

Name: Robert Lefrandt	Grading Quarter: 2	Week Beginning: 09/18/2023
School Year: 2023-24	Subject: Robotics	

Monday	Notes: 09/18/2023 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 Collaborate with schools, 'Industry Professionals Community	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) • 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 Lesson Overview: <u>11st Semester Students:</u> • Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell • Continue building VEX V5 Robots • Speedbot/Base Bot Coding-Block/Python/C/C++ Sensors • Bump/touch, Distance, Line Tracker, Camera • AI • Data Analysis 2nD Semester Plus+ Students: • Login to VEX Certification Accounts: • VEX V5 • Block,Python Programming • Workcell Customizing Robots and Parts • Tinkercade • 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 <u>CNC –ComputerNumeric Control –G/M Code</u>	Academic Standards: 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: 09/19/2023 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 Collaborate with schools, 'Industry Professionals Community	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) - 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 Lesson Overview: <u>1st Semester Students:</u> - Login to VEX Certification Accounts: - VEX V5 - Block Programming - Python Programming - Workcell - Continue building VEX V5 Robots - Speedbot/Base Bot Coding-Block/Python/C/C++ Sensors - Bump/touch, Distance, Line Tracker, Camera - AI - Data Analysis 2nd Semester Plus+ Students: - Login to VEX Certification Accounts: - VEX V5 - Block,Python Programming - Workcell Customizing Robots and Parts - Tinkercade 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	Academic Standards: 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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		• CNC –ComputerNumeric Control –G/M Code	
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		• CNC –ComputerNumeric Control –G/M Code VEX V5 Parts (3D Print)	
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