



CYSD Curriculum Adoption

2016-2017

Technology Education



CYSD Technology Education / Grade 7 / Understand and apply concepts of technology (Exploring Technologies)

Content Area:

Grade/ Course: Strand:

CYSD Technology Education	*Grade 7	*Understand and apply concepts of technology (Exploring Technologies)
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Key:
Content Area
Strand
Grade/ Course
Standard
Indicator

CYSD Technology Education

Understand and apply concepts of technology (Exploring Technologies)

Grade 7

CYTE07.1.1 Apply problem solving in technology as a systematic process.

- CYTE07.1.1.01 Identify the problem in a technology setting.
- CYTE07.1.1.02 Explain possible solutions for the problem.
- CYTE07.1.1.03 Choose one solution for the problem.
- CYTE07.1.1.04 Utilize materials and resources to solve the problem.
- CYTE07.1.1.05 Evaluate the positive and negative aspects of the solution and analyze their applications in a technology setting.

CYTE07.1.2 Analyze and apply informational technologies.

- CYTE07.1.2.01 Design a construction project utilizing basic drafting techniques.
- CYTE07.1.2.02 Design a transportation project utilizing basic principles of design.
- CYTE07.1.2.03 Create a folder design with a technology theme utilizing basic principles of design.

CYTE07.1.3 Analyze and apply construction technologies.

- CYTE07.1.3.01 Identify the types of bridges and compare their application in a bridge construction project.
- CYTE07.1.3.02 Investigate the need for efficiency in a bridge construction project.
- CYTE07.1.3.03 Explain the effect of bending, tension, and compression forces acting upon a bridge construction project.
- CYTE07.1.3.04 Identify the live static load and dead static load acting upon a bridge construction project.
- CYTE07.1.3.05 Construct a bridge to the design specifications.
- CYTE07.1.3.06 Determine the critical load and analyze the force causing failure in their bridge construction project.
- CYTE07.1.3.07 Calculate the efficiency of their bridge construction project based on the critical load.

CYTE07.1.4 Apply and analyze the safe and appropriate use of tools, materials, and procedures, as an individual, or as a group member.

- CYTE07.1.4.01 Apply principles of safety in the use of hand tools.
- CYTE07.1.4.02 Analyze the basic safety rules and interpret their application in a technology setting.
- CYTE07.1.4.03 Measure to within 1/16th of an inch.

CYTE07.1.5 Evaluate the impacts of technology on society and the environment.

- CYTE07.1.5.01 Analyze the technology systems and compare their uses in society.
- CYTE07.1.5.02 Analyze the technological problem solving method as it applies to the technology systems.

CYTE08.1.6. Analyze and apply transportation technologies.

- CYTE07.1.6.01 Explain Newton's Third Law of Motion and describe how it affects the flight of the rocket.
- CYTE07.1.6.02 Describe the forces that affect rocket flight such as thrust and drag.
- CYTE07.1.6.03 Identify parts of the rocket and describe specific sub-systems that influence flight.
- CYTE07.1.6.04 Construct a rocket to the specifications designed for each part.
- CYTE07.1.6.05 Launch the rocket and calculate the altitude and distance of the flight.



CYSD Technology Education / Grade 8

Content Area:

Grade/ Course: Strand:

CYSD Technology Education	*Grade 8	(View All)
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Key:
Content Area
Strand
Grade/ Course
Standard
Indicator

CYSD Technology Education

Understand and apply concepts of technology (Exploring Technologies)

Grade 8

CYTE08.1.1 Apply problem solving in technology as a systematic process.

- CYTE08.1.1.01 Identify the problem.
- CYTE08.1.1.02 Explain possible solutions for the problem.
- CYTE08.1.1.03 Choose one solution.
- CYTE08.1.1.04 Utilize materials and resources to solve the problem.
- CYTE08.1.1.05 Evaluate the positive and negative aspects of the solution.

CYTE08.1.2 Apply and analyze informational technologies.

- CYTE08.1.2.02 Utilize basic drafting techniques in the design of a transportation project.

CYTE08.1.6 Apply and analyze transportation technologies.

