

# **RESEARCHING PROJECT**

## **“ SOIL PH METER DESIGN ”**

### **[ 2<sup>ND</sup> WEEK REPORT ]**

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# OUTLINE

## ❖ Filter Design:

- Low Pass Filter
- High Pass Filter
- Band Pass Filter
- Band Stop Filter

## ❖ Missing and Difficulty



# **FILTER DESIGN**

- ❖ Why do we have to built filter?
    - Because we need to remove noise from our signal to micro-controller.( remove power of noise)
  - ❖ How can filter help in our circuit?
    - If we use filter in our circuit, we can control or limit range of frequency that we need to give to micro-controller.  
(limit Bandwidth)
  - ❖ How can we apply filter to our circuit?
    - We need check noise in our sensor then we built filter to cut noise.
  - ❖ How can we built filter for our sensor?
    - We have to know bandwidth for our sensor then we can built filter for it.
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# LOW PASS FILTER

We use Low Pass Filter to remove high frequency (noise) from signal.

**Input1 and Input2**

**Input1 (low frequency)**  
**Input2 (High frequency)**

LOW PASS FILTER

**Input1**

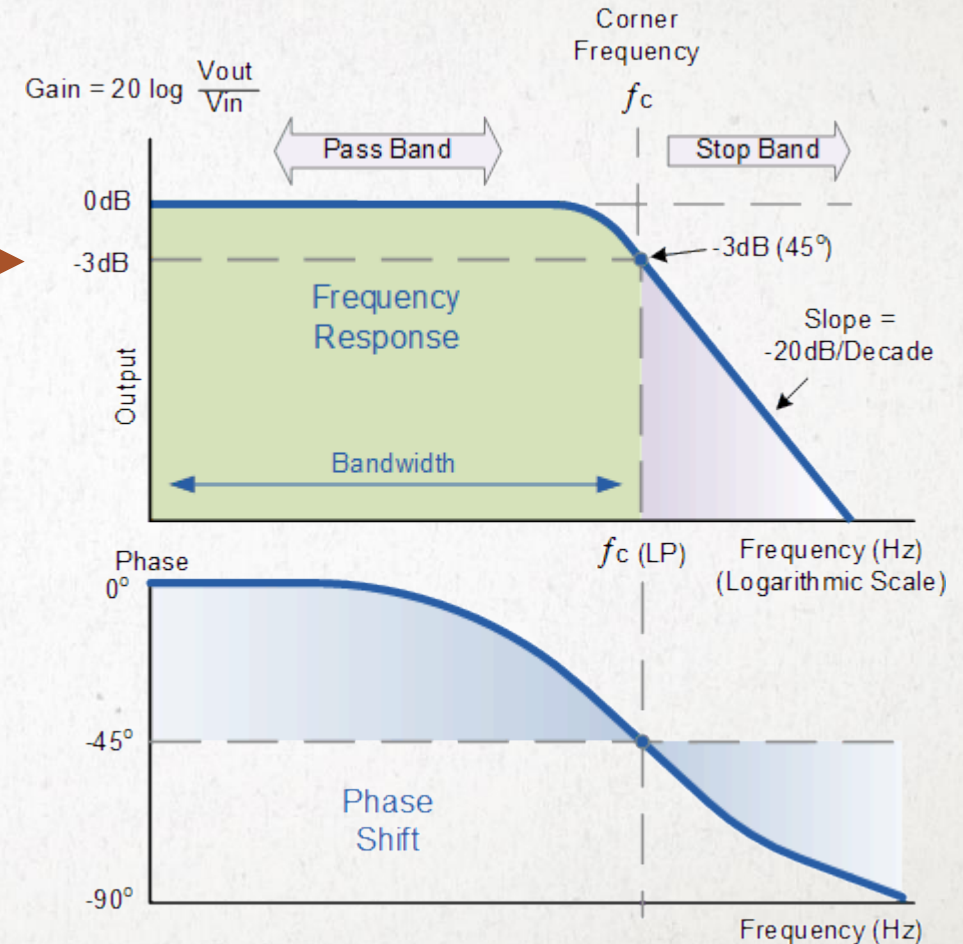
Low pass filter:

- Signal 11Mhz and 5dB
- Cut off frequency 10Mhz at -3dB

Can that signal throw our filter?

