

**ROBOTICS AND AUTOMATION**

<b>CURRICULUM/CONTENT AREA</b>	<b>COURSE LENGTH</b>
<i>Applied &amp; Technical Education (ATE)</i>	<i>1 semester</i>
<b>GRADE LEVEL</b>	<b>DATE LAST REVIEWED</b>
<i>9-12</i>	<i>11/15/2022</i>
<b>PREREQUISITE(s) if applicable</b>	<b>BOARD APPROVAL DATE</b>
	<i>11/15/2022</i>
<b>PRIMARY RESOURCE if applicable</b>	
<a href="https://info.firstinspires.org/curriculum">https://info.firstinspires.org/curriculum</a>	

**DESIRED RESULTS**

**COURSE DESCRIPTION AND PURPOSE**  
*Using a project-based learning method, Students gain knowledge and skills by working towards goals through the investigation of solutions and engagement in a complex question or problem to solve. Content is designed to meet specific STEM learning objectives through connected learning principles as they design, build, and program a robot to complete challenges. In addition, students will explore Career Clusters in which Robotics and Automation are an integral component of various industry fields.*

<b>ENDURING UNDERSTANDINGS</b> <i>Students will understand that...</i>	<b>ESSENTIAL QUESTIONS</b> <i>Students will keep considering...</i>
Creativity, innovation, and critical thinking are essential for success in a technologically advanced world.	Why is creativity and innovation important? How is creativity and innovation used in [name of career pathway]? How do teams efficiently and effectively solve problems in an increasingly complex world? What strategies and processes can I use to become a more effective creator, thinker and problem solver?
The ability to communicate and collaborate with people with diverse backgrounds and perspectives is key to participation in a global economic society.	Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration? What is effective teamwork? What strategies can I use/teams use to work better together? How can perspectives and experiences of a diverse group develop innovative solutions to a given problem?
Career and technical education provides pathways to high-demand, high-wage career opportunities, and personal fulfillment.	Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally? How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings? What are employability skills? How do I prepare myself for a career that is in demand now and in 5, 10, or 20 years from now?

**PRIORITY CAREER & TECHNICAL STANDARDS**  
*Students will be skilled at...*

**Creativity, Critical Thinking, Communication and Collaboration**  
**4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.**  
a: I develop effective resolutions for a given problem, decision or opportunity using available information.  
b: I develop and implement a resolution for a new situation using personal knowledge and experience.

**Career Development**  
**CD4: Students will identify and apply employability skills.**  
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.  
b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job.  
c: I identify and exhibit traits for retaining employment.  
d: I develop positive relationships with others.

**Information, Media, Technology**

**IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.**

- a: I choose appropriate sources of data and information for a given purpose.
- b: I determine the relevance, validity and timeliness of data and information.
- c: I select relevant information necessary for making decisions and solving problems
- d: I apply data and information to communicate ideas and create new opportunities.

**PRIORITY CONTENT STANDARDS**

*Students will know...*

**Standard: BB1:** Students will analyze the core concepts of technology.

**Standard: ENG1:** Students will analyze and demonstrate the attributes of design.

**Standard: ENG3:** Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.

**Standard: ICT1:** Students will analyze, select and use information and communication technologies.

**Standard: MNF1:** Students will be able to select and use manufacturing technologies.

Potential INDUSTRY-RECOGNIZED CREDENTIALS (IRCs) Opportunities associated with the course	Potential WORK BASED LEARNING (WBL) opportunities associated with the course
Potential DUAL CREDIT Opportunities associated with the course	