- CYTE08.1.6.06 Identify the side view and top view of a dragster transportation project.
- CYTE08.1.6.07 Explain the aerodynamic forces of friction, drag, turbulence, and boat tailing acting upon a dragster transportation project.
- CYTE08.1.6.08 Analyze the results of the drag test with the dragster transportation project.
- CYTE08.1.6.09 Calculate the accuracy of a dragster transportation project using the roll test.
- CYTE08.1.6.10 Calculate the speed of a dragster transportation project in miles per hour.

Understand and apply concepts of technology (Manufacturing)

CYTE08.2.1 Apply and analyze manufacturing technologies.

- CYTE08.2.1.01 Explain corporate structure of a manufacturing enterprise.
- CYTE08.2.1.02 Identify the parts of a flow chart.
- CYTE08.2.1.03 Name the significant historical advancements in mass production.
- CYTE08.2.1.04 Identify the essential components of the technology definition and the major areas of technology.

CYTE08.2.2 Evaluate the impacts of technological solutions on society and the environment.

- CYTE08.2.2.01 Analyze a positive and negative effect of technology on society and the environment.

CYTE08.2.3 Demonstrate the safe and appropriate use of tools, materials, and procedures, as an individual, or as a group member, to solve problems.

- CYTE08.2.3.01 Measure to within 1/16th of an inch.
- CYTE08.2.3.02 Apply principles of safety in the use of hand and power tools.
- CYTE08.2.3.03 Apply hand and power tools in the fabrication of a product.



CYSD Technology Education / High School

Content Area:

Grade/ Course: Strand:

CYSD Technology Education	*High School	(View All)
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Key:

Content Area

Strand

Grade/ Course

Standard

Indicator

CYSD Technology Education

Engineering Design

High School

CYTEDC.2.1 Explore and analyze the impacts of technology on society and the environment.

- CYTEDC.2.1.01 Define and identify classifications of technology.
- CYTEDC.2.1.02 Develop an understanding of the historical evolution of technology through invention and innovation.
- CYTEDC.2.1.03 Analyze and evaluate positive and negative impacts that technology can have on the environment.
- CYTEDC.2.1.04 Analyze and discuss technology and its impacts on humans.

CYTEDC.2.2 Utilize drafting and CADD techniques to create, analyze, and communicate conceptual designs to the production and manufacturing world.

- CYTEDC.2.2.01 Demonstrate the use of various sketching, drafting, and illustration techniques to produce visual representations which communicate design information.
- CYTEDC.2.2.02 Recognize and create technical drawings that follow current ANSI and/or ISO standards.
- CYTEDC.2.2.03 Identify and apply the use of various measurement scales to read and create technical drawings.
- CYTEDC.2.2.04 Create and utilize drawing layouts and title-blocks that communicate necessary information about a drawing and/or drawing set.
- CYTEDC.2.2.05 Identify and apply advanced solid modeling techniques to the design and creation of CAD models.
- CYTEDC.2.2.06 Utilize CAD software to generate presentational renderings of part and assembly models.
- CYTEDC.2.2.07 Utilize CAD software to create, organize, and annotate a complete working drawing set.

CYTEDC.2.3 Develop an understanding of engineering design and apply problem-solving techniques following a systematic approach.

- CYTEDC.2.3.01 Explain and apply the components of the engineering design process.
- CYTEDC.2.3.02 Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
- CYTEDC.2.3.03 Explain and apply the Universal Systems Model (USM) in conjunction with the design process.
- CYTEDC.2.3.04 Identify and apply the elements and principles of design as they pertain to product development.
- CYTEDC.2.3.05 Identify and apply various materials used in the design and manufacture of products.
- CYTEDC.2.3.06 Identify and apply various methods used to both temporarily and permanently fasten parts together in the design and manufacture of products.
- CYTEDC.2.3.07 Identify and apply simple machines to achieve a mechanical advantage when applicable to a product's design.
- CYTEDC.2.3.08 Utilize and apply the concept of reverse engineering to re-create, analyze, and improve existing designs.
- CYTEDC.2.3.09 Utilize precision measuring devices to analyze existing part geometry.
- CYTEDC.2.3.10 Identify and apply various types of Finite-Element-Analysis (FEA) tests to a part and/or assembly model to analyze and optimize a design.
- CYTEDC.2.3.11 Design, create, and assess a prototype and/or working model of a solution to given design problem.

CYTEDC.2.4 Develop an understanding of ways to communicate one's work and learned outcomes to others.