How to use filter link:

<https://tools.analog.com/en/filterwizard/>

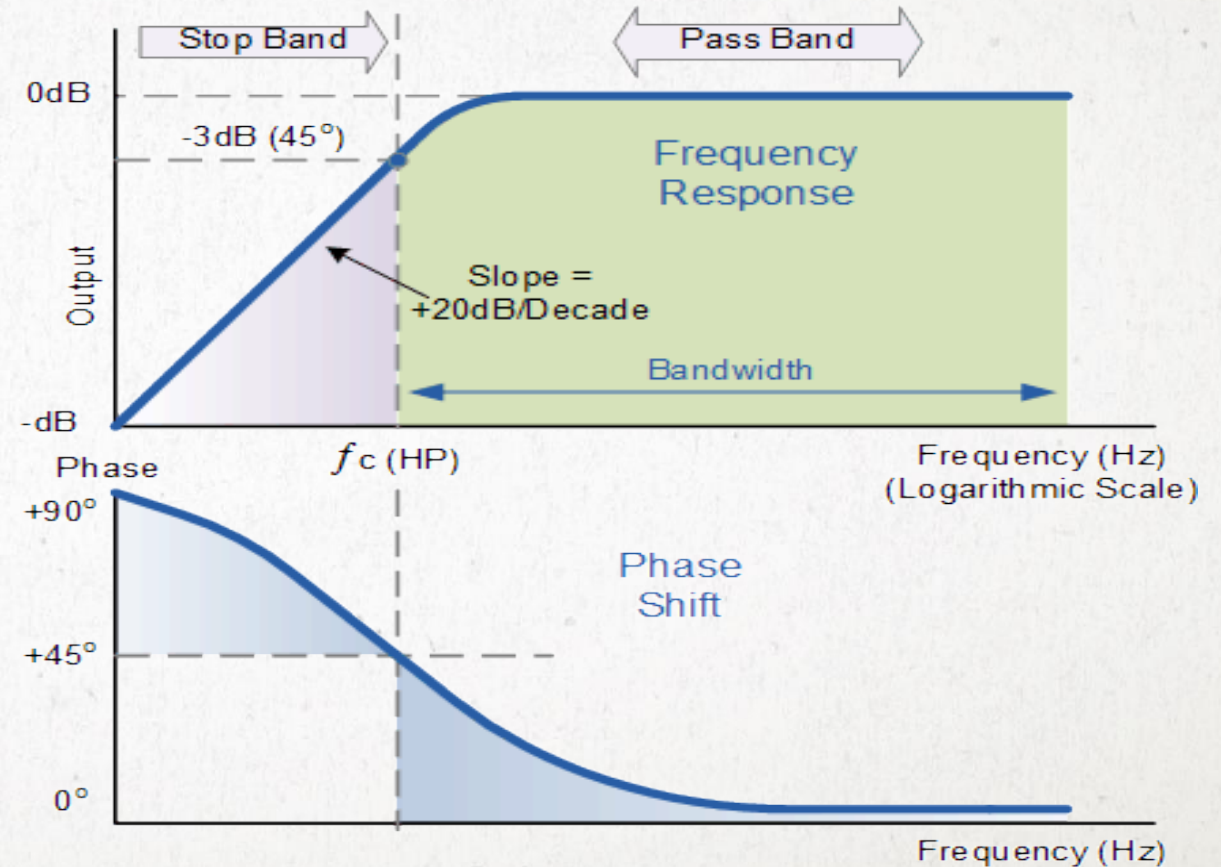
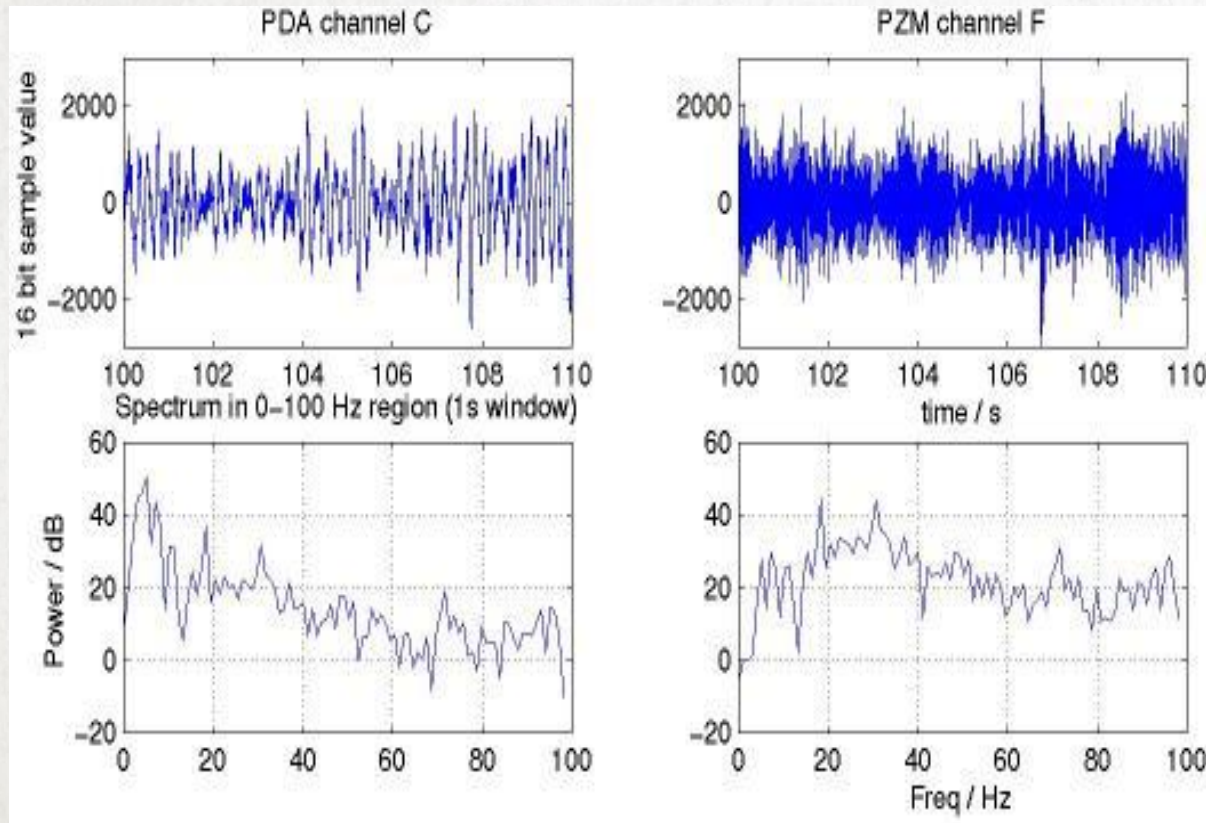




