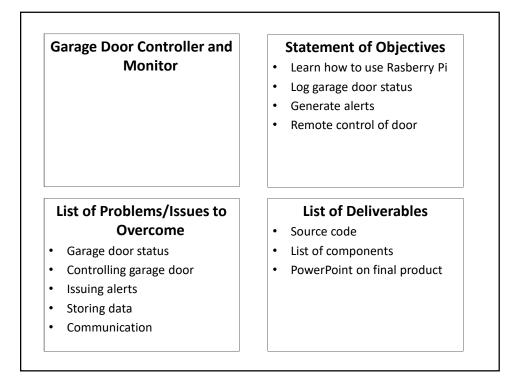
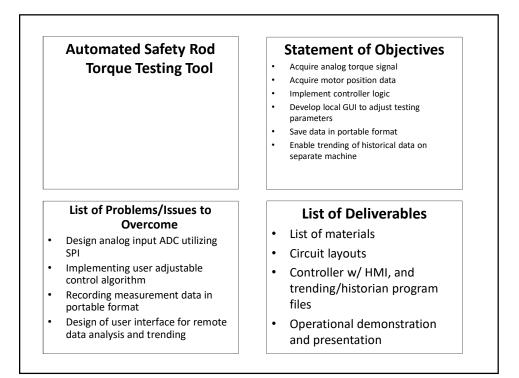
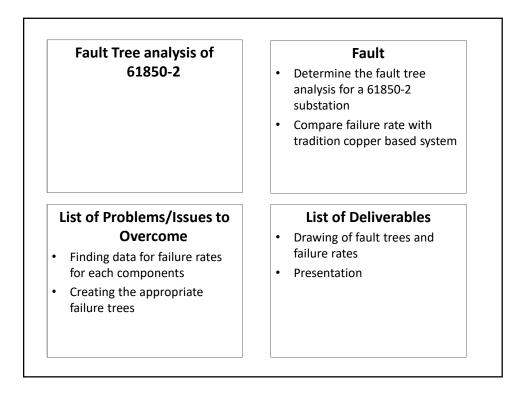
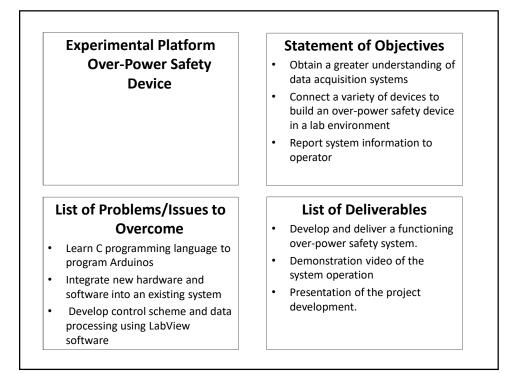


Microgrid Monitoring and	Statement of Objectives
Control	 Demonstrate hybrid microgrid using solar, battery storage, and diesel generator Control solar curtailment when battery SOC reaches 100% Start/Stop generator through controller base on SOC of battery and solar production Remotely monitor hybrid microgid BESS system
List of Problems/Issues	List of Deliverables
 Identify compatible components so control and integration can be done 	Test integration of solar inverter to charge controllers
without 3 rd party controller	Test start/stop command to generator
 Diesel generator start/stop control based on demand and battery SOC using battery cell voltage 	 Test protection settings so battery is protected from over charge or over discharge.
 Solar curtailment based on BESS SOC load demand 	Fuel savings due to decrease diesel generator run time