- CYTEDC.2.4.01 Demonstrate the ability to design and problem-solve both individually and as part of a design team.
- CYTEDC.2.4.02 Document and communicate the design process through the creation of a technical report and/or an engineer's notebook.
- CYTEDC.2.4.03 Document and organize work in the form of a portfolio to demonstrate growth and ability.

Draft CAD

CYTEDC.1.1 Read, understand, and create technical drawings used to communicate conceptual designs to the production and manufacturing world.

- CYTEDC.1.1.01 Demonstrate appropriate hand lettering techniques standardized in the drafting industry.
- CYTEDC.1.1.02 Demonstrate basic freehand sketching techniques to produce proportional visual representations which communicate design information.
- CYTEDC.1.1.03 Identify and apply various line types, line weights, symbols and annotations standardized in the drafting industry.
- CYTEDC.1.1.04 Recognize and create technical drawings following drafting standards set by the American National Standards Institute (ANSI).
- CYTEDC.1.1.05 Recognize technical drawings following drafting standards set by the International Standards Organization (ISO).
- CYTEDC.1.1.06 Identify and utilize manual board drafting tools and equipment to produce technical drawings.
- CYTEDC.1.1.07 Identify and demonstrate the use of various measurement scales to read and create technical drawings.
- CYTEDC.1.1.08 Utilize and create various standardized drawing layouts and title-blocks to communicate necessary information about a drawing and/or drawing set.
- CYTEDC.1.1.09 Demonstrate geometric construction techniques and utilize where necessary to produce accurate technical drawings.
- CYTEDC.1.1.10 Explain the relationships and create standard multi-view drawings based on the process of orthographic projection.
- CYTEDC.1.1.11 Identify and create special views needed to fully and clearly communicate complex design information on a drawing as well as knowing when to do so.
- CYTEDC.1.1.12 Interpret and create fully annotated drawings following the standard rules and guidelines for dimensioning.
- CYTEDC.1.1.13 Identify and create various types of pictorial drawings and renderings.

- CYTEDC.1.2.01 Identify, create, organize, and share appropriate CAD files and folder structures.
- CYTEDC.1.2.02 Demonstrate the use of 2-D sketching tools to create and edit geometry.
- CYTEDC.1.2.03 Create and apply the use of layers to organize and format 2-D geometry on a CAD drawing.
- CYTEDC.1.2.04 Demonstrate the use of dimensioning and geometric relations to fully define both 2-D and 3-D geometry.
- CYTEDC.1.2.05 Demonstrate the use of additive and subtractive solid modeling techniques to produce 3-D solids from 2-D sketches in the creation of part files.
- CYTEDC.1.2.06 Demonstrate the use of geometry modification tools and pattern techniques to manipulate 2-D geometry and 3-D solids in the creation of part, assembly and drawing files.
- CYTEDC.1.2.07 Create assemblies utilizing geometric mates/constraints to eliminate unnecessary degrees of freedom within the CAD software.
- CYTEDC.1.2.08 Demonstrate the use of basic analysis tools to check and adjust part geometry for functional clearances and the elimination of part interferences within an assembly.
- CYTEDC.1.2.09 Create exploded-view configurations to visually demonstrate design assembly.
- CYTEDC.1.2.10 Create, organize, and annotate complete working drawing sets.

CYTEDC.1.3 Develop an understanding of and apply design and problem-solving techniques following a systematic approach.

- CYTEDC.1.3.01 Apply the components of a technological and/or engineering design process.
- CYTEDC.1.3.02 Recognize the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
- CYTEDC.1.3.03 Create and analyze a prototype and/or create a working model to test a design concept by making actual observations and necessary adjustments.

CYTEDC.1.4 Develop an understanding of ways to communicate one's work and learned outcomes to others.

- CYTEDC.1.4.01 Identify relationships among technologies and the connections between technology and other fields of study.
- CYTEDC.1.4.02 Document and communicate the design process through the creation of a technical report.
- CYTEDC.1.4.03 Document and organize work in the form of a portfolio to demonstrate growth and ability.

Electronics I

CYTEIE.1.1 Demonstrate an understanding of the role of technological advancement on society throughout time.

