

Name: Robert Lefrandt		Grading Quarter: 2	Week Beginning: 09/04/2023
School Year: 2023-24		Subject: Robotics	
Monday	Notes: 09/04/2023	***No School*** 09/04/2023	
	Robotic Assemblies Mechtronics 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	Objective: Lesson Overview: ***No School*** 09/04/2023	
		Academic Standards:	

Tuesday	<p>Notes: 09/05/2023</p> <p>Robotic Assemblies Mechtronics</p> <p>Engineering: 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>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 Programming 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 <ul style="list-style-type: none"> Python <p>Precision Machining</p> <ul style="list-style-type: none"> Manual/Traditional - Mill and Drill 	<p>Academic Standards:</p> <p>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</p> <p>STANDARD 10.0 APPLY SENSOR SOLUTIONS</p> <p>STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS</p>
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Wednesday	<p>Notes: 09/06/2023</p> <p>obotic Assemblies Mechtronics</p> <p>Engineering: 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>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>11st Semester Students:</u></p> <ul style="list-style-type: none"> Login to VEX Certification Accounts: VEX V5 Block Programming Python Programming Workcell Continue building VEX V5 Robots Speedbot/Base Bot <p>Coding-Block/Python/C/C++</p> <p>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 <ul style="list-style-type: none"> Python <p>Precision Machining</p> <ul style="list-style-type: none"> Manual/Traditional - Mill and Drill <p><u>CNC –ComputerNumeric Control –G/M Code</u></p>	<p>Academic Standards:</p> <p>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</p> <p>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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Thursday	<p>Notes: 09/07/2023</p> <p>obotic Assemblies Mechtronics</p> <p>Engineering: 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>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:</p> <p><u>1st Semester Students:</u></p> <ul style="list-style-type: none"> Login to VEX Certification Accounts: VEX V5 Block Programming Python Programming Workcell Continue building VEX V5 Robots Speedbot/Base Bot <p>Coding-Block/Python/C/C++</p> <p>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 <ul style="list-style-type: none"> Python <p>Precision Machining</p> <ul style="list-style-type: none"> Manual/Traditional - Mill and Drill 	<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</p> <p>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</p> <p>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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Friday	<p>Notes: 09/08/2023 obotic Assemblies Mechtronics</p> <p>Engineering: 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>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>11st Semester Students:</u></p> <ul style="list-style-type: none"> • Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot <p>Coding-Block/Python/C/C++</p> <p>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 <ul style="list-style-type: none"> • Python <p>Precision Machining</p> <ul style="list-style-type: none"> • Manual/Traditional - Mill and Drill <p><u>CNC –ComputerNumeric Control –G/M Code</u></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</p> <p>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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