

Concept	Indicator	Indicator Statement	Activity
<b>The Nature of Technology</b>  <i>1. The scope of technology.</i> <i>2. The core concepts of technology.</i> <i>3. The relationship among technologies and the connections between technology and other fields.</i>	1-F	New products and systems can be developed to solve problems or to help do things that could not be done without technology.	Team Plan and Robot Plan, Robot Systems, Iteration and Redesign, Advanced Automation, Community Project.
	1-G	The development of technology is a human activity and is the result of individual or collective needs and ability to be creative.	Community Project
	1-H	Technology is closely linked to creativity, which has resulted in innovation.	Why FTC?
	1-I	Corporations can often create demand for a product by bringing in onto a market.	Community Project
	2-M	Technological systems include input, processes, output and, at time, feedback.	Computational Thinking, Advanced Automation, Advanced Computational Thinking
	2-N	Systems thinking involves considering how every part relates to others.	Computational Thinking, Advanced Automation, Advanced Computational Thinking
	2-O	An open-loop system has no feedback path and requires human intervention, while a closed loop system uses feedback.	Advanced Automation, Advanced Computational Thinking
	2-P	Technological systems can be connected to one another.	Robot Systems
	2-Q	Malfunctions of any part of a system may affect the function and quality of the system.	Advanced Automation, Advanced Computational Thinking
	2-R	Requirements are the parameters placed on the development of a product or system.	Robot Plan
	2-S	Trade-off is a decision process recognizing the need for careful compromises among competing factors.	Robot Plan
	2-T	Different technologies involved different sets of process.	Robot Systems, Community Project
	2-U	Maintenance is the process of inspecting and servicing a product or system on a regular basis in order for it to continue functioning properly, to extend its life, or to upgrade its capability.	Iteration and Redesign
	2-V	Controls are mechanisms or particular steps that people perform using information about the system that causes the system to change.	Computational Thinking, Advanced Computational Thinking
	<b>Technology and Society</b>  <i>4. The cultural, social, economic, and</i>	3-D	Technological systems often interact with one another.
3-E		A product, system, or environment developed for one setting may be applied to another setting.	Community Project
3-F		Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.	Robot Systems
4-D		The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology's development and use.	Community Project
	4-E	Technology by itself is neither good nor bad, but decisions about the use of products and systems can result in desirable or undesirable consequences.	Community Project

<p><i>political effects of technology.</i></p> <p><i>5. The effects of technology on the environment.</i></p> <p><i>6. The role of society in the development and use of technology.</i></p> <p><i>7. The influence of technology on history.</i></p>	4-F	The development and use of technology poses ethical issues.	Community Project
	4-G	Economic, political, and cultural issues are influenced by the development and use of technology.	Community Project
	5-D	The management of waste produced by technological systems is an important societal issue.	Community Project
	5-E	Technologies can be used to repair damage caused by natural disasters and to break down waste from the use of various products and systems.	Community Project
	5-F	Decisions to develop and use technologies often put environmental and economic concerns in direct competition with one another.	Community Project
	6-D	Throughout history, new technologies have resulted from the demands, values and interest of individuals, businesses, industries, and societies.	Community Project
	6-E	The use of inventions and innovations has led to changes in society and the creation of new needs and wants.	Team Plan and Robot Plan
	6-F	Social and cultural priorities and values are reflected in technological devices.	Community Project
	6-G	Meeting societal expectations is the driving force behind the acceptance of use products and systems.	Community Project
	7-C	Many inventions and innovations have evolved by using slow and methodical processes of test and refinement.	Team Plan and Robot Plan
	7-D	The specialization of function has been the heart of many technological improvements.	Iteration and Redesign
	7-E	The design and construction of structures for service or convenience have evolved from the development of techniques for measurement, controlling systems, and understanding of spatial relationships.	Iteration and Redesign Advanced Automation Iteration and Redesign 2
	7-F	In the past, an invention or innovation was not usually developed with knowledge of science.	Computational Thinking, Advanced Automation
<p><b>Design</b></p> <p><i>8. The attributes of design</i></p> <p><i>9. Engineering Design</i></p> <p><i>10. The role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.</i></p>	8-E	Design is a creative planning process that leads to useful products and systems.	Team Plan and Robot Plan
	8-F	There is no perfect design	Team Plan and Robot Plan
	8-G	Requirements for a design are made up of criteria and constraints.	Team Plan and Robot Plan
	9-F	Design involves a set of steps which can be performed in different sequences and repeated as needed.	Team Plan and Robot Plan
	9-G	Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.	Team Plan and Robot Plan
	9-H	Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.	Team Plan and Robot Plan
	10-F	Troubleshooting is a problem-solving method used to identify the cause of the malfunction in a technological system.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
	10-G	Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
10-H	Some technological problems are best solved through experimentation.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2	