- CYTEIE.1.1.01 Identify significant historical developments in electricity.
- CYTEIE.1.1.02 Report how historical developments with electricity lead to deeper understanding of nature.
- CYTEIE.1.1.03 Investigate how historical developments have changed society.

CYTEIE.1.2 Demonstrate the application of attributes associated with engineering design process.

- CYTEIE.1.2.01 Identify and describe the use of electrical components such as a switch, resistor, capacitor, diode, inductor, and transformer.
- CYTEIE.1.2.02 Construct and test series, parallel, and complex circuits on a breadboard.
- CYTEIE.1.2.03 Construct and test series, parallel, and complex circuits on a printed circuit board.
- CYTEIE.1.2.04 Create circuit schematics for series, parallel, and complex circuits using appropriate circuit symbols.

CYTEIE.1.3 Demonstrate an understanding of the role of troubleshooting, research and experimentation in problem solving.

- CYTEIE.1.3.01 Identify and investigate possible sources of electromotive force and electron flow.
- CYTEIE.1.3.02 Identify when Ohm's Law is appropriate and calculate quantities involved with circuits.
- CYTEIE.1.3.03 Identify when Joule's Law is appropriate and calculate quantities involved with circuits.
- CYTEIE.1.3.04 Investigate and calculate with Kirchoff's laws in electrical circuits.
- CYTEIE.1.3.05 Demonstrate the ability to properly use an appropriate instrument for the measurement of electrical quantities.
- CYTEIE.1.3.06 Demonstrate the proper use an appropriate instrument for the measurement of electrical quantities.
- CYTEIE.1.3.07 Investigate and compare and contrast DC and AC circuits.
- CYTEIE.1.3.08 Investigate and compare and contrast the use of various components in DC and AC circuits.

Electronics II

CYTEIE.2.1 Demonstrate the safe and appropriate use of tools, materials, procedures, and electronic equipment as an individual, or as a group member, to solve problems.

- CYTEIE.2.1.01 Discriminate between safe and unsafe electrical environments.
- CYTEIE.2.1.02 Demonstrate safe soldering techniques in development of printed circuit boards.
- CYTEIE.2.1.03 Design and fabricate electronic project (s).
- CYTEIE.2.1.04 Successfully troubleshoot electronic circuits.
- CYTEIE.2.1.05 Identify components and fabricate a full-wave rectifier circuit using discrete components.

CYTEIE.2.2 Apply and analyze electrical/electronic technologies.

- CYTEIE.2.2.01 Describe semiconductor composition, identify semiconductor devices, and demonstrate their operation.
- CYTEIE.2.2.02 Demonstrate principles of full-wave and half-wave rectification.
- CYTEIE.2.2.03 Demonstrate Zener diode operation and voltage regulation.
- CYTEIE.2.2.04 Demonstrate switching capabilities of NPN and PNP transistors.
- CYTEIE.2.2.05 Identify the operation of transistor amplifier circuits.
- CYTEIE.2.2.06 Identify operating characteristics of common emitter, common base, and common collector amplifying circuits.
- CYTEIE.2.2.07 Demonstrate the use of an RC circuit to determine amplifier gain.
- CYTEIE.2.2.08 Describe the basic characteristics of an operational amplifier.
- CYTEIE.2.2.09 Describe the principle of inversion of output for operational amplifiers.
- CYTEIE.2.2.10 Describe the principle of coupling operational amplifiers.
- CYTEIE.2.2.11 Identify and create operating IC timer circuits.
- CYTEIE.2.2.12 Identify major concepts of robotics and associated electronics.

CYTEIE.2.3 Apply problem solving, in technology, as a systematic process.

- CYTEIE.2.3.01 Perform all necessary procedures in the selection, design, construction, enclosure, and evaluation of an electronic project.
- CYTEIE.2.3.02 Acquire skills in creating and reading schematic drawings and in designing and assembling circuit boards to solve specific problems.
- CYTEIE.2.3.03 Solve circuit design problems using circuit simulation software and actual electrical circuit components.

CYTEIE.2.4 Apply and analyze informational technologies.

- CYTEIE.2.4.01 Demonstrates the ability to program robotics to perform prescribed functions in order to solve a problem.
- CYTEIE.2.4.02 Describe the societal impacts of various electrical/electronic systems.

CYTEAD.1.1 Explore and analyze the impacts of technology and society on the design of architectural structures.