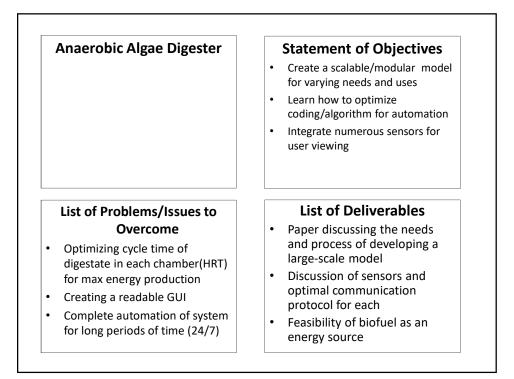


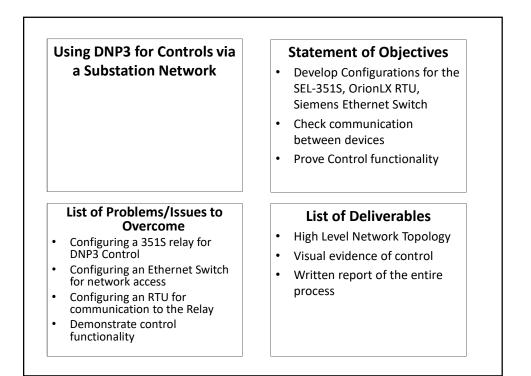




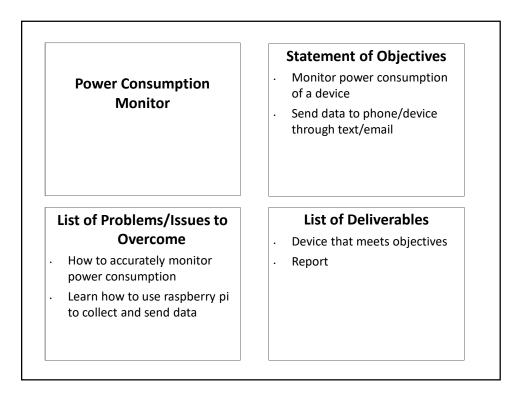


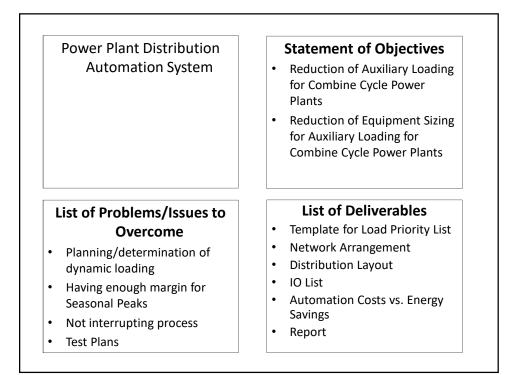
Model Power Grid	Statement of Objectives
Sponsor : University of Idaho Electrical and Computer Engineering Ambassadors	 Build a model power grid Design controls using Raspberry Pi Collect data and monitor system status Create curriculum for ECE Ambassadors use
ist of Problems/Issues to	List of Deliverables
Overcome	Model of power grid
Use Pi to simulate faults in system for students to solve	GUI on Pi for SCADA system
	Software
	Curriculum
1	Presentation





Secure IoT Wireless Data Transfer Module	 Statement of Objectives Design a reliable, high quality, and secure platform Develop an IoT data transfer module to securely transmit data for use in water/wastewater treatment industry Develop a Visio diagram for an IoT platform/communication template Transmission of data through cell wireless
List of Problems/Issues to Overcome Obtaining IoT platforms and components Obtaining access to Test Lab Learning to work in the Lab environment Learning to connect, program and run device	 List of Deliverables Device meets objectives Top Level IoT logical diagram with data transfer and security features Report of results





Updated SCADA Test Bed	Statement of Objectives
	 Add SCADA BACnet Direct Digital Controller (DDC) to Industrial Plant Equipment (IPE)
	 Tie SCADA DDC into Energy Management and Control System (EMCS) and supporting software
List of Problems/Issues to	List of Deliverables
Overcome Learning software for DDC	Operational SCADA for specified IPE
 Learning software for EMCS Network connectivity permission issues Working with IT Team 	 Report documenting efforts, data types recorded, control algorithms, screen shots of the HMI displays

Centralized, secure, and	 Statement of Objectives Design and implement a
remote accessible SCADA	secure SCADA test bed with
test bed for University of	connection to all U of I
Idaho	campuses in the state
List of Problems/Issues to Overcome No centralized SCADA test bed for U of I campuses SCADA test bed state estimation analysis for attack and defense tests only exists in few institutions and laboratories. Working with university IT policies	 List of Deliverables Secure, centralized and remote accessible SCADA test bed Build attack/defense scenarios for state estimation analysis (DNP3 and IEC 61850) Presentation

