Name:	Grading Quarter:	Week Beginning:
Robert Lefrandt	4	04/07/2025
School Year: 2024-25	Subject: Automation & Robotics/Engineering	

Monday: Monday Notes: Robotic Apply basic engineering principles and technical skills for... artificial Assemblies intelligent management ...the principles of robotics, design, operational Mechtronic testing, system maintenance, repair procedures, robot computer systems, and control languages. Engineer: ReEngineer (AZ CTE Automation & Robotics-Program Description) Reverse Engineering PERFORM ELECTRICAL AND ELECTRONIC TASKS Structural ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS Chassis PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D) frame body DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR Mechanical **ELECTRICAL MOTORS** (Motion) Explain the operation and use of DC motors in automation controls Gear: Box, PERFORM MECHANICAL SYSTEMS LINKAGES TASKS train. APPLY SENSOR SOLUTIONS parallel DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER (linear) LABORATORY EQUIPMENT, TOOLS, AND MATERIALS stack **Lesson Overview:** Workflow Process: (vertical), Level 1 Students: ratio, Login to VEX Certification Accounts: torque VEX V5 ,Block Programming, Python Programming, Workcell speed RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Mechtronic Coding-Block/Python/C/C++ Sensors: Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis Electrical (Ohm's Law, ***Customizing Robots and Parts : After Completing 1st Semester Skills Parallel/Seri Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete al Circuits) Certifications + Arduino/PCEP) Chemical *Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado e-chem 3D Modeling, Electric circuits, Arduino IDE – C/Python Code **Physical** Magnetism Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing Batteries Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker Software (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Block Manual/Traditional - Mill and Drill , CNC/G/M Code PLC ladder Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining logic, CNC, CAD/CAM: 3D Printing Python, C++ Sensors Competitions: See Software App Design - FabLab/Engineering: touch, Dist vr.vex.com-coding top6 in AZ

vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes

Other: Racing the Sun (RTS) *See FabLab

Light,

Camera

Academic Standards: Arizona Department of Education Website: Program Description/ Industry Credentials/ Coherent Sequence/ www.azed.g ov/cte/ar/ www.azed.g ov/sites/defa ult/files/202 1/06/Progra mDescription Automation AndRobotics. pdf Az CTE Prof. Skills have 9 areas of measuremnt Notes Conti: PhysComp Embedded smart, IIOT AI ,Data Collect Data Analyze Data MachinLearn Collaborate schools,

Industry

Community

	Notes:	Objective:	Academic	
Tuesday	Robotic	Apply basic engineering principles and technical skills for artificial	Standards:	
	Assemblies	intelligent managementthe principles of robotics, design, operational		
	Mechtronic	testing, system maintenance, repair procedures, robot computer	Arizona	
	Engineer:	systems, and control languages.	Department	
	ReEngineer Reverse Engineering	(AZ CTE Automation & Robotics-Program Description)	of Education	
		PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website:	
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	_	
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Program	
	frame body	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Description/	
	Mechanical	ELECTRICAL MOTORS	Industry Credentials/	
	(Motion) Gear: Box,	Explain the operation and use of DC motors in automation controls	Coherent	
	train,	PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Sequence/	
	parallel	APPLY SENSOR SOLUTIONS	30quo30,	
	(linear)	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	www.azed.g	
	stack	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS Lesson Overview: Workflow Process:	ov/cte/ar/	
	(vertical),	Level 1 Students:		
	ratio,		www.azed.g ov/sites/defa	
	torque	Login to VEX Certification Accounts:	ult/files/202	
	speed	VEX V5 ,Block Programming, Python Programming, Workcell	1/06/Progra	
		RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	mDescription	
	Electrical (Ohm's Law,	Coding-Block/Python/C/C++	_Automation	
	Parallel/Seri	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	AndRobotics.	
	al Circuits)	***Customizing Robots and Parts: After Completing 1st Semester Skills	pui	
	Chemical	Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete	Az CTE Prof.	
	e-chem	Certifications + Arduino/PCEP)	Skills have 9	
	Physical	*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	areas of measuremnt	
	Magnetism Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code		
		Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Notes Conti: Al ,Data	
		Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Collect Data	
	Block PLC ladder logic, CNC,	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	Analyze Data	
		Manual/Traditional - Mill and Drill , CNC/G/M Code	MachinLearn	
	Python, C++	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Collaborate	
	Sensors	CAD/CAM : 3D Printing	schools,	
	touch, Dist	Compositions, Soc Software Ann Docing Fublish/Fusingsvings	Industry	
	Light,	Competitions: See Software App Design - FabLab/Engineering:	Community	
	Camera	vr.vex.com-coding top6 in AZ		
	PhysComp	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes		
	Embedded	Other: Racing the Sun (RTS) *See FabLab		
	smart, IIOT			

