| **Status Indicators** | |
| --- | --- |
| On schedule |  |
| In progress |  |
| Completed |  |
| Behind schedule |  |
| Important Deadlines |  |

**Execution Plan:**

| **Task** | **Owner** | **Deadline** | **Status** |
| --- | --- | --- | --- |
| Conops Report | All | 9/15/24 |  |
| FSR Report | All | 9/26/24 |  |
| ICD Report | All | 9/26/24 |  |
| Order required hardware | All | 9/15/24 |  |
| Become familiar with the CCS & sysconfig environments | All | 9/21/24 |  |
| Become familiar with the motor control SDK | All | 9/28/24 |  |
| Midterm Presentation | All | 9/30/24 |  |
| Subsystem Research | Tyler | 10/1/24 |  |
| Subsystem Research | Tamara | 10/1/24 |  |
| Subsystem Research | Case | 10/1/24 |  |
| Subsystem Research | Cristian | 10/1/24 |  |
| Subsystem Introduction Project | Tyler | 10/8/24 |  |
| Subsystem Introduction Project | Tamara | 10/8/24 |  |
| Subsystem Introduction Project | Case | 10/8/24 |  |
| Subsystem Introduction Project | Cristian | 10/8/24 |  |
| Understand needed Functions/Data for the Estimator | Case | 10/10/24 |  |
| Have Code Outline Complete | Case, Tamara, Cristian | 10/10/24 |  |
| Begin porting process | Tyler | 10/12/24 |  |
| Begin writing code for Inverter/PWM for the F28P65x device | Tamara | 10/14/24 |  |
| Begin writing code for the ADC driver for F28P65x device | Cristian | 10/14/24 |  |
| Begin writing code for the Estimator for the F28P65x device | Case | 10/14/24 |  |
| Project Update Presentation | All | 10/21/24 |  |
| Begin the debugging process for PWM/Inverter | Tamara | 11/4/24 |  |
| Begin the debugging process for ADC driver | Cristian | 11/4/24 |  |
| Begin the debugging process for Estimator | Case | 11/11/24 |  |
| Port existing solution to F28P65x | Tyler | 11/18/24 |  |
| Finish up Subsystem Demo requirements | All | 11/18/24 |  |
| Begin working on 16 ADC resolution | Cristian | 11/26/24 |  |
| Final Presentation | All | 11/18/24 |  |
| Subsystem Demo | All | 11/26/24 |  |
| Final Report | All | 12/5/24 |  |

**Validation Plan:**

| **Task** | **Specification** | **Result** | **Owner** |
| --- | --- | --- | --- |
| Test individual function Operation  (test cases) | Each block function outputs correct data and the integrated project compiles | PASSED | Tamara  PWM |
| Test individual function Operation  (in/out waveforms) | Waveforms behave as expected | PASSED | Tamara  PWM |
| Compile Full PWM Project | Integrated project compiles | PASSED | Tamara  PWM |
| Integrated Project Test | The PWM project shows correct duty cycles and can change in real-time | PASSED | Tamara  PWM |
| Test Estimator Operation | The estimator correctly collects motor information. This is done by comparing with sensored motor outputs | PASSED | Case  EST |
| ADC Driver Operation | ADC Correctly converts Analog signal to digital signal through test cases and plotting | PASSED | Cristian  ADC |
| ADC Overview | The code will compile with 0 errors. | PASSED | Cristian  ADC |
| ADC/ GPIO Behavior | The memory result buffer will show the behavior of ADC A (Toggle) | PASSED | Cristian  ADC |
| ADC/ GPIO Behavior | The memory result buffer will show the behavior of ADC B (Low) | PASSED | Cristian  ADC |
| ADC/ GPIO Behavior | The memory result buffer will show the behavior of ADC C (High) | PASSED | Cristian  ADC |
| Plotting/ Graph | Code Composer Studio will show the PWM waveform updating in real time | PASSED | Cristian  ADC |
| Plotting/ Graph | An oscilloscope will show the GPIO 3 toggling in regards to ADC A | PASSED | Cristian  ADC |
| f28p65x Behavior | LEDs show the behavior of the GPIO pin on the f28p65x board | PASSED | Cristian  ADC |
| System Compiling | Full system compile | PASSED | Tyler PORTING |
| Motor control With sensorless Operation | The full system of a motor without using a sensor operates correctly on the F28002x board | PASSED | Tyler  PORTING |
| Porting Solution onto F28p65x board | Ported solution compiles without any errors | PASSED | Tyler  PORTING |
| Motor control With sensor Operation | The full system of a motor using a sensor operates correctly.  Porting existing sensored motor control software onto 02x launch pad successfully. | PASSED | Tyler  PORTING |
|  |  |  |  |
| Porting Solution onto F28p65x board | Ported motor control software onto f28p65x board successfully according to The Universal Motor control guide | PASSED | All |
| 16 Bit ADC resolution | The system correctly operates using 16-bit ADC resolution according to The Universal Motor control guide | UNTESTED | Cristian |
| 64-bit Floating point operation | The system Correctly Operates using 64-bit Floating Point according to The Universal Motor control guide | UNTESTED | Tyler |
| Enable oversampling | The system Correctly Operates while oversampling is enabled according to The Universal Motor control guide | UNTESTED | Tamara |
| 12 Bit & 16 Bit ADC resolution Support | The system correctly operates using either 12-bit or 16-bit ADC resolutions according to The Universal Motor control guide | UNTESTED | Cristian |
| 32-bit & 64-bit Floating point operation | The system Correctly Operates using either 32-bit or 64-bit Floating Point according to The Universal Motor control guide | UNTESTED | Tyler |
| Test data acquisition | The system Correctly gathers test data for the following parameters: speed ripple, speed step, and load step. Able to be graphed and differences should be able to be seen. | UNTESTED | Tyler |
| Test 12 vs 16 Bit performance | Test the performance of 12-bit and 16-bit ADC resolutions: speed ripple, speed step, load step. | UNTESTED | All |
| Test 32-bit & 64-bit Floating-point performance | Test the performance of 32-bit and 64-bit ADC Floating point operations: speed ripple, speed step, load step. | UNTESTED | All |
| Test the performance of oversampling | Test the effectiveness of oversampling: speed ripple, speed step, load step. | UNTESTED | All |

**Performance of Execution & Validation Plan**

The execution and validation plan was completed entirely to our expectations for the semester. The only exception is that the full port of the motor control solution needs some final debugging. This will be fixed and tested over the winter break so that we are adequately prepared for next semester.