Alignment - Florida Department of Education
Written Correlation to Student Performance Standards 2019-2020

Course Title: **Applied Engineering Technology I**
Course Number: **8401110**
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CTE Standards and Benchmarks	Lessons Where Standard/Benchmark is Directly Addressed in Major Tool
Demonstrate an understanding of the characteristics, scope and core concepts of technology. -The student will be able to:	
01.01 Explain the rapid increase in the rate of technological development and the trade-offs between competing values (e.g., availability, cost, desirability, waste, et al) in the selection of resources.	11 – 16
01.02 Discuss current technological developments that are/were driven by profit motive and the market.	14 – 16
01.03 Explain how technological progress promotes advancement of science and mathematics.	8 – 10
01.04 Identify new technologies that create new processes and describe ways in which technology helps to shape social, cultural, political, and economic aspects of society.	2 – 5
Demonstrate an understanding of the attributes of design and the engineering design process.-The student will be able to:	
01.05 Describe the essential activities and the sequence of steps associated with the design process.	72 – 93
01.06 Discuss why the engineering design process must begin with a clearly stated problem and write a problem statement in sufficient clarity to enable design goals, requirements, and constraints to be identified.	74 – 79
01.07 Critique the design of a solution and revise the design as needed.	88 – 89
01.08 Explain the relationship between design criteria and design constraints and how a design's criteria, constraints, and efficiency can compete with each other.	78
01.09 Demonstrate brainstorming techniques.	82 – 83
01.10 Identify the factors that ensure the safety and sustainability of an engineering design or product.	54 – 55 , 321, 324 , 332 – 336

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01.11 Compare and contrast creative and analytic problem-solving strategies to the engineering design process.	68 – 70 , 88 – 89
01.12 Identify safety considerations when designing a product.	92 – 93
01.13 Apply engineering notebook standards and protocols.	82
01.14 Explain the forms of analysis used in evaluating potential solutions, particularly those forms associated with engineering principles, estimation, economics, and worst case scenario.	82 – 89
01.15 Describe a decision table and how it is used to evaluate proposed solutions to an engineering problem.	88 – 89
Describe the functional characteristics of the engineering design team.-The student will be able to:	
01.16 Describe how work breakdown structure (WBS) impacts the makeup and organization of an engineering design team.	68 – 72
01.17 Compare functional and hierarchical schemes for organizing an engineering design team.	68 – 72
01.18 Describe the function of management in general and project management in particular.	68 – 72
01.19 Describe a typical design project team structure.	68 – 72
01.20 Outline a research methodology.	80 – 82
01.21 Explain the role of ethics as a part of responsible decision making.	92 – 93
Demonstrate skill in technical sketching and drawing as it relates to engineering design.-The student will be able to:	
01.22 Explain the concepts of technical sketching and drawing.	81 – 85
01.23 Understand and interpret basic engineering drawings.	85
01.24 Create an orthographic sketch or drawing with appropriate layout, dimensions, and details for construction.	111 – 113
01.25 Create an isometric sketch or drawing.	103 – 106
Successfully work as a member of a team.-The student will be able to:	
01.26 Accept responsibility for specific tasks in a given situation.	588
01.27 Maintain a positive relationship with other team members.	70 – 71

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01.28	Document progress, and provide feedback on work accomplished in a timely manner.	78 – 79 , 85
01.29	Complete assigned tasks in a timely and professional manner.	78 – 79
01.30	Reassign responsibilities when the need arises.	89
01.31	Complete daily tasks as assigned on one's own initiative.	78 – 79
Demonstrate basic computer-aided design (CAD) knowledge and skills.-The student will be able to:		
01.32	Demonstrate use of the various functions of CAD software.	116 – 118
01.33	Apply basic CAD skills to a mechanical drawing (e.g. layers, linetype, lineweight, viewport, scaling, units, limits, etc)	116 – 118
01.34	Create a part using a solid modeling CAD software platform.	116 – 118
01.35	Create an assembly drawing using a CAD software platform.	116 – 118
01.36	Create a pictorial drawing using a CAD software platform (e.g. isometric, perspective, oblique)	116 – 118
01.37	Create an orthographic drawing using a CAD software platform.	116 – 118
01.38	Create a bill of materials generated from a CAD application.	116 – 118
Demonstrate foundational knowledge and skills associated with the design of engineering systems (e.g. mechanical, fluid, thermal, electrical, and electronic systems).-The student will be able to:		
01.39	Measure and calculate dimensions of parts using metric and U.S. customary systems.	53
01.40	Identify simple machines.	344 – 354
01.41	Calculate mechanical advantage.	346, 356
01.42	Define and calculate scientific quantities that are used in engineering designs (e.g. mass, weight, force, torque, friction, pressure, flow rate, voltage, current, resistance).	344 – 354, 355, 361, 365 – 366, 438, 440, 475, 478
01.43	Draw and read system schematics (e.g. electrical and fluid circuits).	466, 483
01.44	Define scientific principles as they relate to the design of mechanical and electrical systems (e.g. Newton's Laws of motion, Ohm's Law, the three laws of thermodynamics).	386, 475