<b>Abilities for Technological World</b> 11. Apply the design process. 12. Use and maintain technological products and systems. 13. Assess the impact of product and systems.	11-H	Apply a design process to solve problems in and beyond the laboratory-classroom.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
	11-I	Specify criteria and constraints for the design.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
	11-J	Make two-dimensional and three-dimensional representations of the designed solution.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
	11-K	Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.	Team Plan and Robot Plan Sprint to Compete Iteration and Redesign Advanced Automation Iteration and Redesign 2
	11-L	Make a product or system and document the solution.	All
	12-H	Use information provided in manuals, protocols, or by experienced people to see and understand how things work.	Team Plan and Robot Plan Robot Systems Iteration and Redesign Advanced Automation Iteration and Redesign 2
	12-I	Use tools, materials, and machines safely to diagnose, adjust and repair systems.	Team Plan and Robot Plan
	12-J	Use computers and calculators in various applications.	All
	12-K	Operate and maintain systems in order to achieve a given purpose.	Iteration and Redesign Advanced Automation Iteration and Redesign 2
	13-F	Design and use instruments to gather data.	Computational Thinking
	13-G	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.	All
	13-H	Identify trends and monitor potential consequences of technological development.	Computational Thinking
	13-I	Interpret and evaluate the accuracy of the information obtained and determine if it is useful.	Test and Evaluate in All Units
<b>The Designed World</b> 14. Medical Technologies 15. Agricultural and related biotechnologies. 16. Energy and power technologies. 17. Information and communication technologies. 18. Transportation technologies. 19. Manufacturing technologies.	14-G	A wide range of specialized equipment and practices is used to improve the production of food, fiber, fuel, and specialized animal care equipment	Community Project
	16-E	Energy is the capacity to do work	Robot Systems
	16-F	Energy can be used to do work using many processes.	Robot Systems Advanced Automation
	16-G	Power is the rate at which energy is converted from one form to another, or the rate at which work is done.	Robot Systems Advanced Automation
	16-H	Power systems are used to drive and provide propulsion to other technological products and systems.	Robot Systems Advanced Automation
	16-I	Much of the energy used in our environment is not used efficiently.	Robot Systems Advanced Automation
	17-H	Information and communication systems allow information to be transferred from human to human, human to machine, and machine to human.	Robot Systems

20. Construction technologies.	17-I	Communication systems are made up of a source, encoder, transmitter, receive, decoder, and destination.	Computational thinking
	17-J	The design of a message is influenced by such factors as the intended audience, medium, purpose, and nature of the message.	Community Project
	17-K	The use of symbols, measurements, and drawings promotes clear communication by providing a common language to express ideas.	Computational thinking, Robot Plan
	18-F	Transporting people and goods involves a combination of individuals and vehicles	-
	18-G	Transportation vehicles are made up of subsystems, such as structural, propulsion, suspension, guidance, control, and support, that must function together for a system to work effectively.	-
	19-F	Manufacturing systems use mechanical processes of separating, forming, combining, and conditioning.	-
	19-H	Manufacturing process includes the designing, development, making and servicing of products and systems.	-
	20-J	Infrastructure is the underlying base or basic framework of a system.	Robot systems
	20-K	Structures are constructed using a variety of processes and procedures.	Robot systems
	20-L	The design of structures includes a number of requirements.	Robot systems
	20-M	Structures require maintenance, alteration or renovation period	Robot systems, Advanced Automation, Iteration and Redesign, Sprint to Compete