

Name: Robert Lefrandt	Grading Qua 1
School Year: 2023-24	Subject: Automation & Robotics

Monday	Notes: Robotic Assemblies Mechtronics <u>Engineering:</u> 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/touchDistance Light Camera Physical Computing AI Data Collect DataAnalyze	08/28/2023 -Monday - 4th Week Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the control languages. https://live-az-ade.pantheonsite.io/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf STANDARD 10.0 APPLY SENSOR SOLUTIONS 10.1 Select sensors for use in a feedback control loop 10.2 Construct and operate a system with a feedback control loop 10.3 Calibrate sensors 10.4 Gather and statistically analyze performance data on a control loop 10.5 Explain analog to dig https://www.azed.gov/sites/default/files/2021/01/AutomationandRoboticsTSs48050020N.pdf 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 ○ https://www.vexrobotics.com/v5/downloads/build-instructions Coding-Block: ○ https://vr.vex.com/ ○ https://codev5.vex.com/ Sensors ○ Bump/touch, Distance, Light, Camera ○ AI ○ Data Analysis <u>2nd Semester Plus+ Students:</u> ○ Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell Circuits/Electronics • Cut cables • Snap Circuits kit(s) ○ Rechargeable batteries • Tinkercade ○ 3D Modeling ○ Electric circuits ○ Arduino IDE – C/Python Programming
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		○ 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 Building VEX V5 Robots and customizing robots VEX V5 Parts (3D Print) Autodesk Tinkercad https://www.tinkercad.com/things/5zBduwCA6c9-vex-v5-parts VEX V5 and VEX Pro (CAD Files) https://www.vexrobotics.com/v5 https://www.vexrobotics.com/pro https://www.vexrobotics.com/v5/products/view-all/?q=__empty__&vex_site=cads&vex_m2_vexrobotics_cads%5BrefinementList%5D%5Bproduct Understanding VEX Classic and V5 Smart Motors https://kb.vex.com/hc/en-us/articles/360060929971-Understanding-V5-Smart-Motors https://wiki.purduesigbots.com/vex-electronics/vex-electronics/motors https://motors.vex.com/ https://motors.vex.com/introduction https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/classical-me https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/dc-motors.h https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/simulate_an https://www.autodesk.com/education/edu-software/overview?sorting=featured&filters=individu https://motors.vex.com/brushed-brushless https://motors.vex.com/vexpro-motors
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Tuesday	Notes: Robotic Assemblies Mechtronics <u>Engineering:</u> 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/touchDistance Light Camera Physical Computing AI Data Collect DataAnalyze	08/29/2023 - Tuesday - 4th Week Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the control languages. https://live-az-ade.pantheonsite.io/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf 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 https://www.vexrobotics.com/v5/downloads/build-instructions Coding-Block: • https://vr.vex.com/ • https://codev5.vex.com/ • Sensors ○ Bump/touch, Distance, Light, Camera ○ AI ○ Data Analysis <u>2nd Semester Plus+ Students:</u> • Login to VEX Certification Accounts: ○ VEX V5 ○ Block Programming ○ Python Programming ○ Workcell Circuits/Electronics • Cut cables • Snap Circuits kit(s) ○ Rechargeable batteries • Tinkercade ○ 3D Modeling ○ Electric circuits ○ Arduino IDE – C/Python Programming 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
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		Building VEX V5 Robots and customizing robots VEX V5 Parts (3D Print) Autodesk Tinkercad https://www.tinkercad.com/things/5zBduwCA6c9-vex-v5-parts VEX V5 and VEX Pro (CAD Files) https://www.vexrobotics.com/v5 https://www.vexrobotics.com/pro https://www.vexrobotics.com/v5/products/view-all/?q=__empty__&vex_site=cads&vex_m2_vexrobotics_cads%5BrefinementList%5D%5Bproduct Understanding VEX Classic and V5 Smart Motors https://kb.vex.com/hc/en-us/articles/360060929971-Understanding-V5-Smart-Motors https://wiki.purduesigbots.com/vex-electronics/vex-electronics/motors https://motors.vex.com/ https://motors.vex.com/introduction https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/classical-me https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/dc-motors.h https://curriculum.vexrobotics.com/curriculum/speed-power-torque-and-dc-motors/simulate_an https://www.autodesk.com/education/edu-software/overview?sorting=featured&filters=individu https://motors.vex.com/brushed-brushless https://motors.vex.com/vexpro-motors
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Wednesday	Notes: Robotic Assemblies Mechtronics <u>Engineering:</u> 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/touchDistance Light Camera Physical Computing AI Data Collect DataAnalyze	08/30/2023 - Wednesday - 4th Week Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the control languages. https://live-az-ade.pantheonsite.io/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf 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 https://www.vexrobotics.com/v5/downloads/build-instructions Coding-Block: https://vr.vex.com/ https://codev5.vex.com/ Sensors Bump/touch, Distance, Light, Camera AI Data Analysis <u>2nd Semester Plus+ Students:</u> Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell Circuits/Electronics • Cut cables • Snap Circuits kit(s) ◦ Rechargeable batteries • Tinkercade ◦ 3D Modeling ◦ Electric circuits ◦ Arduino IDE – C/Python Programming 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
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Thursday	Notes:	08/31/2023 - Thursday – 4 th Week
	Robotic Assemblies Mechtronics	Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the control languages.
	<u>Engineering:</u> Structural Chassis frame body	https://live-az-ade.pantheonsite.io/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf
	Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed	Lesson Overview: <u>1st Semester Students:</u> Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell
	Electrical Chemical electrochemical	Continue building VEX V5 Robots Speedbot/Basebot https://www.vexrobotics.com/v5/downloads/build-instructions
	Physical Magnetism Batteries	Coding-Block: https://vr.vex.com/ https://codev5.vex.com/
	Software Block PLC ladder logic, CNC, Python, C++,	Sensors Bump/touch, Distance, Light, Camera AI Data Analysis
	Sensors Bump/touchDistance Light Camera	<u>2nd Semester Plus+ Students:</u> Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell
	Physical Computing	
	AI Data Collect DataAnalyze	Circuits/Electronics • Cut cables • Snap Circuits kit(s) ○ Rechargeable batteries • Tinkercade ○ 3D Modeling ○ Electric circuits ○ Arduino IDE – C/Python Programming 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

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Friday	Notes: Robotic Assemblies Mechtronics <u>Engineering:</u> 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/touchDistance Light Camera Physical Computing AI Data Collect DataAnalyze	09/01/2023 - Friday - 4th Week Objective: Apply basic engineering principles and technical skills for... artificial intelligent management ...the control languages. https://live-az-ade.pantheonsite.io/sites/default/files/2021/06/ProgramDescription_AutomationAndRobotics.pdf 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/Basebot https://www.vexrobotics.com/v5/downloads/build-instructions Coding-Block: https://vr.vex.com/ https://codev5.vex.com/ Sensors Bump/touch, Distance, Light, Camera AI Data Analysis <u>2nd Semester Plus+ Students:</u> Login to VEX Certification Accounts: • VEX V5 • Block Programming • Python Programming • Workcell Circuits/Electronics • Cut cables • Snap Circuits kit(s) ○ Rechargeable batteries • Tinkercade ○ 3D Modeling ○ Electric circuits ○ Arduino IDE – C/Python Programming 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
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