Atlas - Adopted Standards

<https://cysd-public.rubiconatlas.org/Atlas/References/Standards/Vi...>

- CYTEAD.1.1.01 Identify and apply the elements and principles of design as they apply to architecture.
- CYTEAD.1.1.02 Recognize the philosophical debate of form vs. function and employ a balance as it applies to the design of architecture.
- CYTEAD.1.1.03 Explore and recognize early examples of architecture throughout history.
- CYTEAD.1.1.04 Identify examples of architectural engineering techniques used by ancient civilizations that are still fundamental in how we design structures today.
- CYTEAD.1.1.05 Recognize key features of various architectural styles and apply through design.
- CYTEAD.1.1.06 Recognize the differences in residential design as it relates to urban, suburban, and rural living.

CYTEAD.1.2 Read, analyze, and create architectural drawings, renderings, models, and written documentation used to communicate conceptual designs to others.

- CYTEAD.1.2.01 Demonstrate the use of various sketching, drafting, and illustration techniques to produce visual representations which communicate design information.
- CYTEAD.1.2.02 Recognize and create architectural drawings that follow current standards set by the American National Standards Institute (ANSI).
- CYTEAD.1.2.03 Identify and apply the use of various measurement scales for reading and creating architectural drawings.
- CYTEAD.1.2.04 Create and utilize drawing layouts and title-blocks that communicate the necessary information regarding an architectural drawing set.
- CYTEAD.1.2.05 Identify and utilize standard symbols found in architectural drawing sets.
- CYTEAD.1.2.06 Read and annotate drawings following the standard rules and guidelines for architectural dimensioning.
- CYTEAD.1.2.07 Identify and apply the procedure for creating a detailed floor plan.
- CYTEAD.1.2.08 Identify and apply the procedure for creating a detailed elevation plan.
- CYTEAD.1.2.09 Identify, create, organize, and share appropriate CAD files and folder structures.
- CYTEAD.1.2.10 Utilize CAD software to design, create, and analyze virtual 3-D models of architectural structures.
- CYTEAD.1.2.11 Utilize CAD software to generate presentational renderings of architectural structures.
- CYTEAD.1.2.12 Utilize CAD software to create, organize, and annotate a complete plan drawing set.
- CYTEAD.1.2.13 Create and utilize scale modeling techniques to represent and communicate architectural design concepts to others.
- CYTEAD.1.2.14 Document and communicate the design process through the creation of a design proposal.
- CYTEAD.1.2.15 Document and organize work in the form of a portfolio to demonstrate growth and ability.

CYTEAD.1.3 Analyze and design the different areas, layouts, and means of egress in architectural dwellings.

- CYTEAD.1.3.01 Apply the components of a technological and/or engineering design process.
- CYTEAD.1.3.02 Understand how to find and apply current building codes to the design of architectural dwellings.
- CYTEAD.1.3.03 Identify and explain the various floor plan layouts and footprint options commonly found in residential architecture.
- CYTEAD.1.3.04 Identify, design, and analyze living areas as part of a residential layout.
- CYTEAD.1.3.05 Identify, design, and analyze sleeping areas as part of a residential layout.
- CYTEAD.1.3.06 Identify, design, and analyze service areas as part of a residential layout.
- CYTEAD.1.3.07 Identify, design, and analyze kitchen layouts including proper casework and appliances to maintain an efficient work triangle.
- CYTEAD.1.3.08 Identify, design, and analyze bath areas as part of a residential layout.
- CYTEAD.1.3.09 Identify, design, and analyze traffic areas as part of a residential layout taking into account necessary means of egress.

CYTEAD.1.4 Develop an understanding of various methods and materials of residential construction and implement them through design.

- CYTEAD.1.4.01 Identify and explain the various foundation options commonly used in residential architecture.
- CYTEAD.1.4.02 Identify common methods and materials used in residential construction.
- CYTEAD.1.4.03 Identify the major components of common stick-frame floor, wall, and roof construction.
- CYTEAD.1.4.04 Recognize and design residential layouts that include basic Mechanical, Electrical, and Plumbing (MEP) components according to current codes.
- CYTEAD.1.4.05 Identify and select appropriate and efficient building materials for interior and exterior residential design while taking into account current codes, budgetary constraints, and the environment.
- CYTEAD.1.4.6 Create and utilize architectural schedules to demonstrate material needs for a proposed design.

