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]	8	22	35	25
Built-in Analog to Digital Converter? How many?	Yes	10	35	24
Built-in Hardware PWM? How many?	Yes	3	2	2
Built-in I2C? SPI? How many?	I2C preferred	1 SPI, 2 I2C	1 SPI, 2 I2C	2 SPI, 2 I2C
Built-in UART? How many?		2	2	2
Other Required Built-In Features? *(optional)*				
Additional considerations specific to your project specifications *(optional)*	Program memory	64k	128k	64kb
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**
	Include the entire part number (leave off any letters at the end that specify the package type)	PIC24FJ64GA702	PIC18F47Q10	PIC18F26K40-I/SO
Link (URL) to product page	*Do not paste links directly into the table. Instead, [link them like this](#).*	[Product](#)	[Link](#)	[Link](#)
Links (URL) to Data Sheets		[Datasheet](#)	[Link](#)	[Link](#)

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.	Notes	Link	Link
Links (URL) to Code Examples		Code	Code	n/a
Links (URL) to External Resources	Search on Google and YouTube for other resources for each specific microcontroller.	Link	Link	Link
Production Unit Cost	Find in the Microchip online store, or Digikey	$1.88	$1.95	$2.04
Supply Voltage Range	Find in the microcontroller datasheet	2V-3.6V	1.8V – 5.5V	1.8V-3.6V
Absolute Maximum Current for entire IC	Find in the microcontroller datasheet	200mA	350mA	n/a
Maximum GPIO Pin Current (Source/Sink)	Find in the microcontroller datasheet	25 mA	50mA	50 mA
8-bit or 16-bit Architecture	Find in the microcontroller datasheet	16-bit	8-bit	8-bit
Available IC Packages / Footprints[1]	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.	SOIC28, SSOP28, QFN28, UQFN28	SPDIP28, SOIC28, SSOP28, VQFN28, QFN28	SPDIP, SOIC, SSOP, QFN, UQFN, PDIP
Supports External Interrupts?	Find in the microcontroller datasheet	5 external	3 externals	3 external
In-System Programming Capability and Type	Allows for programming the microcontroller without removing it from the PCB. Find in the microcontroller datasheet.	ICSP, 2 pints	ICSP	ICSP

Programming Hardware, Cost, and URL	Find on the microcontroller product page	Link	Link $94.99	Link $94.99
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*	- **High Max Current rating** - **In circuit programming**	Low cost All necessary pins	Has all necessary pins Low cost
Overall Cons	*Write at least 2 for each microcontroller*	- **Low program memory size** - **Insufficient number of EUSARTs**	Only three external interupts 8-bit	No code example No max current for IC (only individual pins)
Ranking	*1 = first, 2 = second, 3 = third*	1	2	3

6. Final Microcontroller Choice: PIC24FJ64GA702

Rationale:

Has the most bits of the selections as well as the cheapest option out of the three choices. Also has multiple EUSART peripherals to support any debug while maintaining a small footprint and low power usage. The benefit of multiple I2C ports will support our sensors.

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

[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.

Give specific list of all available packages/footprints