

COSC 380  
INTERNSHIP  
SUMMER, 2018

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# ABOUT K&L MICROWAVE

- K&L is located on Northwood Dr in Salisbury, MD and employs more than 200 people
- A company “recognized by top-tier defense contractors and wireless infrastructure providers as a world leader in the design and manufacture of RF and microwave filters, duplexers, and integrated assemblies.”
- A part of the Dover Corporation which has locations worldwide
- The Dover Corporation’s interests are “Engineered Systems, Fluids and Refrigeration & Food Equipment”

Sources:

<http://www.klmicrowave.com/about.php>

<https://www.dovercorporation.com/about-us/overview/>

# ABOUT K&L MICROWAVE

- K&L produces RF and microwave filters
- A filter is an everyday object
- There are filters in radios, cell phones, computers
- A filter allows electronic users to only hear, see or utilize what they want



- There are several types of filters including Band Pass, High Pass, Low Pass, and Band Reject

Photo Source:

[https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiP7veS3ZffAhUq94MKHbbcBUjRx6BAgBEAU&url=https%3A%2F%2Fwww.shutterstock.com%2Fvideo%2Fclip-4442471-radio-tuning-on-old-illuminated-display&psig=AOvVaw1GylEuz\\_-Ms8xyoAOGbh5Q&ust=1544615996999421](https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiP7veS3ZffAhUq94MKHbbcBUjRx6BAgBEAU&url=https%3A%2F%2Fwww.shutterstock.com%2Fvideo%2Fclip-4442471-radio-tuning-on-old-illuminated-display&psig=AOvVaw1GylEuz_-Ms8xyoAOGbh5Q&ust=1544615996999421)

## A FILTER

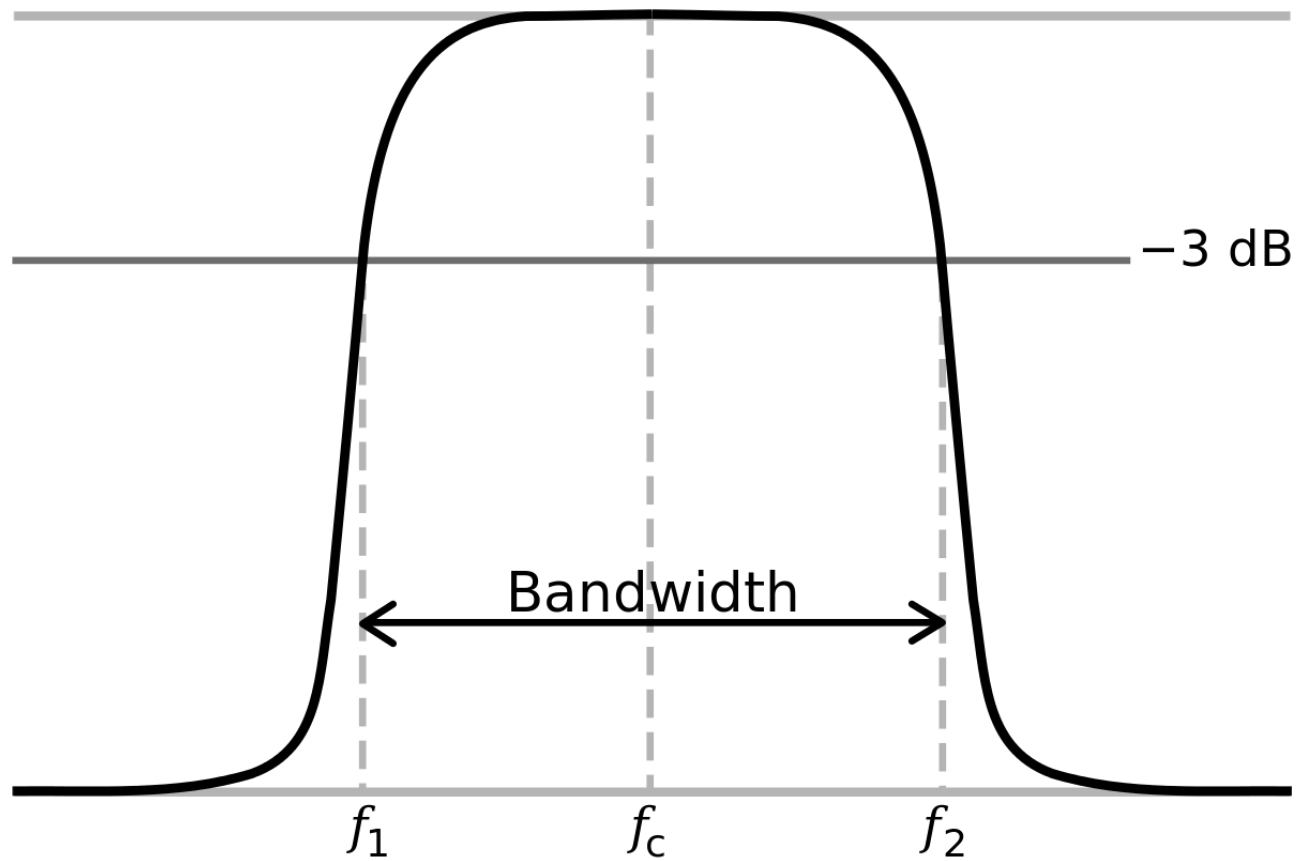


Photo Source:  
[https://en.wikipedia.org/wiki/Cutoff\\_frequency](https://en.wikipedia.org/wiki/Cutoff_frequency)

# WHAT I DID FOR K&L

- Updated a piece of the company's essential proprietary software
- These updates included:
  - Reformatting the existing code to the latest ASP.NET syntax
  - Making changes to the formatting and output per engineer's requests
  - Making a list of bugs as they were discovered

# CHALLENGES THAT AROSE

- The program is largely undocumented
- Learning to use ASP.NET C++, C#, and GitLab
- Learning rudimentary details of a filter
- The environment is very busy, and very few people could help with computer related problems
- The issues brought to me by the engineers were not always clear
- However, I was usually able to get a fairly quick response by e-mail

# HOW CLASS TIME PREPARED ME FOR THIS INTERNSHIP

- Computer classes taught the basic structure of C++, which made it easier to learn ASP.NET C++ and C#
- Math classes helped me understand the calculations within the program

# WHAT I HAVE LEARNED

- This internship has taught me a lot about:
  - The art of debugging
  - Tracing values to determine where they started and how they are calculated
  - Reading and understanding a block of complex code manually



# CONCLUSION

- K&L Microwave is a good company to work for
- I learned a lot about programming and filters by being able to dive in and tackle a real-life in use program
- Salisbury University prepared me for this experience by helping me learn math and programming