INTRODUCTION TO ROBOTICS		
<b>STAGE 1: Desired Unit Results</b> <i>What will students understand as a result of the unit?</i> One important skill that students will learn in this course is design thinking. They will use the design process to brainstorm, plan, and implement a robot design. This unit will walk students through creating the basic pieces of a robot to familiarize them with the various parts and processes. Students will use their engineering notebook to document the Engineering Design Process. Then they will move on to design and implement their own robot in the following units.		<b>STAGE 2: Assessment Evidence</b> <i>By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?</i> Students will be assessed on successful completion of an Engineering Notebook, Building and Programming a Robot, and engaging in self and peer reflection.
<b>ESSENTIAL QUESTION (s)</b> <i>What thought-provoking questions will foster inquiry, understanding, and transfer of learning?</i>		<b>Success Criteria with Standards</b> <i>The criteria for evaluating performance on standards is constant.</i>
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		CTE standards-based Rubric: Throughout course, students and teachers use rubric for communication of success criteria, reflection, goal setting, and feedback.
Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?		Students continually reflect on and discuss essential questions in their engineering notebook and orally in class.
<b>PRIORITY CAREER &amp; TECHNICAL STANDARDS &amp; Learning Targets</b>		<b>Performance Tasks Options/ Assessment Strategies by Standard</b> <i>Students may be given options to show their learning in varied ways.</i>
<b>Creativity, Critical Thinking, Communication and Collaboration</b> <b>4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</b>		
<b>a:</b> I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem. 4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation. 4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative. 4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model. 4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria. C2.a.16.h: I can defend an action taken or a decision implemented.	<i>-Using the engineering notebook to document, reflect, and refine.</i> <i>-Quick Write Reflections 1. What strategies and processes did I use to become a more effective creator, thinker and problem solver? 2. Why is communication and collaboration important? 3. How have positive work behaviors and personal qualities impacted communication and collaboration?</i>
<b>b:</b> I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation. 4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	
<b>PRIORITY CONTENT STANDARDS &amp; Learning Targets</b>		<b>Performance Tasks Options/ Assessment Strategies by Standard</b> <i>Students may be given options to show their learning in varied ways.</i>
<b>Standard: ENG1:</b> Students will analyze and demonstrate the attributes of design.	<i>I can use the design process to brainstorm, plan, and implement a robot design</i>  <i>I can program a robot to move in multiple directions.</i>  <i>I can create basic pieces of a robot.</i>	<i>Document original design and design iterations in Engineering Notebook.</i>  <i>Program the robot to move in multiple directions (Java language)</i>  <i>Build the basic pieces of a robot.</i>
<b>Standard: ENG3:</b> Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.		
<b>Standard: ICT1:</b> Students will analyze, select and use information and communication technologies.		
<b>Standard: MNF1:</b> Students will be able to select and use manufacturing technologies.		
<b>Stage 3: Learning Activities</b> <i>A brief summary of the key learning activities- How will students build knowledge &amp; develop skills? How will learning be relevant, accessible, and engaging? How will the learning unfold in a natural flow?</i>		
<b>GUIDING UNIT QUESTIONS</b> <i>Using Costas' Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning</i>	<b>STRATEGIES/ACTIVITIES</b> <i>What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.</i>	<b>RESOURCES/MATERIALS</b> <i>This includes an applicable textbooks, software, industry recognized certification software/tools, subscriptions (such asPLTW), etc.</i>
How do engineers organize and document the design process?	Set up an engineering notebook.	<a href="#">FIRST FTC Curriculum Unit 2</a>
How do engineers design and build robots?	Set up electronics.	
	Build a chassis.	
	Construct a drivetrain.	
	Mount electronics.	
How do engineers program robots to manipulate them?	Build a manipulator.	
	Program the robot to move.	

FIRST TECH CHALLENGE GAME		
STAGE 1: Desired Unit Results <i>What will students understand as a result of the unit?</i>		STAGE 2: Assessment Evidence <i>By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?</i>
ESSENTIAL QUESTION (s) <i>What thought-provoking questions will foster inquiry, understanding, and transfer of learning?</i>		Success Criteria with Standards <i>The criteria for evaluating performance on standards is constant.</i>
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		CTE standards-based Rubric: Throughout course, students and teachers use rubric for communication of success criteria, reflection, goal setting, and feedback.
Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?		Students continually reflect on and discuss essential questions in their engineering notebook and orally in class.
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
Creativity, Critical Thinking, Communication and Collaboration <b>4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</b>		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	Collaboratively create lists of what is known and what they need to know about the challenge. Document in Engineering Notebook.
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	In Engineering Notebook document: Identify possible complications and strategies for the game challenge. Identify what the robot needs to accomplish. Propose a scoring strategy.
PRIORITY CONTENT STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
Standard: ENG1: Students will analyze and demonstrate the attributes of design.	I can ask and find answers to questions about an engaging and open-ended problem or challenge.	Prepare a 5 minute presentation answering the Guiding Unit Question in relation to your section of the manual.
Standard: ICT1: Students will analyze, select and use information and communication technologies.	I can select and use communication technology to present information.	Create a 3 question Quiz based on assigned section of manual.
Stage 3: Learning Activities		
<i>A brief summary of the key learning activities- How will students build knowledge &amp; develop skills? How will learning be relevant, accessible, and engaging? How will the learning unfold in a natural flow?</i>		
GUIDING UNIT QUESTIONS	STRATEGIES/ACTIVITIES	RESOURCES/MATERIALS
<i>Using Costas' Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning</i>	<i>What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.</i>	<i>This includes an applicable textbooks, software, industry recognized certification software/tools, subscriptions (such asPLTW), etc.</i>
What do we as engineers need to know about the Game Challenge in order to design an effective robot?	Identify what is known and what is unknown about the game challenge.	<a href="#">FTC Unit 3</a>
	Identify how they can learn the things on the list that they don't know (where to look, resources to use, people to help).	
	Analyze the rules and the implications they will have on the robot design. 3. Discuss possible complications and strategies. For example: 1. Propose a scoring strategy 2. What does the robot need to accomplish? 3. How can the robot be designed to accomplish the tasks? 4. What interesting things have teams done in the past? 5. Are any of the rules vague? If so, what freedom or constraint does that place upon the robot design?	
	Prepare a 5 minute presentation answering the Guiding Unit Question in relation to your section of the manual. Create a 3 question Quiz based on assigned section of manual.	

