1. Determine your project-specific requirements		3. Look up specifications in the PIC datasheet		
Design Considerations	**Team Project-Specific Requirements** from Problem Definition and Block Diagram	**PIC Option 1**	**PIC Option 2**	**PIC Option 3**
How many GPIO Pins?[1]	6	PIC18F47Q10	PIC18F26K22	PIC16F15376
Built-in Analog to Digital Converter? How many?	1	35	25	22
Built-in Hardware PWM? How many?	2	2	2	4
Built-in I2C? SPI? How many?	1	2	2	2
Built-in UART? How many?	1 Uart that uses two pins (rx and tx)	Yes	Yes (1)	Yes (2)
Other Required Built-In Features? *(optional)*	None			
Additional considerations specific to your project specifications *(optional)*	None			
2. Find 3 microcontrollers that meet your team project-specific requirements and find information on each		**4. Look up part details in the PIC datasheet**		
Microcontroller Considerations	**Instructions**	**PIC Option 1**	**PIC Option 2**	**PIC Option 3**

[1] No PIC16F887, PIC16F917, PIC18F47Q10, or dsPICs allowed

Part Number[2]	*Include the entire part number (leave off any letters at the end that specify the package type)*	PIC18F47Q10	PIC18F26K22	PIC16F15376
Link (URL) to product page	*Do not paste links directly into the table. Instead, link them like this.*	Product	Product	Product
Links (URL) to Data Sheets		Data Sheet	Data Sheet	Data Sheet
Links (URL) to Application Notes	*Often provided by manufacturers to give you specific examples of how to use their products. Search for them in the search bar on the Microchip's website.*	Application_Notes_1 Application_Notes_2 Application_Notes_3 Application_Notes_4	Application_Notes_1 Application_Notes_2 Application_Notes_3 Application_Notes_4	Application_Notes_1 Application_Notes_2 Application_Notes_3 Application_Notes_4
Links (URL) to Code Examples		Code_Examples	None	None

[2] General Purpose Input/Output Pins - calculate based on your block diagram and include at least 20% more than you need. Avoid using In-System Programming (ISP) pins for GPIO.

Links (URL) to External Resources	*Search on Google and YouTube for other resources for each specific microcontroller.*	External_Sources	External_Sources	External_Sources
Production Unit Cost	*Find in the Microchip online store, or Digikey*	$1.83	$1.83	$1.76
Supply Voltage Range	*Find in the microcontroller datasheet*	1.8V-5.5 V	1.8V-5.5 V	2.3V-5.5 V
Absolute Maximum Current for entire IC	*Find in the microcontroller datasheet*	350mA	350mA	350mA
Maximum GPIO Pin Current (Source/Sink)	*Find in the microcontroller datasheet*	50mA	50mA	50mA
8-bit or 16-bit Architecture	*Find in the microcontroller datasheet*	8 bits	8 bits	8 bits
Available IC Packages / Footprints	*Find in the microcontroller datasheet. Choose a microcontroller with both surface mount and DIP/through-hole packages available. See Most Common Mistakes below for requirements to improve manufacturing reliability.*	Yes	Yes	Yes
Supports External Interrupts?	*Find in the microcontroller datasheet*	Yes	Yes	Yes
In-System Programming Capability and Type	*Allows for programming the microcontroller without removing it from the PCB. Find in the microcontroller datasheet.*	Yes	Yes	Yes
Programming Hardware, Cost, and URL	*Find on the microcontroller product page*	$1.69 URL	$1.69 URL	$1.69 URL

Works with MPLAB® X Integrated Development Environment (IDE)?	*Required. See Microchip Development Tools*	Yes	Yes	Yes
Works with Microchip Code Configurator?	*Required. Go to the MCC website, click the "Manual Downloads" tab, scroll to the device library that goes with the PIC you chose (likely "MCC 8-bit PIC") and read the release notes to make sure your microcontroller is in the list of supported devices.*	Yes	Yes	Yes

5. Write overall pros, cons, and rankings for the chosen microcontrollers				
Overall Pros	*Write at least 2 for each microcontroller*	Large # of GPIO pins. Lower power consumption	Compact and efficient design. Wide voltage range.	Most affordable. Rich analog features.
Overall Cons	*Write at least 2 for each microcontroller*	Limited development resources. May be harder to implement for a basic project.	Fewer GPIO pins. Moderate complexity in terms of implementations.	Limited performance for complex tasks. Smaller peripheral set.
Ranking	*1 = first, 2 = second, 3 = third*	**2**	**1**	**3**

6. Final Microcontroller Choice: PIC18F26K22

Rationale: The PIC18F26K22 is the best choice for this project because it offers a perfect balance of features, including sufficient GPIO pins, ADC, PWM, UART, and communication modules (I2C/SPI), all while being compact and cost-effective. Its wide operating voltage range (1.8V - 5.5V) and compatibility with MPLAB X and MCC make it easy to integrate into our design. It has enough peripherals for our current project needs without adding unnecessary complexity or cost to the final product.