			T
₩	Notes:	Objective:	Academic
Wednesday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
esda	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
у	Wiceritionic	testing, system maintenance, repair procedures, robot computer	Department
	Engineer:	systems, and control languages.	of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education Website:
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website.
	Structural Chassis	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Program
	frame body	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Description/
	Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Industry
	(Motion)	ELECTRICAL MOTORS	Credentials/
	Gear: Box,	Explain the operation and use of DC motors in automation controls PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Coherent
	train,	APPLY SENSOR SOLUTIONS	Sequence/
	parallel	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	_
	(linear)	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	www.azed.g
	stack	Lesson Overview: Workflow Process:	ov/cte/ar/
	(vertical),	Level 1 Students:	www.azed.g
	ratio,	Login to VEX Certification Accounts:	ov/sites/defa
	torque	VEX V5 ,Block Programming, Python Programming, Workcell	ult/files/202
	speed	RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	1/06/Progra
	Electrical (Coding-Block/Python/C/C++	mDescription Automation
	Ohm's Law,		AndRobotics.
	Parallel/Seri	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	pdf
	al Circuits)	***Customizing Robots and Parts: After Completing 1st Semester Skills	
	Chemical	Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete	Az CTE Prof.
	e-chem	Certifications + Arduino/PCEP)	Skills have 9 areas of
	Physical	*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	measuremnt
	Magnetism Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti:
		Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Al ,Data
	Block PLC ladder logic, CNC,	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Collect Data
		(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	Analyze Data
		Manual/Traditional - Mill and Drill , CNC/G/M Code	MachinLearn
	Python, C++	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Collaborate
	Sensors	CAD/CAM: 3D Printing	schools,
	touch, Dist	Competitions: See Software App Design - FabLab/Engineering:	Industry
	Light,	vr.vex.com-coding top6 in AZ	Community
	Camera		
	PhysComp	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes	
	Embedded	Other: Racing the Sun (RTS) *See FabLab	
	smart, IIOT		

Objective: Academic Notes: Thursday Robotic Apply basic engineering principles and technical skills for... artificial Standards: Assemblies intelligent management ...the principles of robotics, design, operational Mechtronic Arizona testing, system maintenance, repair procedures, robot computer Department systems, and control languages. Engineer: of ReEngineer (AZ CTE Automation & Robotics-Program Description) Education Reverse Website: Engineering PERFORM ELECTRICAL AND ELECTRONIC TASKS Structural ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS Program Chassis PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D) Description/ frame body DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR Industry Mechanical **ELECTRICAL MOTORS** Credentials/ (Motion) Explain the operation and use of DC motors in automation controls Coherent Gear: Box, PERFORM MECHANICAL SYSTEMS LINKAGES TASKS Sequence/ train. APPLY SENSOR SOLUTIONS parallel DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER www.azed.g (linear) LABORATORY EQUIPMENT, TOOLS, AND MATERIALS ov/cte/ar/ stack **Lesson Overview:** Workflow Process: (vertical), Level 1 Students: www.azed.g ratio, ov/sites/defa Login to VEX Certification Accounts: torque ult/files/202 VEX V5 ,Block Programming, Python Programming, Workcell 1/06/Progra speed RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw mDescription Electrical (Coding-Block/Python/C/C++ Automation Ohm's Law. AndRobotics. Sensors: Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis Parallel/Seri pdf ***Customizing Robots and Parts : After Completing 1st Semester Skills al Circuits) Az CTE Prof. Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Chemical Skills have 9 Certifications + Arduino/PCEP) e-chem areas of **Physical** *Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado measuremnt Magnetism 3D Modeling, Electric circuits, Arduino IDE – C/Python Code Batteries Notes Conti: Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing AI ,Data Software Collect Data Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker Block (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Analyze Data PLC ladder MachinLearn Manual/Traditional - Mill and Drill , CNC/G/M Code logic, CNC, Collaborate Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining Python, C++ schools, Sensors CAD/CAM: 3D Printing Industry touch, Dist Competitions: See Software App Design - FabLab/Engineering: Community Light, vr.vex.com-coding top6 in AZ Camera vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes PhysComp

Other: Racing the Sun (RTS) *See FabLab

Embedded

smart, IIOT

Friday

Notes: Robotic Assemblies Mechtronic

Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train. parallel (linear) stack (vertical), ratio, torque speed

Electrical (
Ohm's Law,
Parallel/Seri
al Circuits)
Chemical
e-chem
Physical
Magnetism
Batteries
Software

Block/PLC ladder logic, CNC, Python, C++ Sensors bump/touc h DistLight, Camera

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 (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

Lesson Overview: Workflow Process:

Level 1 Students:

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++

Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis

***Customizing Robots and Parts : After Completing 1st Semester Skills

Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)

*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado

3D Modeling, Electric circuits, Arduino IDE – C/Python Code

Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing

Inkscape > **Tinkercad** > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D

Manual/Traditional - Mill and Drill, CNC/G/M Code

Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining CAD/CAM: 3D Printing

Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ

vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes

Other: Racing the Sun (RTS) *See FabLab

Academic Standards:

Arizona
Department
of
Education
Website:

Program
Description/
Industry
Credentials/
Coherent
Sequence/

www.azed.g ov/cte/ar/

www.azed.g ov/sites/defa ult/files/202 1/06/Progra mDescription _Automation AndRobotics. pdf

Az CTE Prof. Skills have 9 areas of measuremnt

Notes Conti:
PhysComp
Embedded
smart, IIOT
AI ,Data
Collect Data
Analyze Data
MachinLearn
Collaborate
schools,
Industry
Community