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01.45 Compare and contrast between related scientific and engineering principles (e.g. pneumatics and hydraulics, heat and temperature, series and parallel circuits, alternating and direct current).	361 – 363, 404 – 405, 447 – 451, 469 – 470
01.46 Assemble, operate, and identify the parts of a mechanical system.	344 – 354
Demonstrate technical knowledge and skills for machining.-The student will be able to:	
01.47 Measure dimensions using precision measurement tools, such as rulers, scales, calipers, and micrometers.	170 – 200
01.48 Identify appropriate tools for machining purposes (e.g., drilling, turning, milling, sawing, and grinding).	170 – 200
01.49 Explain steps for assembly and fabrication of products.	309 – 323
Demonstrate technical knowledge and skills in the designing, engineering, and analysis of constructed works.-The student will be able to:	
01.50 Define terminology associated with engineering products and systems.	302 – 320
01.51 Define and describe the experimental method as it is applied to design.	93
01.52 Describe simulation.	92 – 93
01.53 Prepare a model of a design solution to an engineering problem.	90 – 92
01.54 Prepare a graphical solution to an engineering problem.	84 – 89
01.55 Prepare a mathematical solution to an engineering problem (using either a calculator or computer).	86 – 87
01.56 Present a technical report on an engineering design problem, concept or issue.	92 – 93
Demonstrate foundational knowledge and skills associated with common computer peripherals and computer functions.-The student will be able to:	
01.57 Identify and describe the various internal and external components of a computer and their functions (e.g., power supply, hard drive, RAM, mother board, I/O cards/ports, cabling, etc.).	503 – 510
01.58 Describe and connect types and purposes of various computer input devices (e.g., USB, firewall, parallel and serial, Ethernet, printers, camera).	503 – 510

Demonstrate knowledge of computer file management.-The student will be able to:		
01.59	Describe and use conventional file naming conventions.	509
01.60	Demonstrate proficiency with file management tasks (e.g., folder creation, file creation, backup, copy, delete, open, save).	509
01.61	Be able to identify file types by extension (e.g., .doc, .txt, .wav, xls, dwg, etc.).	509
Demonstrate proficiency using the Internet to locate information.-The student will be able to:		
01.62	Identify and use web terminology.	493 – 496
01.63	Define Universal Resource Locators (URLs) and associated protocols (e.g., http, ftp, telnet, mailto).	493 – 496
01.64	Compare and contrast the types of Internet domains (e.g., .com, .org, .edu, .gov, .net, .mil).	493 – 496
01.65	Demonstrate proficiency using search engines, including Boolean search techniques.	493 – 496
01.66	Apply the rules for properly citing works or other information obtained from the Internet.	493 – 496
01.67	Identify and apply Copyright Fair Use guidelines.	493 – 496
01.68	Evaluate online information for credibility and quality using basic guidelines and indicators (e.g. authority, affiliation, purpose, etc.).	493 – 496
Develop fundamental business productivity software skills.-The students will be able to:		
01.69	Use appropriate functions in a word processing program. (e.g. format text, insert tables, create bulleted lists).	507
01.70	Describe a spreadsheet and the ways in which it may be used.	507
01.71	Use appropriate functions in a spreadsheet program. (e.g. insert and format text, merge cells, sort data, insert columns and rows).	507
01.72	Describe presentation software, the ways it may be used and appropriate presentation delivery skills.	507
01.73	Use appropriate functions in a presentation software program. (e.g. insert images, duplicate slides, format text).	507
Develop an understanding of computer programming concepts.-The student will be able to:		
01.74	Create a flowchart that visually describes a basic task.	503 – 505

01.75 Describe different computer programming languages and functions.	503 – 505
01.76 Create a basic computer program.	503 – 505
Demonstrate safe and appropriate use of tools.-The student will be able to:	
01.77 Select appropriate tools, procedures, and/or equipment.	171 – 177
01.78 Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment.	30 – 31
01.79 Follow laboratory safety rules and procedures.	28 – 31
01.80 Demonstrate good housekeeping at workstation within total laboratory.	31
01.81 Identify color-coding safety standards.	31 – 33
01.82 Explain fire prevention and safety precautions and practices for extinguishing fires.	33 – 34
01.83 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.	34 – 36