Electricity Electronics

CYTEIE.1.1 Demonstrate the safe and appropriate use of tools, materials, procedures, and electronic equipment as an individual, or as a group member, to solve problems.

- CYTEIE.1.1.01 Identify best practice for personal and equipment safety when handling electricity.
- CYTEIE.1.1.02 Identify the hazards of handling electricity and electrical devices.
- CYTEIE.1.1.03 Design, fabricate and troubleshoot electronic project(s).
- CYTEIE.1.1.04 Demonstrate safe soldering techniques in development of printed circuit boards.
- CYTEIE.1.1.05 Demonstrate competency in wiring single through 4-2way switched AC circuits.

CYTEIE.1.2 Apply and analyze electrical/electronic technologies.

- CYTEIE.1.2.01 Identify the six sources of electromotive force and electron flow.
- CYTEIE.1.2.02 Identify the significant historical developments in electricity and electronics.
- CYTEIE.1.2.03 Identify the units of measure commonly used in electricity and electronics.
- CYTEIE.1.2.04 Identify the relationships between current, voltage, resistance, and power in DC circuits.
- CYTEIE.1.2.05 Identify the relationships between current, voltage, resistance, and power in AC circuits.
- CYTEIE.1.2.06 Identify physical and electrical properties of electronic components.
- CYTEIE.1.2.07 Identify series, parallel, and series-parallel resistive circuits.
- CYTEIE.1.2.08 Identify the characteristics of electromagnetism and induction.

CYTEIE.1.3 Apply problem solving, in technology, as a systematic process.

- CYTEIE.1.3.01 Demonstrate competency in mathematical processes for electronic solutions.
- CYTEIE.1.3.02 Identify and apply the three variables of Ohm's Law.
- CYTEIE.1.3.03 Identify and apply Watt's Law.
- CYTEIE.1.3.04 Demonstrate competency using DMM's and O-scope's for the measurement of electronic values.
- CYTEIE.1.3.05 Identify and describe p/n junctions and hole theory of semiconductor devices.

CYTEIE.1.4 Apply and analyze informational technologies.

- CYTEIE.1.4.01 Demonstrate competency in mechanical and CAD development of schematic drawings.

Process Engineering I

CYTEPE1.1 (Process Engineering I) Understand and apply concepts of technology.

CYTEPE.1.1 Apply and analyze production manufacturing technologies.

- CYTEPE.1.1.01 Apply production jigs and fixtures in the fabrication of duplicate product components.

- CYTEPE.1.2.01 Apply production flow charts to the fabrication of project components.
- CYTEPE.1.2.02 Select, interpret, and apply a set of working drawings in the manufacture of a product.

CYTEPE.1.3 Apply problem solving, in technology, as a systematic process.

- CYTEPE.1.3.01 Measure to within 1/16 of an inch.
- CYTEPE.1.3.02 Select and apply appropriate hand and power tools to primary and secondary machining applications.
- CYTEPE.1.3.03 Apply proper construction techniques in the assembly of production products.
- CYTEPE.1.3.04 Apply proper finishing techniques in the fabrication of production products.

CYTEPE.1.4 Demonstrate the safe and appropriate use of tools, materials, and procedures, as an individual, or as a group member, to solve problems.

- CYTEPE.1.4.01 Apply principles of safety in the use of hand tools, power tools, and stationary machinery.
- CYTEPE.1.4.02 Apply a degree of skill and craftsmanship in the fabrication of product components utilizing accepted standards of quality control.
- CYTEPE.1.4.03 Employ interpersonal skills to work effectively with others to achieve a common goal.

Process Engineering II

CYTEPE2.1 (Process Engineering II) Understand and apply concepts of technology.

CYTEPE2.1.1 Apply and analyze manufacturing technologies.

- CYTEPE2.1.1.01 Identify, utilize, and assess appropriate manufacturing processes.
- CYTEPE2.1.1.02 Identify and utilize applications of custom, limited production, lean production, and just-in-time manufacturing systems.
- CYTEPE2.1.1.03 Apply concepts and processes involved in the modern manufacturing techniques of computer-aided manufacturing (CAM).
- CYTEPE2.1.1.04 Design and/or apply production jigs and fixtures to the fabrication of woodworking joinery or duplicate product components.

