Robotics/Principles of Technology (Semester Course)

Course Description

Robotics/Principles of Technology is aligned with the NGSS standards and was developed based upon the interest of students. Through the use of technology, engineering and robotics, the course stresses problem-solving skills in a real world setting. Students will be given tasks and will need to design and construct various projects. Students will work independently as well as in pairs, small groups and large groups. Both verbal and written communication of ideas will be emphasized. The course is designed to motivate the student of all ability levels to participate in real-world scenarios utilizing engineering and robotic concepts to problem solve through hand on activities. Robotics/Principles of Technology encompass STEM principles in a variety of in-class and out-of-class learning activities designed to teach the student about careers in technology, engineering, robotics and science.

Suggested Course Sequence:

History of Robotics (2 weeks)

Careers in STEM (1 week)

Design in Engineering & Technology (2-3 weeks)

Getting Started in Robotics (3-4 weeks)

Space Exploration Robotics (6-7 weeks)

Design & Build a Robot (3 weeks)

Unit Overview

Content Area:
Robotics/Principles of Technology

Unit Title: History of Robots

Grade Level: 11-12

Unit Summary: This unit will cover the development of robotics over time. Students will research how robotics has evolved over time.

Interdisciplinary Connections:
History
6.1.4.C.17
6.1.4.C.16

English
RT.11-12.9
RT.11-12.10
WHST.11-12.2B

Technology
8.1.12.E.1
8.2.12.A.3
8.2.12.C.2

21st Century Themes and Skills:
- CRP2 Apply appropriate academic and technical skills.
-CRP4 Communicate clearly & effectively and with reason.
-CRP7 Employ valid & reliable research strategies.
-CRP11 Use technology to enhance productivity

Learning Targets

Standards (Content and Technology):

CPI#:	**Statement:**
9.3.ST.4	Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career Cluster and the role of STEM in society and the economy.
8.2.12.B.4	Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.
8.1.12.F.1	Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Unit Essential Question(s): • How did robots evolve? • What are current & future uses of robots?	**Unit Enduring Understandings:** • Learn the history & future of robotics

Unit Learning Targets/Objectives:

Students will…

- **Understand the history of robotics.**
- **Analyze the advancement of engineering.**
- **Identify how robots have advanced over time.**
- **Evaluate how robots are used in industry.**

Evidence of Learning

Formative Assessments: Teacher observations, Homework assignments, outline worksheets, conference with students.

Summative/Benchmark Assessment(s): History of Robotics Project.

Resources/Materials:
Computer/Internet/Websites/Books

Modifications:

- Special Education: cooperative learning, peer tutoring, extended time, project.
- English Language Learners:
  -Provide hands-on activities and explanations.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
  - Use of translation dictionaries to locate words in the native language
- At-Risk Students: Hands on activity, cooperative learning, reteach in various methods.
- Gifted and Talented Students: Provide extension activities on history of robotics per student interest.

Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
History of Engineering & Technology	**How engineering & technology has evolved over time.**	3 days
History of Robotics	**How robotics has evolved over time.**	5 days
Advancement of Robots	**Recent advances in robotics.**	2 days
Uses of Robots in Industry	**Fields where robots are utilized.**	2 days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Unit Overview

Content Area:
Robotics/Principles of Technology

Unit Title: Careers in STEM

Grade Level: 11-12

Unit Summary: Explore careers in technology and robotics. Research careers and present careers to class.

Interdisciplinary Connections:
Career
9.2.12.C.1
9.2.12.C.4

English
RST.11-12.9
RST.11-12.1
RST.11-12.2
WHST.11-12.2B
WHST.11-12.1
WHST.11-12.8

21st Century Themes and Skills:
-CRP 10 Plan education & career paths aligned to personal goals.
-CRP4 Communicate clearly & effectively and with reason.
- CRP7 Employ valid & reliable research strategies.
-CRP11 Use technology to enhance productivity.
- CRP1 Act as a responsible and contributing citizen and employee.
- CRP2 Apply appropriate academic and technical skills.