INITIAL DESIGN		
STAGE 1: Desired Unit Results <i>What will students understand as a result of the unit?</i>		STAGE 2: Assessment Evidence <i>By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?</i>
ESSENTIAL QUESTION (s) <i>What thought-provoking questions will foster inquiry, understanding, and transfer of learning?</i>		Success Criteria with Standards <i>The criteria for evaluating performance on standards is constant.</i>
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		CTE standards-based Rubric: Throughout course, students and teachers use rubric for communication of success criteria, reflection, goal setting, and feedback.
Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?		Students continually reflect on and discuss essential questions in their engineering notebook and orally in class.
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
<b>Creativity, Critical Thinking, Communication and Collaboration</b>		
<b>4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</b>		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	<i>Students will begin the design process by working on a <a href="#">paper table activity</a>.</i>
	4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model.	<i>After the activity, students and teacher discuss five stages of the design process 1. Identify a problem 2. Brainstorm ideas 3. Design and plan a solution 4. Build a prototype 5. Test the prototype</i>
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	<i>1.Students will be given one week to create a robot design by following the first three steps of the design process. (much of this work was done in the previous unit) 2. Students should document their process in the Engineering Notebook on a regular basis!</i>
<b>Career Development</b>		
<b>CD4: Students will identify and apply employability skills.</b>		
	CD4.a.8.h: I can apply communication strategies when adapting to a culturally diverse environment.	<i>Students will be working in groups of 3-4 Reflection in Engineering Notebook on EQ #2 Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?</i>
<b>Information, Media, Technology</b>		
<b>IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.</b>		
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information.	<i>After each presentation, students will perform "Critical Friends."</i>
PRIORITY CONTENT STANDARDS & Learning Targets		Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
<b>Standard: ENG1:</b> Students will analyze and demonstrate the attributes of design.	<i>I can apply the five stages of the design process 1. Identify a problem 2. Brainstorm ideas 3. Design and plan a solution 4. Build a prototype 5. Test the prototype in developing my robot.</i>	<i>Students will create a robot design by following the first three steps of the design process.</i>
<b>Standard: ENG3:</b> Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.		
Stage 3: Learning Activities		
<i>A brief summary of the key learning activities- How will students build knowledge &amp; develop skills? How will learning be relevant, accessible, and engaging? How will the learning unfold in a natural flow?</i>		
GUIDING UNIT QUESTIONS	STRATEGIES/ACTIVITIES	RESOURCES/MATERIALS
<i>Using Costas' Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning</i>	<i>What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.</i>	<i>This includes an applicable textbooks, software, industry recognized certification software/tools, subscriptions (such asPLTW), etc.</i>
<i>How can we as engineers design a robot to compete in the FIRST Tech Challenge?</i>	<i>Students will apply the design process while they are making a paper table.</i>	<a href="#">ETC.Unit4</a>
	<i>Students will design a robot using the three first stages of the design process.</i> <i>1. Identify a problem</i> <i>2. Brainstorm ideas</i> <i>3. Design and plan a solution</i>	<i>1. Newspaper 2. Masking tape</i>
	<i>Students will present their plans to the rest of the class.</i>	
	<i>Students will discuss which design they will use for the robot.</i>	