CYTEPE2.1.2 Apply and analyze informational technologies.

- CYTEPE2.1.2.01 Plan, design, select, and/or interpret a set of working drawings of a product to be manufactured.

CYTEPE2.1.3 Apply problem solving, in technology, as a systematic process.

- CYTEPE2.1.3.01 Measure to within 1/32 of an inch.
- CYTEPE2.1.3.02 Apply mathematical and scientific principles and formulas to solve problems relating to manufacturing and manufacturing processes.
- CYTEPE2.1.3.03 Select and apply appropriate power and hand tools to the primary and secondary machining applications of single and/or multiple products.
- CYTEPE2.1.3.04 Select, execute, and apply appropriate woodworking joinery to single and/or multiple products.
- CYTEPE2.1.3.05 Select and apply proper construction techniques in the assembly of single and/or multiple products.
- CYTEPE2.1.3.06 Select and apply proper finishing application in the fabrication of single and/or multiple products.

CYTEPE2.1.4 Demonstrate the safe and appropriate use of tools, materials, and procedures, as an individual or as a group member, to solve problems.

- CYTEPE2.1.4.01 Apply principles of safety and effectively use a variety of tools, machines, and equipment in a manufacturing laboratory/shop environment.
- CYTEPE2.1.4.02 Apply a degree of skill and craftsmanship in the fabrication of single and/or multiple components utilizing accepted standards of quality control.
- CYTEPE2.1.4.03 Employ interpersonal skills to work effectively with others as part of a production team to achieve a common goal.

Process Engineering III

CYTEPE3.1 (Process Engineering III) Understand and apply concepts of technology.

CYTEPE3.1.1 Apply and analyze manufacturing technologies.

- CYTEPE3.1.1.01 Develop, utilize, and assess appropriate technological manufacturing techniques and processes.
- CYTEPE3.1.1.02 Apply concepts and processes involved in the modern manufacturing techniques of Just-In-Time (JIT) and Limited Production Run (LPR).
- CYTEPE3.1.1.03 Measure and utilize appropriate measuring tools to fabricate parts and set up equipment to within 1/32 of an inch.
- CYTEPE3.1.1.04 Design, fabricate, test, troubleshoot, and apply production jigs and fixtures to the fabrication of single and/or multiple product parts and components.
- CYTEPE3.1.1.05 Apply concepts and processes involved in the modern manufacturing techniques of computer-aided manufacturing (CAM).

CYTEPE3.1.2 Apply and analyze informational technologies.

- CYTEPE3.1.2.01 Utilize research and development techniques to determine product needs, design product ideas, and develop the ideas into finished products.
- CYTEPE3.1.2.02 Plan, design, create, and/or select a set of working drawings of a product to be manufactured.

CYTEPE3.1.3 Apply problem solving, in technology, as a systematic process.

- CYTEPE3.1.3.01 Measure to within 1/64 of an inch utilizing a variety of different measuring tools.
- CYTEPE3.1.3.02 Assess and apply appropriate mathematical and scientific principles and formulas to solve problems relating to manufacturing and manufacturing processes.
- CYTEPE3.1.3.03 Select, set up, adjust, and apply appropriate power and hand tools to the primary and secondary machining applications of single and/or multiple products.
- CYTEPE3.1.3.04 Select, layout, execute, and apply appropriate woodworking joinery to single and/or multiple products.
- CYTEPE3.1.3.05 Select, apply, and troubleshoot proper construction techniques in the assembly of single and/or multiple products.
- CYTEPE3.1.3.06 Select and apply proper finishing application in the fabrication of single and/or multiple products.

CYTEPE3.1.4 Demonstrate the safe and appropriate use of tools, materials, and procedures, as an individual or as a group member, to solve problems.

- CYTEPE3.1.4.01 Apply principles of safety and effectively use a variety of hand and power tools, stationary machines, and equipment in a manufacturing laboratory/shop environment.
- CYTEPE3.1.4.02 Apply a degree of skill and craftsmanship in the fabrication of single and/or multiple components utilizing accepted standards of quality control.
- CYTEPE3.1.4.03 Employ interpersonal skills to work effectively with others as part of a production team to achieve a common goal.