Kentucky CTE

Engineering Technology: Advanced Design Applications 210117 (2026–2027)

Explain the different scales and be able to convert different measurements. 1	1 Explain the different scales and be able to convert different measurements. 1
Develop a design and create a scale drawing and a scale three-dimensional model of that design. 2	2 Develop a design and create a scale drawing and a scale three-dimensional model of that design. 2
Employ common techniques for residential housing design. 3	3 Employ common techniques for residential housing design. 3
Sketch elementary construction details such as foundations, framing, roofing, and sheathing. 4	4 Sketch elementary construction details such as foundations, framing, roofing, and sheathing. 4
Identify physical characteristics that promote or hinder interaction among residents of a neighborhood. 5	5 Identify physical characteristics that promote or hinder interaction among residents of a neighborhood. 5
Design appropriate features for a new or existing neighborhood to co int	6 Design appropriate features for a new or existing neighborhood to encourage community interaction. 6

Skip to main content

Demonstrate appropriate residential building techniques. 7	7 Demonstrate appropriate residential building techniques. 7
Identify the key ideas of green building. 8	8 Identify the key ideas of green building. 8
Describe the process and requirements of LEED certification. 9	9 Describe the process and requirements of LEED certification. 9
Design/model buildings that utilize optimum value engineering (OVE). 10	10 Design/model buildings that utilize optimum value engineering (OVE). 10
Explain the use of survey equipment and the purpose of surveying equipment. 11	11 Explain the use of survey equipment and the purpose of surveying equipment. 11
Explain how to read a leveling rod and how to take readings. 12	12 Explain how to read a leveling rod and how to take readings. 12
Understand key surveying terminology. 13	13 Understand key surveying terminology. 13
Explain how to determine elevations by surveying/leveling. 14	14 Explain how to determine elevations by surveying/leveling. 14
Explain common mistakes made when surveying/leveling. 15	15 Explain common mistakes made when surveying/leveling. 15
To understand that construction technology involves the design of structures to meet various requirements. 16	16 To understand that construction technology involves the design of structures to meet various requirements. 16
St Skip to main content construct architectural	Students will design and construct architectural models. 17

models. 17

Refine a design by using scale drawings and models. 18	18 Refine a design by using scale drawings and models. 18
Evaluate the design solution using conceptual, physical, and mathematical models at various intervals in the design process in order to check for proper design and to note where improvements are needed. 19	19 Evaluate the design solution using conceptual, physical, and mathematical models at various intervals in the design process in order to check for proper design and to note where improvements are needed. 19
Evaluate final solutions and communicate observations, processes, and results of the entire design process using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. 20	20 Evaluate final solutions and communicate observations, processes, and results of the entire design process using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. 20
Explain the term "spinoff" and provide an example. 21	21 Explain the term "spinoff" and provide an example. 21
Explain the function of a tradeoff and provide an example. 22	22 Explain the function of a tradeoff and provide an example. 22
Identify and explain how external factors affect the design of a product before it is manufactured. 23	23 Identify and explain how external factors affect the design of a product before it is manufactured. 23
Identify and change a set of characteristics wi pe pri	24 Identify and change a set of characteristics within a design as they pertain to a set of design principles (for example, function, efficiency, aesthetics, ergonomics, and anthropometrics) and apply those characteristics to the development of a product and a system. 24

Skip to main content

function, efficiency, aesthetics, ergonomics, and anthropometrics) and apply those characteristics to the development of a product and a system. 24	
Use tables, charts, and graphs in making arguments and claims in oral, written, and visual presentations. 25	25 Use tables, charts, and graphs in making arguments and claims in oral, written, and visual presentations. 25
Make decisions about units and scales that are appropriate for problem situations. 26	26 Make decisions about units and scales that are appropriate for problem situations. 26
Classify manufacturing systems as customized production, batch production, and continuous production. 27	27 Classify manufacturing systems as customized production, batch production, and continuous production. 27
Explain the essential aspects of mass customization practices. 28	28 Explain the essential aspects of mass customization practices. 28
Explain how physical sketch models, 2D sketches, and digital models can be used as visualization tools for design ideation. 29	29 Explain how physical sketch models, 2D sketches, and digital models can be used as visualization tools for design ideation. 29
Explain how design changes developed require revisions to critical data such as costs, materials, and component requirements. 30	30 Explain how design changes developed require revisions to critical data such as costs, materials, and component requirements. 30

Skip to main content

Explain how quality control is affected by input and output factors when applied to a manufacturing process. 31	**31 Explain how quality control is affected by input and output factors when applied to a manufacturing process.** 31
Identify how people, materials, tools, and training affect product quality. 32	**32 Identify how people, materials, tools, and training affect product quality.** 32
Produce multiple products that are controlled for quality. 33	**33 Produce multiple products that are controlled for quality.** 33
Create functional fixtures and jigs for creating their product. 34	**34 Create functional fixtures and jigs for creating their product.** 34
Develop a program to logically control a set of inputs to achieve a desired output. 35	**35 Develop a program to logically control a set of inputs to achieve a desired output.** 35
Generate a viable solution to a technological problem using a design model (the design loop). 36	**36 Generate a viable solution to a technological problem using a design model (the design loop).** 36
Utilize appropriate design principles while developing an automated manufacturing machine. 37	**37 Utilize appropriate design principles while developing an automated manufacturing machine.** 37
Explain how sensors work and how they are used in manufacturing to control technological systems and devices. 38	**38 Explain how sensors work and how they are used in manufacturing to control technological systems and devices.** 38

Skip to main content

Describe how a microprocessor is used to control devices and systems and to provide information to humans. 39	39 Describe how a microprocessor is used to control devices and systems and to provide information to humans. 39
Understand how relays work. 40	40 Understand how relays work. 40
Create a working relay. 41	41 Create a working relay. 41
Construct a circuit using a commercial relay. 42	42 Construct a circuit using a commercial relay. 42
Classify materials as natural, synthetic, or mixed based on the mechanical, thermal, and electrical properties of the material. 43	43 Classify materials as natural, synthetic, or mixed based on the mechanical, thermal, and electrical properties of the material. 43
Examine that materials have different qualities and may be classified as natural, synthetic, or mixed. 44	44 Examine that materials have different qualities and may be classified as natural, synthetic, or mixed. 44
Define the mechanical processes that change the form of materials through the processes of separating, forming, combining, and conditioning them. 45	45 Define the mechanical processes that change the form of materials through the processes of separating, forming, combining, and conditioning them. 45
Explore the manufacturing process of designing, developing, making, and servicing products and systems. 46	46 Explore the manufacturing process of designing, developing, making, and servicing products and systems. 46
Standard	