Learning Targets

Standards (Content and Technology):

CPI#:	Statement:
9.3.ST.4	Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career Cluster and the role of STEM in society and the economy.
8.1.12.F.1	Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Unit Essential Question(s):	**Unit Enduring Understandings:**
• **What careers exist in Engineering & Robotics?** •	• Learn about careers in STEM •

Unit Learning Targets/Objectives:

Students will…

- **Learn about careers in the STEM field.**
- **Describe what each job entails.**
- **Learn about schooling for various careers.**

Evidence of Learning

Formative Assessments: Teacher observations, Homework assignments, outline worksheets, conference with students.

Summative/Benchmark Assessment(s): Rubric Project on Careers in Robotics.

Resources/Materials:
Internet/Websites/Books

Modifications:

- Special Education: Extended time, project, Alternative Assessment
- English Language Learners:
  -Provide hands-on activities and explanations.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
  - Use of translation dictionaries to locate words in the native language
- At-Risk Students: Hands on activity, alternative assessment
- Gifted and Talented Students: Provide extension activities on engineering careers in robotics per student interest.

Lesson Plans

Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
Careers	**Learn careers in STEM**	1 days
Research Careers	**Research careers**	2 days
Create a presentation	**Prepare power point/poster/pamphlet**	3 days
Presentation	**Presentation of information to class**	2 days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Unit Overview
Content Area: **Robotics/Principles of Technology**
Unit Title: **Design in Engineering & Technology**
Grade Level: 11-12
Unit Summary: Students will study how problem solving involves investigation & research leading to a design. Discussion on choosing and justifying the perfect design. Analyze how the building, testing, evaluating, redesign and modifications lead to an optimal product. **Interdisciplinary Connections:** **Math:** MP.2 MP.4 HSN.Q.A.1 HSN.Q.A.2 HSN.Q.A.3 **English Language Standards:** RST.11-12.4 RST.11-12.9 RST.11-12.10 RST.11-12.3 RST.11-12.8 WHST.11-12.1a WHST.12-12.7 WHST.11-12.2 **Technology:** 8.1.12.C.5 8.1.12.D.5 8.1.12.F.1 8.2.12.B.4 8.1.12.C.7 **21st Century Themes and Skills:** -CRP2 Apply appropriate academic and technical skills. -CRP4 Communicate clearly and effectively and with reason. -CRP6 Demonstrate creativity & innovation. -CRP7 Employ valid and reliable research strategies.

-CRP8 Utilize critical thinking to make sense of problems and persevere in solving them.
-CRP12 Work productively in teams while using cultural global competence.

Learning Targets

Standards (Content and Technology):

CPI#:	Statement:
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts
HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass and its acceleration.
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

Unit Essential Question(s):

- **How do the principles and processes of engineering lead to a product?**

Unit Enduring Understandings:

- How engineers and scientists work together to clarify a problem, research and investigate, and then design a prototype.

Unit Learning Targets/Objectives:

Students will…

- **Learn the processes and principles for engineering design.**
- **Problem solve using research & investigation a given problem**
- **Design & sketch a Prototype**
- **Generate an alternative design**
- **Choose and justify the chosen design**
- **Construct design**
- **Test & Evaluate the design**
- **Redesign the product**
- **Communicate the solution**
-

Evidence of Learning

Formative Assessments: Teacher observations, Homework assignments, Group problem solving, worksheets, conference with students.

Summative/Benchmark Assessment(s): Communication of the solution report, rubric for project

Resources/Materials:

Modifications:

- Special Education: Students Hands on activity, cooperative learning, peer tutoring, extended time
- English Language Learners:

  -Provide hands-on activities and explanations.
  -Use reduced text, so that print is not dense.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
  - Use of translation dictionaries to locate words in the native language
- At-Risk Students: Hands on activity, cooperative learning, reteach in various methods.
- Gifted and Talented Students: Students will redesign for optimal challenge. Provide extension activities per student interest.

