# Requirements analysis for all departments

## Mechanical Department :

We need to design the legs to choose the right materials such as plastic in the formation of the structure to lose weight and iron in the joints to load the weight of the robot and the wheels of the end of the foot to allow the robot to move easier and not to need harder techniques may be expensive and need more maintenance and also a spring is installed from the knee joint to the lower end of the robot to the bottom leg, the spring works to raise the foot and descend depending on the basic motor without the need for more than one engine and a sensor mode that works to sense any body

## Electronics and Power Department:

Selection and design of the right engines for the robot

## IOT and software development Department :

steps for setting up esp32 using micropython;
1-Download the micropython firmware from micropython.org/download
2-Download and install Anaconda Distribution from anaconda.com
3-Create a virtual environment using the Anaconda Prompt
4- Install esptool using the Anaconda prompt
5-Install the SiLabs driver for the chip
6-Connect the ESP32 to the computer
7-install Thonny IDE to write commands for ESP32
8- in Thonny IDE go to options > interpreter.
9- Choose the interpreter u want to use depending on your board and then select the COM port your board is connected to.
10- Then again from options > interpreter. in right bottom click on "install or update firmware"
11- Select the connected Port, then choose the firmware which we downloaded in step 1 above.

12- Now We are ready to test our esp32. we can try help) command to see if it response or try to send commands to blink the LED light of the board
>>› from machine import Pin
»>> Pin(2, Pin. OUT). value(1)

steps for setting up esp32 using Arduino IDE:
1-Download and install Arduino IDE.
2-In Arduino IDE go to File> preferences and in "Additional Board Manager URL" field past this URL
https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index. json
3-Open the Board Manager from Tools and search for ESP32 and install "ESP32 by Espressif Systems"
4-Connect ESP32 into the computer then from Tools choose Board and then look for your model of ESP32
5- From Tools select "Port"
6-Now we are Ready

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## Robotics and AI Department

I installed xubuntu through the following link https://xubuntu.org/download/ and then installed it on the VM virtualbox to be able to use the platform and then I installed ROS 2 on it through the terminal, After that using balenaEtcher we will insert the xubuntu image and put it either via flash or sd card to be burned in the jetson nano.

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## Industrial and system engineering Department :

In the industrial engineering track we work on writing a freamwork for the robot is done by specifying the requirements and putting the design and tests for the robot parts attached to you a link to a business model that you wrote previously

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