Building & Programming	
STAGE 1: Desired Unit Results <i>What will students understand as a result of the unit?</i>	STAGE 2: Assessment Evidence <i>By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?</i>
ESSENTIAL QUESTION (s) <i>What thought-provoking questions will foster inquiry, understanding, and transfer of learning?</i>	Success Criteria with Standards <i>The criteria for evaluating performance on standards is constant.</i>
What strategies and processes can I use to become a more effective creator, thinker and problem solver?	<p><a href="#">CTE standards-based Rubric: Throughout course, students and teachers use rubric for communication of success criteria, reflection, goal setting, and feedback.</a></p> <p>Students continually reflect on and discuss essential questions in their engineering notebook and orally in class."</p>
Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?	
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
<b>Creativity, Critical Thinking, Communication and Collaboration</b> <b>4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</b>	
<b>a:</b> I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem. 4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation. 4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative. 4C2.a.14.h: I can analyze the impact of a decision using a systems thinking model. 4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria. C2.a.16.h: I can defend an action taken or a decision implemented.
<b>b:</b> I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation. 4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.
<b>Career Development</b> <b>CD4: Students will identify and apply employability skills.</b>	
<b>a:</b> I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive work qualities typically desired in each of the career cluster's pathways. CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.
<b>c:</b> I identify and exhibit traits for retaining employment.	CD4.a.8.h: I can apply communication strategies when adapting to a culturally diverse environment.
<b>d:</b> I develop positive relationships with others.	CD4.d.6.h: I can evaluate the best method to assist co-workers in accomplishing goals and tasks.
<b>Information, Media, Technology</b> <b>IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.</b>	
<b>a:</b> I choose appropriate sources of data and information for a given purpose.	IMT1.a.6.h: I can justify the selection of various information sources for a given purpose. IMT1.a.7.h: I can explain the level of objectivity for a given source of information. IMT1.a.8.h: I can model how raw data can be applied differently to support opposing arguments or premises.
<b>c:</b> I select relevant information necessary for making decisions and solving problems	IMT1.c.5.h: I can defend a solution or conclusion using appropriate data and information. IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.
<b>d:</b> I apply data and information to communicate ideas and create new opportunities.	IMT1.d.8.h: I can manage and share stored data and information for a specific purpose.
PRIORITY CONTENT STANDARDS & Learning Targets	Performance Tasks Options/ Assessment Strategies by Standard <i>Students may be given options to show their learning in varied ways.</i>
<b>Standard: ENG1:</b> Students will analyze and demonstrate the attributes of design.  <b>Standard: ENG3:</b> Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.  <b>Standard: MNF1:</b> Students will be able to select and use manufacturing technologies.	<p style="text-align: center;"><i>I can implement the design process in my robot.</i></p> <p>Students will use gears to increase force to the robot's drivetrain or servo-based manipulator. Students will use a 4-bar linkage, rack &amp; pinion system, scissor lift, or another unique design to build a manipulator that expands beyond the 45.72mm3 (18 in3) starting size. Students will design a motor-powered system to pick up objects.</p>
Stage 3: Learning Activities	
<i>A brief summary of the key learning activities- How will students build knowledge &amp; develop skills? How will learning be relevant, accessible, and engaging? How will the learning unfold in a natural flow?</i>	

<b>GUIDING UNIT QUESTIONS</b> <i>Using Costas' Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning</i>	<b>STRATEGIES/ACTIVITIES</b> <i>What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.</i>	<b>RESOURCES/MATERIALS</b> <i>This includes an applicable textbooks, software, industry recognized certification software/tools, subscriptions (such asPLTW), etc.</i>
<i>What is involved in completing the rest of the design process (prototype, test, redesign)?</i>	<i>Students will learn how to use tools safely.</i>	<a href="#">ETC.UNIT5</a>  <a href="#">ETC.UNIT6</a>
	<i>Students will learn how to work with hardware, electronics, and programming</i>	<b>TOOLS &amp; MATERIALS</b> 1. Rev Kit of Parts 2. Electronics parts 3. Anderson Power Pole 4. Soldering iron 5. Saws 6. Wrenches 7. Drill 8. Allen wrenches 9. Any and all power tools available
	<i>Students will build the robot they designed in the last unit and program it.</i>	
	<i>Students will test the prototype, make adjustments and redesign the robot.</i>	
	<i>Identify how they can learn the things on the list that they don't know (where to look, resources to use, people to help).</i>	





Priority Standards	Unit 1	Unit 2	Unit 3	Unit 4
<b>Creativity, Critical Thinking, Communication and Collaboration</b> <b>4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</b> a: I develop effective resolutions for a given problem, decision or opportunity using available information. b: I develop and implement a resolution for a new situation using personal knowledge and experience.	X	X	X	X
<b>Career Development</b> <b>CD4: Students will identify and apply employability skills.</b> a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable. b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job. c: I identify and exhibit traits for retaining employment. d: I develop positive relationships with others.	X	X	X	X
<b>Information, Media, Technology</b> <b>IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.</b> a: I choose appropriate sources of data and information for a given purpose. b: I determine the relevance, validity and timeliness of data and information. c: I select relevant information necessary for making decisions and solving problems d: I apply data and information to communicate ideas and create new opportunities.	X	X	X	X
<b>Standard: BB1:</b> Students will analyze the core concepts of technology.	X			
<b>Standard: ENG1:</b> Students will analyze and demonstrate the attributes of design.	X	X	X	X
<b>Standard: ENG3:</b> Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.	X		X	X
<b>Standard: ICT1:</b> Students will analyze, select and use information and communication technologies.	X	X		
<b>Standard: MNF1:</b> Students will be able to select and use manufacturing technologies.	X			X