

| | | |
|--------------------------|--|-------------------------------|
| Name: Robert Lefrandt | Grading Quarter: 4 | Week Beginning: 03/24/2025 |
| School Year: 2024-25 | Subject: Automation & Robotics/Engineering | |

| | | | |
|--------|--|---|--|
| Monday | <p><u>Notes:</u></p> <p>Robotic Assemblies Mechtronic</p> <p>Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Mechtronic</p> <p>Electrical (Ohm's Law, Parallel/Ser al Circuits) Chemical e-chem Physical Magnetism Batteries Software</p> <p>Block PLC ladder logic, CNC, Python, C++ Sensors touch, Dist Light, Camera</p> | <p>Monday:</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.</p> <p>(AZ CTE Automation & Robotics-Program Description)</p> <p>PERFORM ELECTRICAL AND ELECTRONIC TASKS</p> <p>ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS</p> <p>PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)</p> <p>DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS</p> <p>Explain the operation and use of DC motors in automation controls</p> <p>PERFORM MECHANICAL SYSTEMS LINKAGES TASKS</p> <p>APPLY SENSOR SOLUTIONS</p> <p>DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS</p> <p>Lesson Overview: Workflow Process:</p> <p>Level 1 Students:</p> <p>Login to VEX Certification Accounts:</p> <p>VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++</p> <p>Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis</p> <p><u>***Customizing Robots and Parts : After Completing 1st Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing</p> <p>Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC/G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining CAD/CAM : 3D Printing</p> <p>Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ</p> <p>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</p> | <p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p>www.azed.gov/cte/ar/</p> <p>www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</p> <p>Az CTE Prof. Skills have 9 areas of measuremnt</p> <p><u>Notes Conti:</u></p> <p>PhysComp Embedded smart, IIOT AI ,Data Collect Data Analyze Data MachinLearn Collaborate schools, Industry Community</p> |
|--------|--|---|--|

| | | | |
|--|--|---|--|
| | | Other: Racing the Sun (RTS) *See FabLab | |
|--|--|---|--|

| | | | |
|---------|--|--|---|
| Tuesday | <p><u>Notes:</u></p> <p>Robotic Assemblies Mechtronic</p> <p>Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Electrical (Ohm's Law, Parallel/Serial Circuits) Chemical e-chem Physical Magnetism Batteries Software</p> <p>Block PLC ladder logic, CNC, Python, C++ Sensors touch, Dist Light, Camera PhysComp Embedded smart, IIOT</p> | <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.</p> <p>(AZ CTE Automation & Robotics-Program Description)</p> <p>PERFORM ELECTRICAL AND ELECTRONIC TASKS ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/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> <p>Lesson Overview: Workflow Process:</p> <p>Level 1 Students:</p> <p>Login to VEX Certification Accounts: VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++</p> <p>Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis</p> <p><u>***Customizing Robots and Parts : After Completing 1st Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing</p> <p>Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC/G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining</p> <p>CAD/CAM : 3D Printing</p> <p>Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ</p> <p>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</p> | <p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p>www.azed.gov/cte/ar/</p> <p>www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</p> <p>Az CTE Prof. Skills have 9 areas of measuremnt</p> <p><u>Notes Conti:</u></p> <p>AI ,Data</p> <p>Collect Data</p> <p>Analyze Data</p> <p>MachinLearn</p> <p>Collaborate schools,</p> <p>Industry Community</p> |
|---------|--|--|---|

| | | | |
|--|--|---|--|
| | | Other: Racing the Sun (RTS) *See FabLab | |
|--|--|---|--|

