

Name: Robert Lefrandt	Grading Quarter: 3	Week Beginning: 02/10/2025
School Year: 2024-25	Subject: Automation & Robotics/Engineering	

Monday	<p><b>Notes:</b></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/Seri 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><b>Objective:</b></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 &amp; 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><b>Lesson Overview:</b> 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 1<sup>st</sup> Semester Skills</u></p> <p>Level 2 Plus+ Students:</p> <p>Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)</p> <p><b>*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</b></p> <p>3D Modeling, Electric circuits, Arduino IDE – C/Python Code</p> <p>Prototyping: 2D Sketch &gt; 3D Modeling &gt; 3D Settings &gt; 3D Printing</p> <p>Inkscape &gt; <b>Tinkercad</b> &gt; Ultimaker Cura (Settings) &gt; Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D</p> <p>Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control – G/M Code</p> <p>Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining CAD/CAM : 3D Printing</p> <p><b>Competitions: See FabLab/Engineering: vr.vex.com-coding top6 in AZ</b></p> <p><b>vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes</b></p> <p>Other: Racing the Sun (RTS) *See FabLab</p>	<p>Academic Standards:</p> <p>Arizona Department of Education Website:</p> <p>Program Description/ Industry Credentials/ Coherent Sequence/</p> <p><a href="http://www.azed.gov/cte/ar/">www.azed.gov/cte/ar/</a></p> <p><a href="http://www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf">www.azed.gov/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf</a></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>
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