Lesson Plans

Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
You're the engineer: Project	**Problem given and requirements for solving**	1 day
	Research & investigate	2 days
	Sketch a design **Sketch an alternative design**	1 day
	Construct design	3 days
	Test & evaluate	1 day
	Redesign & retest **Communicate results**	2 days

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit:

Unit Overview

Content Area:
Robotics/Principles of Technology

Unit Title: Getting started in robotics: Building, Programming & Sensors

Grade Level: 11-12

Unit Summary:

Students will identify what the parts are in the robotic kits and how the EV3 brick (memory brick) works. Students will install the EV3 program software and analyze the programming process. Identify the output ports, input ports, cables and the remote control. Students will learn how to create a basic program, by understanding modes, settings, loops and sequencing for robotics. Students will compare how numeric values (math blocks) are converted to logic values. Students will understand how sensors work and create programs and robots for utilization of different sensors. Students will investigate torque, gear ratios, and angles of rotation to make the robot move.

Interdisciplinary Connections:

Math:

MP.2
MP.4
HSN.Q.A.1
HSN.Q.A.2
HSN.Q.A.3

English Language Standards:

RST.11-12.3,
RST.11-12.4
RST.11-12.9
RST.11-12.10
WHST.11-12.1a
WHST.12-12.7
WHST.11-12.2

Technology:

8.1.12.A.4
8.1.12.D.5
8.1.12.F.1
8.2.12.B.4
8.1.12.C.5
8.1.12.C.7

21st Century Themes and Skills:

-CRP1 Act as a responsible and contributing citizen & employee.
-CRP2 Apply appropriate academic and technical skills.
-CRP4 Communicate clearly & effectively and with reason.
-CRP6 Demonstrate

creativity & innovation.
-CRP8 Utilize critical thinking to make sense of problems & persevere in solving them.
-CRP11 Use technology to enhance productivity.
-CRP12 Work productively in teams while using cultural global competence.

Learning Targets

Standards (Content and Technology):

CPI#:	Statement:
HS-PS3-3	Design, build and refine a device that works within given constraints to convert one form of energy into another form of energy.
HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria & constraints on interactions within and between systems relevant to the problem.
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission & storage of information.
HS-PS3-1	Create a computational model to calculate the change in the energy of one component(s) and energy flows in and out of the system are known.
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

Unit Essential Question(s):

- **What parts are available to build a robot?**
- **How are robots programmed?**
- **What types of sensors exist on robots and how do the sensors control the robot?**

Unit Enduring Understandings:

- How the robot kit will enable students to build a robot.
- Ability to program the EV3 robots.
- How different sensors control the actions of robots.

Unit Learning Targets/Objectives:

Students will…

- **Learn the parts in the EV3 Mindstorms robotics kit.**
- **Analyze how the module (memory brick) works and how to program.**
- **Operate the functions on the remote control.**
- **Understand loops and sequencing in programming.**
- **Investigate how physics/engineering concepts relate to robotics.**
- **Differentiate between the different types of sensors and how they work in robots:**
  Touch, color, infrared and rotation
- **Construct robots using different sensors.**
- **Write a basic program on computer.**
- **Program sensors- Loops, wait block and switch blocks.**
- **Program, test and redesign robots.**
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Evidence of Learning

Formative Assessments: Teacher observations, identify aspects of the brick, Homework assignments, Group problem

solving, worksheets, quiz, conference with students.

Summative/Benchmark Assessment(s): Rubric- Students will write a program, build a robot and program robot. Robot will do the activity described for the project evaluated on a rubric.

Resources/Materials: --
***The Lego Mindstorms EV3 Discovery Book: a beginner's guide to building & programming robots**
***The Art of Lego Mindstorm EV3 Programming**
***The Lego Mindstorms EV Idea Book**
***STEM by Design, Teaching with LEGO Mindstorms EV3**
***Classroom Activities for the Busy Teach: EV3**
***The Lego Mindstorms EV3 Laboratory: build, program and experiment with five wicked cool robots!**

Modifications:

- Special Education: Students Hands on activity, cooperative learning, peer tutoring, extended time, reteach in utilizing various methods
- English Language Learners:

  -Provide hands-on activities and explanations.
  -Use reduced text, so that print is not dense.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
  - Use of translation dictionaries to locate words in the native language
- At-Risk Students: Hands on activity, cooperative learning, reteach in various methods.
- Gifted and Talented Students: Students will write their own program and build robot. Provide extension sensor activities per student interest.

