arcs, circles, and curves.
0	Standard	6) 6. Construct regular polygons.
0	Standard	7) 7. Construct circles and ellipses.
0	Duty	null) UNIT E: DEMONSTRATING DIMENSIONING SKILLS (STANDARD AND METRIC)

6	Standard	1) 1. Place dimensions on a drawing.
1	Standard	2) 2. Set and control dimensioning styles.
1	Standard	3) 3. Dimension using aligned and unidirectional dimensioning systems.
2	Standard	4) 4. Dimension using leaders for notes, arcs, and circular features.
2	Standard	5) 5. Dimension using dual dimensioning skills (standard and metric).
6	Standard	6) 6. Dimension using tolerances.
4	Standard	7) 7. Identify and apply geometric dimensioning and tolerancing.
0	Duty	null) UNIT F: DEMONSTRATING ORTHOGRAPHIC PROJECTIONS (STANDARD AND METRIC)
10	Standard	1) 1. Draw regular orthographic views.
1	Standard	2) 2. Draw regular, inclined, and oblique surfaces.
0	Standard	3) 3. Draw curved surfaces.
0	Standard	4) 4. Draw using standard line symbols.
1	Standard	5) 5. Draw surface intersections.
1	Standard	6) 6. Draw detailed size description.
0	Standard	7) 7. Draw to scale and dimension.
0	Standard	8) 8. Identify 1st- and 3rd-angle projection drawings.
0	Standard	9) 9. Draw a 3rd-angle projection drawing.
0	Duty	null) UNIT G: DEMONSTRATING SKILLS AND KNOWLEDGE REQUIRED TO PRODUCE TECHNICAL ILLUSTRATIONS (STANDARD AND METRIC)
2	Standard	1) 1. Draw an isometric projection.
0	Standard	2) 2. Draw an isometric section.
0	Standard	3) 3. Draw an oblique projection.
0	Duty	null) UNIT H: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE SECTIONAL VIEWS AND APPLYING STANDARD CONVENTIONAL DESIGN PRACTICES
3	Standard	1) 1. Demonstrate section line and symbol techniques.
7	Standard	2) 2. Identify various types of sectional views.
0	Standard	3) 3. Draw half and full sections.
0	Standard	4) 4. Draw broken-out sections.
0	Duty	null) UNIT I: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE AUXILIARY

		VIEWS
0	Standard	1) 1. Demonstrate the ability to rotate a point, a line, and a surface.
0	Standard	2) 2. Demonstrate the ability to determine the true length of a line.
0	Standard	3) 3. Draw a primary auxiliary view.
0	Duty	null) UNIT J: DEMONSTRATING KNOWLEDGE AND SKILLS REQUIRED TO PRODUCE DETAILED MACHINE DRAWINGS
0	Standard	1) 1. Identify use and applications of threads and fasteners.
0	Standard	2) 2. Draw bolt, nut, and thread styles.
0	Standard	3) 3. Draw screws, screw heads, pins, and keys.
0	Standard	4) 4. Identify a fillet and a round, and tell where and why each is used.
1	Standard	5) 5. Produce a set of detail drawings applying standard machine fits, finishes, and tolerances.
0	Standard	6) 6. Create a detailed parts list.
0	Standard	7) 7. Select appropriate drawing layout and scale.
0	Standard	8) 8. Extract attribute data.
3	Standard	9) 9. Produce a machine assembly drawing.
6	Standard	10) 10. Identify various manufacturing processes.
0	Duty	null) UNIT K: COMPUTER LITERACY
1	Standard	1) 1. Identify hardware components of a CAD computer system.
1	Standard	2) 2. Format disks and copy, delete, rename, save, and back up files and folders.
0	Standard	3) 3. Identify, create, and use folders and directory structures.
1	Standard	4) 4. Identify various file formats (e.g., .wmf, .bmp, and .jpeg).
1	Standard	5) 5. Import and export data files between formats (e.g., IGES and DXF).
0	Standard	6) 6. Use software help features.
0	Duty	null) UNIT L: DEMONSTRATING CAD-SPECIFIC SKILLS
1	Standard	1) 1. Use the graphical user interface.
0	Standard	2) 2. Create, retrieve, edit, and use symbol libraries.

0	Standard	3) 3. Use inquiry commands to extract drawing data (list distance and area).
0	Standard	4) 4. Control entity properties.
0	Standard	5) 5. Plot/Print drawing to appropriate scale.
0	Duty	null) UNIT M: DEMONSTRATING BASIC SKILLS TO PRODUCE 3-D MODELS
0	Standard	1) 1. Create solid models.
0	Standard	2) 2. Modify solid models.
0	Standard	3) 3. Produce 2-D projections from 3-D models.
85	**Correlations**	
85	**Total Correlations**	