2023 Idaho Pre-Engineering Criticality Survey (26)

CONTENT STANDARD 1.0: PROFESSIONAL ORGANIZATIONS AND LEADERSHIP	
Performance Standard 1.1: Effective Leadership and Participation in Career Technical Student Organizations (CTSO) and	
Professional Associations	
Q2. 1.1.1Explore the role of professional organizations and/or associations in the engineering industry.	1.38
Q3. 1.1.2 Participate in content-aligned CTSO.	1.46
Q4. 1.1.3 Participate in a CTSO event at the local level or above.	1.50
Q5. 1.1.4 Engage in career exploration and development through CTSO participation.	1.62
CONTENT STANDARD 2.0: LAB/WORKPLACE SAFETY AND TOOL USE	1.02
Performance Standard 2.1: Safety	
Q6. 2.1.1 Describe the role of the Occupational Safety and Health Administration (OSHA).	2.00
Q7. 2.1.2 Comply with requirements for personal protection equipment (PPE).	2.44
Q8. 2.1.3Describe material handling, storage, use, and disposal requirements.	2.08
Q9. 2.1.4 Interpret safety data sheets (SDS) before using materials (i.e., handling, storage use, disposal requirements).	2.08
Q10. 2.1.5Interpret safety signage for hazards, evacuation routes, and safety areas.	2.28
Q11. 2.1.6Identify the location and the types of fire extinguishers and other fire equipment.	2.00
Q12. 2.1.7Describe procedures for using fire extinguishers and other fire safety equipment.	1.88
Q13. 2.1.8Describe the requirements for using eye-wash stations.	1.88
Q14. 2.1.9Describe electrical hazards and the effects of electrical shock on the human body.	2.04
Performance Standard 2.2: Tool Identification and Safe Use	2.04
Q15. 2.2.1 Identify hand tools and power tools, including precision measuring tools.	2.40
Q16. 2.2.2Maintain tools.	2.40
·	2.04
Q17. 2.2.3Match tools to their intended use and purpose.	2.32
Q18. 2.2.4Perform a safety check before using tools. CONTENT STANDARD 3.0: IMPACT OF ENGINEERING	2.16
Performance Standard 3.1: Engineering Careers	1.84
Q19. 3.1.1 Define engineering.	-
Q20. 3.1.2 Research career opportunities and the educational requirements for a given engineering field. Q21. 3.1.3 Create an education and career plan for a career in engineering.	1.76
·	1.64
Q22. 3.1.4 Describe the importance of collaboration in the engineering industry.	2.00
Performance Standard 3.2: Ethics in Engineering	4.04
Q23. 3.2.1 Identify current engineering codes of ethics and their purpose.	1.84
Q24. 3.2.2 Describe ethical engineering issues.	1.92
Q25. 3.2.3 Analyze the ethical issues involved in an engineering failure.	2.00
CONTENT STANDARD 4.0: ENGINEERING DESIGN PROCESS	
Performance Standard 4.1: Design Process Concepts	
Q26. 4.1.1 Apply the steps of the design process to solve a design problem (i.e., define the problem, generate concepts, develop	
a solution, develop a design proposal, construct and test a prototype, refine the design, evaluate a solution, and communicate the	0.50
processes and results).	2.52
Q27. 4.1.2 Describe how social, environmental, regulatory, and financial constraints influence the design process.	1.72
Q28. 4.1.3 Describe the evolution and lifecycle of a product (i.e., introduction, growth, maturity, decline).	1.76
Performance Standard 4.2: Measuring and Scaling	
Q29. 4.2.1 Identify imperial/standard and metric/SI units of measure and level of accuracy requirements for an engineering	0.50
problem/design.	2.56
Q30. 4.2.2 Convert between imperial/standard and metric/SI units of measure in an engineering problem/design.	2.44
Q31. 4.2.3 Determine scale on a blueprint.	2.36
Q32. 4.2.4 Apply algebraic and geometric calculations to determine size, mass, volume, and surface area in an engineering	
problem/design.	2.20
Q33. 4.2.5 Convert between fractions and decimals in an engineering problem/design.	2.60
Q34. 4.2.6 Report measurements by using and reading precision measuring tools.	2.56

35. 4.3.1 Communicate ideas, using freehand sketching (e.g., pictorial, multi-view) and annotations. 2.36. 4.3.2 Produce drawings from sketches. 2.37. 4.3.3 Identify the alphabet of lines (i.e., styles, weights) and line conventions. 38. 4.3.4 Identify the alphabet of lines (i.e., styles, weights) and line conventions. 39. 4.3.5 Apply basic elements (e.g., title block information, dimensions, and line types) in a technical drawing. 40. 4.3.6 Identify basic industry standard symbols on sketches, drawings, and blueprints. 41. 4.3.7 Produce various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, and schematic), given an ingrineering design. 42. 4.3.8 Arrange dimensions and annotations, using ANSI and ISO standards for an engineering problem/design. 43. 4.3.9 Create a bill of materials or schedule from blueprints and specifications. 44. 4.4.1 Describe documentation and communication methods used in engineering. 45. 4.4.2 Wilanitani documentation and communication methods used in engineering. 46. 4.4.3 Describe the importance of proprietary documentation (e.g., copyright, patent) in engineering. 47. 4.4.4 Create project-management timelines for an engineering design. 48. 4.4.5 Write a technical report for an engineering design. 49. 4.5.1 Identify the areas of modeling (e.g., physical, conceptual, mathematical). 41. 4.5.3 Evaluate the accuracy of a scale model or a working prototype. 41. 4.5.3 Evaluate the accuracy of a scale model or a working prototype. 41. 4.5.1 Identify the areas of modeling (e.g., physical, conceptual, mathematical). 42. 5.5.1.1 Identify the areas of modeling (e.g., physical, conceptual, mathematical). 43. 5.5.1.2 Describe the accuracy of a scale model or a working prototype. 44. 5.5.2 Describe the accuracy of a scale model or a working prototype. 45. 5.5.1.2 Describe the accuracy of a scale model or a working prototype. 46. 5.5.1.3 Describe the accuracy of a scale model or a working prototype. 47. 48. 5.5.2 Describe the various formatical stre	Performance Standard 4.3: Technical Sketching and Drawing	
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Q74. 6.2.3 Calculate the efficiency of power systems and conversion devices.	1.65
Q75. 6.2.4 Categorize major forms of energy (e.g., thermal, radiant, nuclear, chemical, electrical, mechanical, fluid).	1.83
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Q85. 6.3.7 Create series and parallel circuits, using basic laws of electricity and Kirchhoff's law.	1.91
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Q96. 6.5.7 Calculate mechanical advantage, using Pascal's law.	1.48
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Q98. 7.1.1 Define statistical terminology (e.g., mean, mode, median, range, standard deviation).	1.95
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