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
Robotic Kits	**Learn parts of the robotic kits**	1 day
How a robot works	**Learn the module (memory brick) of the kit and how to use.**	1 day
	Functions of remote.	1 day
	Torque, gears & rotation	1 day
	Loops & sequencing in a program.	2 day

Robotic Sensors	**What are sensors and how do they work?**	2 days
	Programming sensors	1 days
	Color sensors **Construct & program Robot with color sensor**	4 days
	Infrared sensors **Construct & program Robot with infrared sensor**	4 days
	Rotation sensors **Construct & program Robot with rotation sensor**	4 days
	Redesign or reprogram as needed	1 day
Teacher Notes:		
Additional Resources Click links below to access additional resources used to design this unit:		

Unit Overview

Content Area:
Robotics/Principles of Technology

Unit Title:
Design Projects in Robotics

Grade Level: 11-12

- **Unit Summary:** Students will be involved in a current and real-world theme of traveling to and living on Mars. Students will progress through a set of lessons, challenges, and projects that integrate science, technology, engineering, and math concepts while incorporating problem solving, communication, and teamwork.
- Students explore, plan, and develop three fundamental challenges NASA engineers and scientists are working to solve: 1. How to survive in space 2. How to create energy in space 3. How robots explore space.

Interdisciplinary Connections:
Math:
MP.1
MP.2
MP.4
MP.5
MP.6
HSN.Q.A.1
HSN.Q.A.2
HSN.Q.A.3
HSG.MG.A.3
HSN.VM.B.4.B
HSN.Q.A.3
HSF.LE.A.1

English Language Standards:
RST.11-12.4
RST.11-12.3
RST.11-12.9

Technology:
8.1.12.A.4
8.1.12.D.5
8.1.12.F.1
8.2.12.B.4
8.2.12.B.5
8.2.12.C.3
8.2.12.D.1
8.2.12.E.3
8.2.12.E.1

21st Century Themes and Skills:
-CRP1 Act as a responsible and contributing citizen and employee.
-CRP2 Apply appropriate

academic and technical skills.
-CPR4 Communicate clearly & effectively and with reason.
-CPR5 Consider the environmental, social and economic impacts of decisions.
-CPR6 Demonstrate creativity & innovation.
-CPR7 Employ valid & reliable research strategies.
-CRP11 Use technology to enhance productivity.
-CRP8 Utilize critical thinking to make sense of problems and persevere in solving them.
-CRP12 Work productively in teams while using cultural global competence

Learning Targets

Standards (Content and Technology):

CPI#:	**Statement:**
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission & storage of information.
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information & energy
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Unit Essential Question(s):

- **How do engineers and scientists work to solve problems?**
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Unit Enduring Understandings:

- Students will utilize programming and problem-solving skills to design and build robots to solve different space challenges.
- Class to apply skills from the STEM subjects as they build, test, and see how effective their models are.

Unit Learning Targets/Objectives:

Students will…

- **Investigate how to solve problems stated**
- **Apply problem solving skills to activity**
- **Calculate movements needed**
- **Apply knowledge from class to solve problem**
- **Design and build robot**
- **Program robot to do task**
- **Observe how the designed program works and make adjustments**
- **Utilize STEM skills to build, test and correct their models**
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Evidence of Learning

Formative Assessments: Teacher observations, identify aspects of sensors, Homework assignments, Group problem solving, worksheets, quiz, conference with students.

Summative/Benchmark Assessment(s): Completion of all space challenge projects with correct results (rubric) within allotted time.

Resources/Materials:
Mindstorms EV3 Space Challenge

Modifications:

- Special Education: Students Hands on activity, cooperative learning, peer tutoring, extended time
- English Language Learners:
  -Provide hands-on activities and explanations.
  -Use reduced text, so that print is not dense.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
  - Use of translation dictionaries to locate words in the native language
- At-Risk Students: Hands on activity, cooperative learning, reteach in various methods.
- Gifted and Talented Students: Students will write their own program and build robot. Provide extension activities per student interest.

Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Basic of Gears	**Basics of Gears**	1 day
Controlled Movements	**Precise Turns**	1 day
Sensor Movements	**Turn using sensors, follow a line**	1 day
	Detect a Color/Calibrate a color sensor	1 day
	Detect an Object	1 day
	Detect and React	1 day
	Intelligent Movements	1 day

Space Challenge	**Activate Communication**	1 day
	Assemble your crew	1 day
	Build and Free the MSL Robot	5 days
	Launch the Satellite into Orbit	1 day
	Return the Rocket Samples	1 day
	Secure your Power Supply/ Initiate Launch	1 day
Reseach Projects	**How can humans survive in space?**	5 days
	How do we generate energy for human outposts?	5 days
	How can robots help humans explore?	5 days
Teacher Notes:		
Additional Resources Click links below to access additional resources used to design this unit:		

Unit Overview
Content Area: **Robotics/Principles of Technology**
Unit Title: **Design and Build a Robot**
Grade Level: 11-12
Unit Summary: Students will utilize knowledge of STEM to design, sketch and build a robot. **Interdisciplinary Connections:** **Math:** MP.1 MP.2 MP.4 MP.5 MP.6 HSN.Q.A.1 HSN.Q.A.2 HSN.Q.A.3 HSG.MG.A.3 HSN.VM.B.4.B HSN.Q.A.3 HSF.LE.A.1 **English Language Standards:** RST.11-12.4 RST.11-12.3 RST.11-12.9 WHST.11-12.1a WHST.12-12.7 WHST.11-12.2 **Technology:** 8.1.12.A.4 8.1.12.D.5 8.1.12.F.1 8.2.12.B.4 8.2.12.B.5 8.2.12.C.3 8.2.12.D.1 8.2.12.E.3 8.2.12.E.1 **21st Century Themes and Skills:** -CRP1 Act as a responsible and contributing citizen and employee. -CRP2 Apply appropriate academic and technical skills.

-CPR4 Communicate clearly & effectively and with reason.
-CPR5 Consider the environmental, social and economic impacts of decisions.
-CPR6 Demonstrate creativity & innovation.
-CPR7 Employ valid & reliable research strategies.
-CRP11 Use technology to enhance productivity.
-CRP8 Utilize critical thinking to make sense of problems and persevere in solving them.
-CRP12 Work productively in teams while using cultural global competence

Learning Targets

Standards (Content and Technology):

CPI#:	**Statement:**
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission & storage of information.
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information & energy
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within & between systems relevant to the problem.
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Unit Essential Question(s):	**Unit Enduring Understandings:**
• **Using STEM concepts can a robot be designed & built?** •	• Problem solving by designing and building a robot to cover the task required.

Unit Learning Targets/Objectives:

Students will…

- **Investigate how to solve problems stated**
- **Apply problem solving skills to activity**
- **Calculate movements needed**

- **Apply knowledge from class to solve problem**
- **Design and build robot**
- **Program robot to do task**
- **Observe how the designed program works and make adjustments**
- **Utilize STEM skills to build, test and correct their models**
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Evidence of Learning

Formative Assessments: Teacher observations, Group problem solving, worksheets, conference with students.

Summative/Benchmark Assessment(s): Completion of project (design, build & program) with rubric within allotted time.

Resources/Materials:
***The Lego Mindstorms EV3 Discovery Book: a beginner's guide to building & programming robots**
***The Art of Lego Mindstorm EV3 Programming**
***The Lego Mindstorms EV Idea Book**
***STEM by Design, Teaching with LEGO Mindstorms EV3**
***Classroom Activities for the Busy Teach: EV3**
***The Lego Mindstorms EV3 Laboratory: build, program and experiment with five wicked cool robots!**

Modifications:

- Special Education: Students Hands on activity, cooperative learning, peer tutoring, extended time
- English Language Learners:
  -Provide hands-on activities and explanations.
  -Use reduced text, so that print is not dense.
  -Assess comprehension through demonstration or other alternative means (gestures, drawings)
  - Give instructions/directions in writing and orally
- At-Risk Students: Hands on activity, cooperative learning, reteach in various methods.
- Gifted and Talented Students: Students will write their own program and build robot. Provide extension activities per student interest.

Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Design a robot	**Pick a challenge and discuss how to solve the problem**	1 day
	Sketch a drawing of a robot	2 days

	design	
	Write a description of the robots function	1 day
	Build the robot	7 days
	Test the robot and make adjustments	1 day
	Teacher evaluation of robot	1 day

Teacher Notes:

Additional Resources

Click links below to access additional resources used to design this unit: