

Name: Robert Lefrandt	Grading Quarter: 2	Week Beginning: 10 10/23/2023
School Year: 2023-24	Subject: Robotics	

Monday	Notes: 10/23/2023	<p>***Hold Robotics Team/Club Meeting this week to discuss Q2 purchases:</p> <ul style="list-style-type: none"> • VEX Prof+ Access • Portable perimeter Field, Anti-Static Tiles,Bag • VEXV5 2023 Game Elements (Delay Shipping Added to purchase) • VEX V5 Robotics 2023 Competition @ Whiteriver in November • Battlebot Competition with Show Low High School • SunFounder Raspberry Pi Pico W Ultimate Starter Kit with Online Tutorials, 450+ Items, 117 Projects, MicroPython, Piper Make and C/C++ (Compatible with Arduino IDE) 	Academic Standards:
	Robotic Assemblies Mechtronics Engineering: ReEngineering Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed Electrical Chemical electrochemical Physical Magnetism Batteries Software Block PLC ladder logic, CNC, Python, C++, Sensors Bump/touchDis tance Light Camera Physical Computing AI Data Collect DataAnalyze Collaborate with schools, 'Industry Professionals Community	<p>Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)</p> <ul style="list-style-type: none"> • PERFORM ELECTRICAL AND ELECTRONIC TASKS • ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS • PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D) • DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS • Explain the operation and use of DC motors in automation controls • PERFORM MECHANICAL SYSTEMS LINKAGES TASKS • APPLY SENSOR SOLUTIONS • DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS <p>Lesson Overview: <u>1st Semester Students:</u></p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block, Python Programming, Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot <p>Coding-Block/Python/C/C++ Sensors</p> <ul style="list-style-type: none"> • Bump/touch, Distance, Line Tracker, Camera, AI, Data Analysis <p>2nd Semester Plus+ Students:</p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block,Python Programming, Workcell <p>Customizing Robots and Parts</p> <ul style="list-style-type: none"> • Tinkercade <ul style="list-style-type: none"> • 3D Modeling, Electric circuits, Arduino IDE – C/Python Code • Workflow Process: • Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing • Inkscape > Tinkercad > Ultimaker Cura > Ultimaker <p>*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling</p> <ul style="list-style-type: none"> • Raspberry Pi – Pico Bluetooth/WiFi, Python <p>Precision Machining</p> <ul style="list-style-type: none"> • Manual/Traditional - Mill and Drill <p>CNC – ComputerNumeric Control –G/M Code</p>	AZ_CTE Automation & Robotics Tech-Standards STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS STANDARD 7.0 PERFORM DRAFTING TASKS 7.5 Make dimensional CAD drawings (e.g., 2D and 3D) STANDARD 5.0 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS 5.2 Explain the operation and use of DC motors in automation controls STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS STANDARD 10.0 APPLY SENSOR SOLUTIONS STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS

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Tuesday	Notes: 10/24/2023	<p>***Hold Robotics Team/Club Meeting this week to discuss Q2 purchases:</p> <ul style="list-style-type: none"> • VEX Prof+ Access • Portable perimeter Field, Anti-Static Tiles,Bag • VEXV5 2023 Game Elements (Delay Shipping Added to purchase) • VEX V5 Robotics 2023 Competition @ Whiteriver in November • Battlebot Competition with Show Low High School • SunFounder Raspberry Pi Pico W Ultimate Starter Kit with Online Tutorials, 450+ Items, 117 Projects, MicroPython, Piper Make and C/C++ (Compatible with Arduino IDE) 	Academic Standards:
	Robotic Assemblies Mechtronics		AZ_CTE
	Engineering: ReEngineering Reverse Engineering	<p>Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)</p>	Automation & Robotics Tech-Standards
	Structural Chassis frame body		STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS
	Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed	<ul style="list-style-type: none"> • PERFORM ELECTRICAL AND ELECTRONIC TASKS • ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS • PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D) • DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS • Explain the operation and use of DC motors in automation controls • PERFORM MECHANICAL SYSTEMS LINKAGES TASKS • APPLY SENSOR SOLUTIONS • DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS 	STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS
	Electrical Chemical electrochemical		STANDARD 7.0 PERFORM DRAFTING TASKS 7.5 Make dimensional CAD drawings (e.g., 2D and 3D)
	Physical Magnetism Batteries	<p>Lesson Overview: <u>1st Semester Students:</u></p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block, Python Programming, Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot <p>Coding-Block/Python/C/C++ Sensors</p> <ul style="list-style-type: none"> • Bump/touch, Distance, Line Tracker, Camera, AI, Data Analysis <p>2nd Semester Plus+ Students:</p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block,Python Programming, Workcell <p>Customizing Robots and Parts</p> <ul style="list-style-type: none"> • Tinkercade <ul style="list-style-type: none"> • 3D Modeling, Electric circuits, Arduino IDE – C/Python Code • Workflow Process: • Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing • Inkscape > Tinkercad > Ultimaker Cura > Ultimaker *Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling • Raspberry Pi – Pico Bluetooth/WiFi, Python • Precision Machining • Manual/Traditional - Mill and Drill CNC – ComputerNumeric Control –G/M Code 	STANDARD 5.0 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS
	Software Block PLC ladder logic, CNC, Python, C++,		5.2 Explain the operation and use of DC motors in automation controls
	Sensors Bump/touchDis tance Light Camera		STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS STANDARD 10.0 APPLY SENSOR SOLUTIONS
	Physical Computing AI Data Collect DataAnalyze Collaborate with schools, 'Industry Professionals Community		STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS

Wednesday	Notes: 10/25/2023	<p>***Hold Robotics Team/Club Meeting this week to discuss Q2 purchases:</p> <ul style="list-style-type: none"> • VEX Prof+ Access • Portable perimeter Field, Anti-Static Tiles,Bag • VEXV5 2023 Game Elements (Delay Shipping Added to purchase) • VEX V5 Robotics 2023 Competition @ Whiteriver in November • Battlebot Competition with Show Low High School • SunFounder Raspberry Pi Pico W Ultimate Starter Kit with Online Tutorials, 450+ Items, 117 Projects, MicroPython, Piper Make and C/C++ (Compatible with Arduino IDE) 	Academic Standards:
	obotic Assemblies Mechtronics Engineering: ReEngineering Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed Electrical Chemical electrochemical Physical Magnetism Batteries Software Block PLC ladder logic, CNC, Python, C++, Sensors Bump/touchDis tance Light Camera Physical Computing AI Data Collect DataAnalyze Collaborate with schools, 'Industry Professionals Community	<p>Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)</p> <ul style="list-style-type: none"> • PERFORM ELECTRICAL AND ELECTRONIC TASKS • ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS • PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D) • DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS • Explain the operation and use of DC motors in automation controls • PERFORM MECHANICAL SYSTEMS LINKAGES TASKS • APPLY SENSOR SOLUTIONS • DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS <p>Lesson Overview: <u>1st Semester Students:</u></p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block, Python Programming, Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot <p>Coding-Block/Python/C/C++ Sensors</p> <ul style="list-style-type: none"> • Bump/touch, Distance, Line Tracker, Camera, AI, Data Analysis <p>2nd Semester Plus+ Students:</p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block,Python Programming, Workcell <p>Customizing Robots and Parts</p> <ul style="list-style-type: none"> • Tinkercade <ul style="list-style-type: none"> • 3D Modeling, Electric circuits, Arduino IDE – C/Python Code • Workflow Process: • Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing • Inkscape > Tinkercad > Ultimaker Cura > Ultimaker <p>*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling</p> <ul style="list-style-type: none"> • Raspberry Pi – Pico Bluetooth/WiFi, Python <p>Precision Machining</p> <ul style="list-style-type: none"> • Manual/Traditional - Mill and Drill <p>CNC – ComputerNumeric Control –G/M Code</p>	AZ_CTE Automation & Robotics Tech-Standards STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS STANDARD 7.0 PERFORM DRAFTING TASKS 7.5 Make dimensional CAD drawings (e.g., 2D and 3D) STANDARD 5.0 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS 5.2 Explain the operation and use of DC motors in automation controls STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS STANDARD 10.0 APPLY SENSOR SOLUTIONS STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIAL

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	Engineering: ReEngineering Reverse Engineering	<p>Objective:</p> <p>Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)</p>	STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS
	Structural Chassis frame body		STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS
	Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed	<ul style="list-style-type: none"> • PERFORM ELECTRICAL AND ELECTRONIC TASKS • ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS • PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D) • DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS • Explain the operation and use of DC motors in automation controls • PERFORM MECHANICAL SYSTEMS LINKAGES TASKS • APPLY SENSOR SOLUTIONS • DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS 	STANDARD 7.0 PERFORM DRAFTING TASKS 7.5 Make dimensional CAD drawings (e.g., 2D and 3D)
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	Physical Computing AI Data Collect DataAnalyze		
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Friday	<p>Notes: 10/27/2023 obotic Assemblies Mechtronics</p> <p>Engineering: ReEngineering Reverse Engineering</p> <p>Structural Chassis frame body</p> <p>Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Electrical Chemical electrochemical</p> <p>Physical Magnetism Batteries</p> <p>Software Block PLC ladder logic, CNC, Python, C++,</p> <p>Sensors Bump/touchDis tance Light Camera</p> <p>Physical Computing</p> <p>AI Data Collect DataAnalyze</p> <p>Collaborate with schools, 'Industry Professionals Community</p>	<p>***Hold Robotics Team/Club Meeting this week to discuss Q2 purchases:</p> <ul style="list-style-type: none"> • VEX Prof+ Access • Portable perimeter Field, Anti-Static Tiles,Bag • VEXV5 2023 Game Elements (Delay Shipping Added to purchase) • VEX V5 Robotics 2023 Competition @ Whiteriver in November • Battlebot Competition with Show Low High School • SunFounder Raspberry Pi Pico W Ultimate Starter Kit with Online Tutorials, 450+ Items, 117 Projects, MicroPython, Piper Make and C/C++ (Compatible with Arduino IDE) <p>Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)</p> <ul style="list-style-type: none"> • PERFORM ELECTRICAL AND ELECTRONIC TASKS • ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS • PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D) • DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS • Explain the operation and use of DC motors in automation controls • PERFORM MECHANICAL SYSTEMS LINKAGES TASKS • APPLY SENSOR SOLUTIONS • DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS <p>Lesson Overview: <u>1st Semester Students:</u></p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block, Python Programming, Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot <p>Coding-Block/Python/C/C++ Sensors</p> <ul style="list-style-type: none"> • Bump/touch, Distance, Line Tracker, Camera, AI, Data Analysis <p>2nd Semester Plus+ Students:</p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5, Block,Python Programming, Workcell <p>Customizing Robots and Parts</p> <ul style="list-style-type: none"> • Tinkercade <ul style="list-style-type: none"> • 3D Modeling, Electric circuits, Arduino IDE – C/Python Code • Workflow Process: • Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing • Inkscape > Tinkercad > Ultimaker Cura > Ultimaker <p>*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling</p> <ul style="list-style-type: none"> • Raspberry Pi – Pico Bluetooth/WiFi, Python <p>Precision Machining</p> <ul style="list-style-type: none"> • Manual/Traditional - Mill and Drill <p>CNC – ComputerNumeric Control –G/M Code</p>	<p>Academic Standards: AZ_CTE</p> <p>Automation & Robotics Tech-Standards</p> <p>STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS</p> <p>STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS</p> <p>STANDARD 7.0 PERFORM DRAFTING TASKS 7.5 Make dimensional CAD drawings (e.g., 2D and 3D)</p> <p>STANDARD 5.0 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS</p> <p>5.2 Explain the operation and use of DC motors in automation controls</p> <p>STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS STANDARD 10.0 APPLY SENSOR SOLUTIONS</p> <p>STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIAL</p>
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