# HIGH PASS FILTER

We use High Pass Filter to remove low frequency (noise) from signal.

$$\text{Gain (dB)} = 20 \log \frac{V_{\text{out}}}{V_{\text{in}}}$$

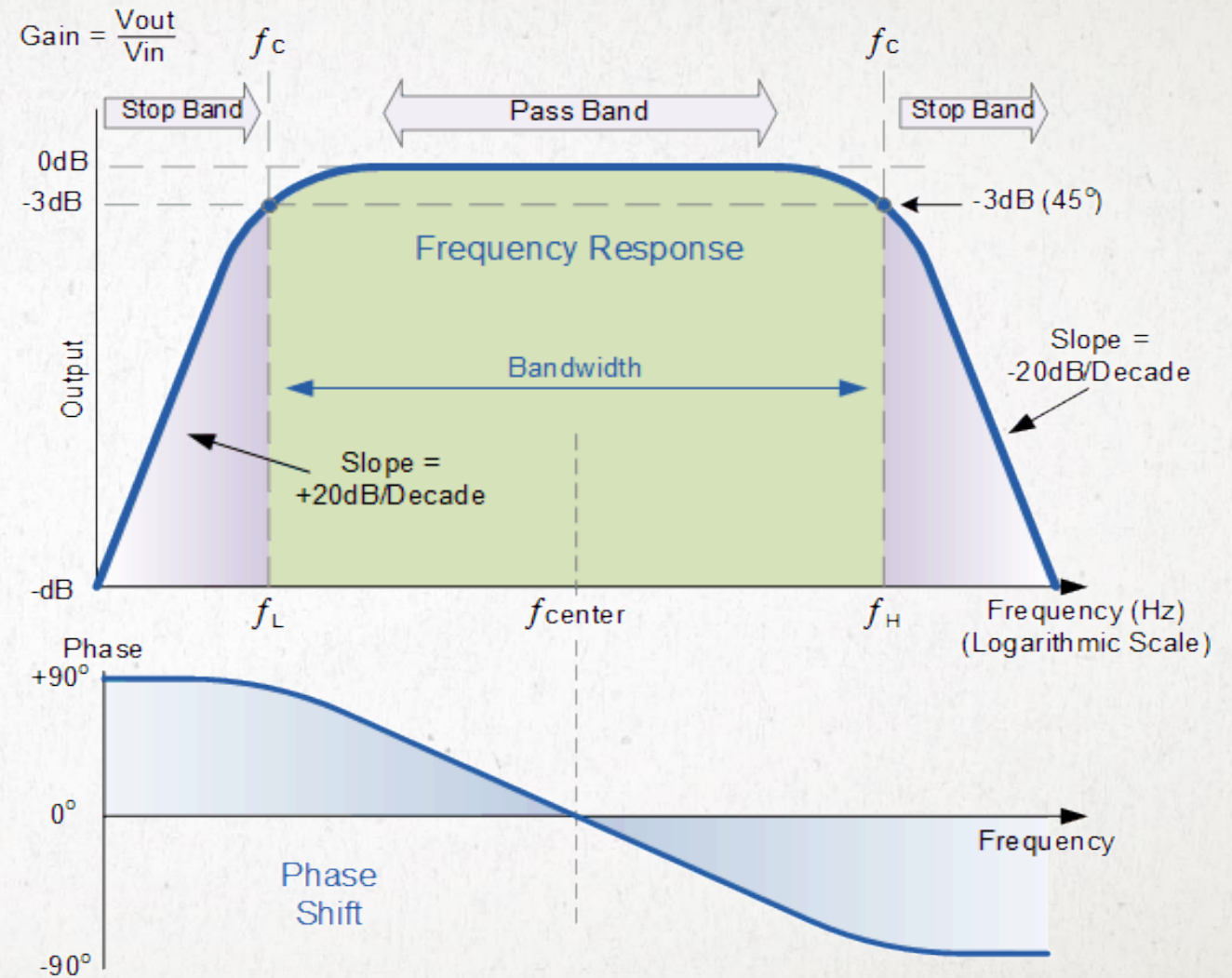


# BAND PASS FILTER

We use Band Pass Filter to limit range of frequency that we need for use from signal.

I mean:

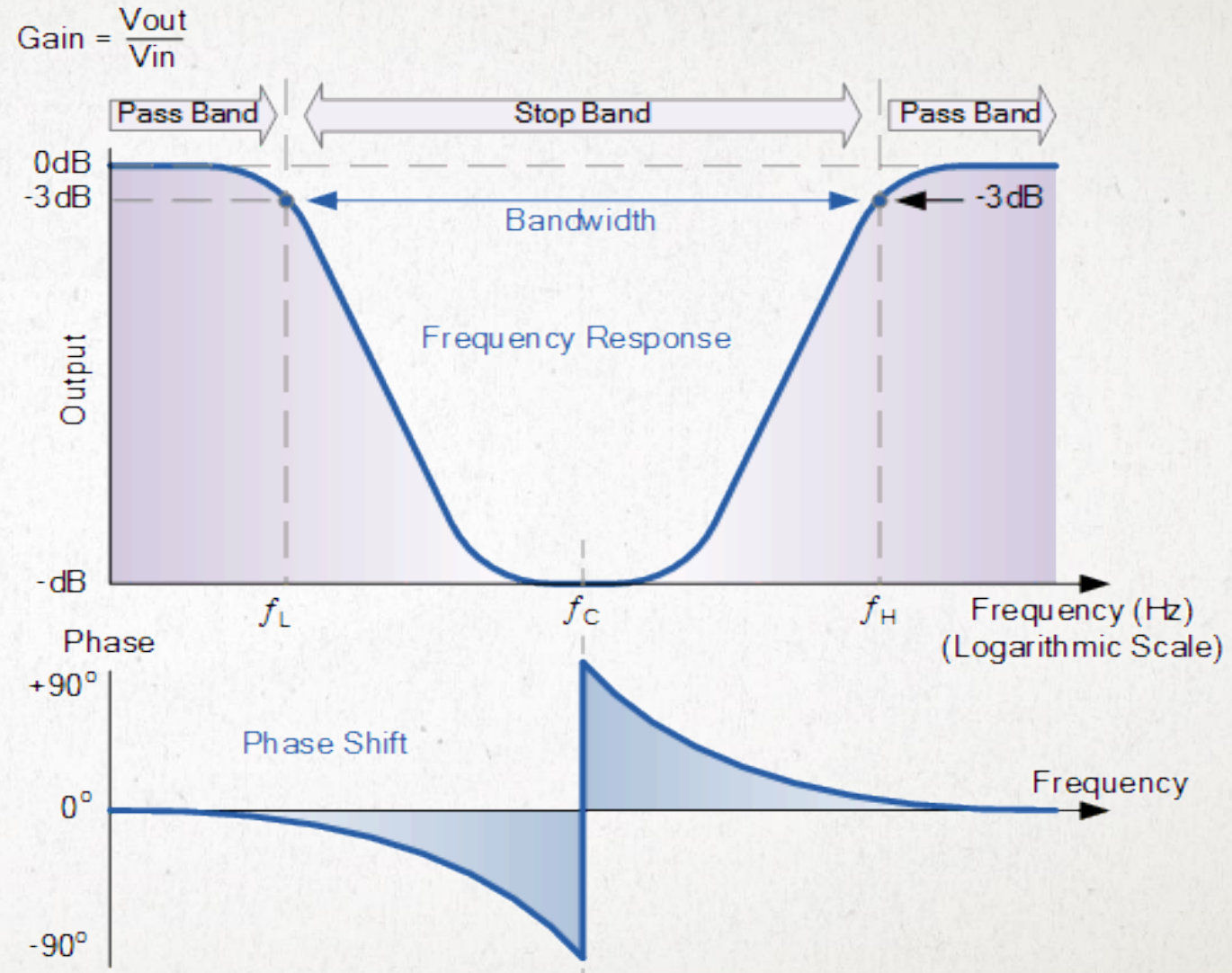
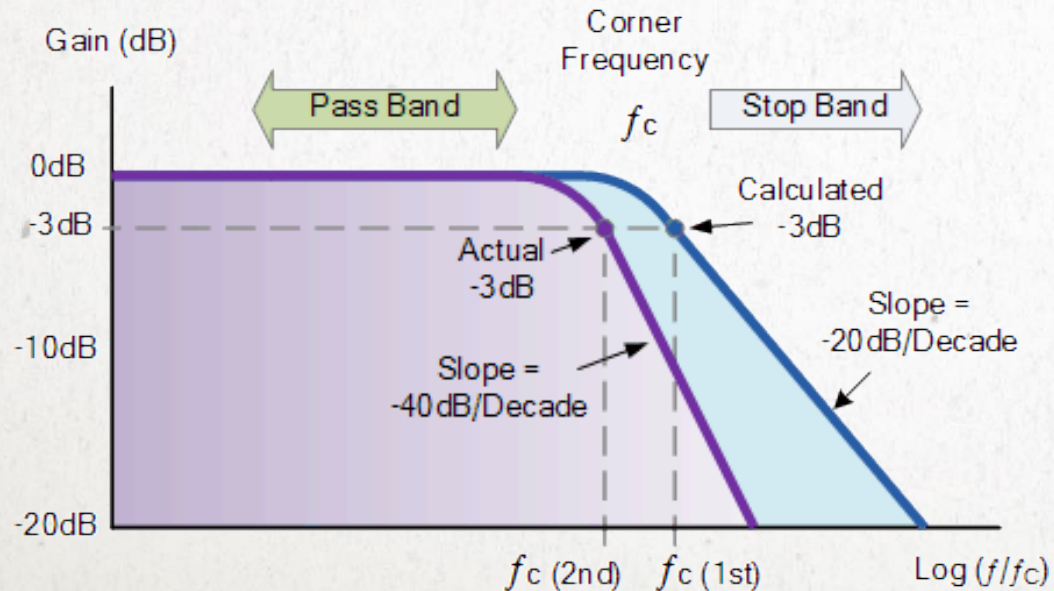
We can cut low and high frequency noise by use band pass filter.





# BAND STOP FILTER

We use Band Stop Filter to limit range of frequency that we don't need for use from signal. (opposite of BPF)



# DIFFICULTY AND MISSING

## ❖ Difficulty :

- Hard to understand.
- Hard to research sample.
- I have learned more about it but I still don't understand to use it.(take long time)

## ❖ Missing:

- Lately work



# PLANNING FOR 1<sup>ST</sup> MONTH

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Goal
1 <sup>st</sup> Week	Research	Meeting	Learn Amplifier	Presentation	Learn Filter	Learn Filter
2 <sup>nd</sup> Week	REST DAYS					
3 <sup>rd</sup> Week	Learn Filter	Learn Filter	Learn Filter	Learn Filter	Learn Filter	Learn Filter
4 <sup>th</sup> Week	Learn Amplifier	Learn Amp Meeting	Learn Amplifier	Presentation Learn Amp	Learn Amplifier	Learn Amplifier

Start : 10/08/2020



**THANK  
YOU**