| | | | |
|-----------|--|---|---|
| Wednesday | <p><u>Notes:</u></p> <p>Robotic Assemblies Mechtronic</p> <p>Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Electrical (Ohm's Law, Parallel/Serial Circuits) Chemical e-chem Physical Magnetism Batteries Software</p> <p>Block PLC ladder logic, CNC, Python, C++ Sensors touch, Dist Light, Camera PhysComp Embedded smart, IIOT</p> | <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.</p> <p>(AZ CTE Automation & Robotics-Program Description)</p> <p>PERFORM ELECTRICAL AND ELECTRONIC TASKS ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/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> <p>Lesson Overview: Workflow Process:</p> <p>Level 1 Students:</p> <p>Login to VEX Certification Accounts: VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++</p> <p>Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis</p> <p><u>***Customizing Robots and Parts : After Completing 1st Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing</p> <p>Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC/G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining</p> <p>CAD/CAM : 3D Printing</p> <p>Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ</p> <p>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</p> | <p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p>www.azed.gov/cte/ar/</p> <p>www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</p> <p>Az CTE Prof. Skills have 9 areas of measuremnt</p> <p><u>Notes Conti:</u></p> <p>AI ,Data</p> <p>Collect Data</p> <p>Analyze Data</p> <p>MachinLearn</p> <p>Collaborate schools,</p> <p>Industry Community</p> |
|-----------|--|---|---|

| | | | |
|--|--|--|--|
| | | Other: Racing the Sun (RTS) *See FabLab | |
|--|--|--|--|

| | | | |
|----------|--|--|---|
| Thursday | <p>Notes:</p> <p>Robotic Assemblies Mechtronic</p> <p>Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Electrical (Ohm's Law, Parallel/Seril Circuits) Chemical e-chem Physical Magnetism Batteries Software</p> <p>Block PLC ladder logic, CNC, Python, C++ Sensors touch, Dist Light, Camera PhysComp Embedded smart, IIOT</p> | <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.</p> <p>(AZ CTE Automation & Robotics-Program Description)</p> <p>PERFORM ELECTRICAL AND ELECTRONIC TASKS ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/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> <p>Lesson Overview: Workflow Process:</p> <p>Level 1 Students:</p> <p>Login to VEX Certification Accounts: VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++</p> <p>Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis</p> <p><u>***Customizing Robots and Parts : After Completing 1st Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing</p> <p>Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC/G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining</p> <p>CAD/CAM : 3D Printing</p> <p>Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ</p> <p>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</p> | <p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p>www.azed.gov/cte/ar/</p> <p>www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</p> <p>Az CTE Prof. Skills have 9 areas of measuremnt</p> <p><u>Notes Conti:</u></p> <p>AI ,Data</p> <p>Collect Data</p> <p>Analyze Data</p> <p>MachinLearn</p> <p>Collaborate schools,</p> <p>Industry Community</p> |
|----------|--|--|---|

| | | | |
|--|--|--|--|
| | | Other: Racing the Sun (RTS) *See FabLab | |
|--|--|--|--|

| | | | |
|--------|---|--|---|
| Friday | <p>Notes:</p> <p>Robotic Assemblies Mechtronic</p> <p>Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed</p> <p>Electrical (Ohm's Law, Parallel/Seril Circuits) Chemical e-chem Physical Magnetism Batteries Software</p> <p>Block/PLC ladder logic, CNC, Python, C++ Sensors bump/touch DistLight, Camera</p> | <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.</p> <p>(AZ CTE Automation & Robotics-Program Description)</p> <p>PERFORM ELECTRICAL AND ELECTRONIC TASKS ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/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> <p>Lesson Overview: Workflow Process:</p> <p>Level 1 Students:</p> <p>Login to VEX Certification Accounts: VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++</p> <p>Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis</p> <p><u>***Customizing Robots and Parts : After Completing 1st Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing</p> <p>Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC/G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining</p> <p>CAD/CAM : 3D Printing</p> <p>Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ</p> <p>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</p> | <p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p>www.azed.gov/cte/ar/</p> <p>www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</p> <p>Az CTE Prof. Skills have 9 areas of measuremnt</p> <p><u>Notes Conti:</u> PhysComp Embedded smart, IIOT AI ,Data Collect Data Analyze Data MachinLearn Collaborate schools, Industry Community</p> |
|--------|---|--|---|

| | | | |
|--|--|--|--|
| | | Other: Racing the Sun (RTS) *See FabLab | |
|--|--|--|--|