

Professional Self-Assessment Report

Purpose and Expectations

George Godby

4/10/2014

How have I satisfied the learning objectives in this course and contributed to team and course outcomes?

1. Describe various forms of technical communication and the reason for using them.

Though out the semester we have had many guest speakers come in and give talks on various forms of technical communications. We learned how to use Microsoft Project to make Gantt charts, which help plan out how all of the stages of our project would unfold over time. We were given extensive training on the Six Sigma program, which introduced us on how to use FAST diagrams, which use key words to build an easy to read project flow chart and the House of Quality concept that listed functions needed by customers, graphically presented in the shape of a house. Additionally, we were give exposure to the Voice of Customer program, which takes a list of questions to help to determine what the customer is expecting.

2. Write well-organized technical reports and proposals

Technical reports have served as the foundation of this class. Beginning with the proposal report, which required us to produce a high level description of how we planned to implement our project description and a listed a budget detailing parts descriptions and cost. Some of the technical documents were specific to the each individual and not a group effort, such as, the Application Note. The Application Note gave each individual in the group an opportunity to write a tutorial on how to perform a specific task related to the student's roll in the project. The course is concluded with a Final Report, which strings together all of the documents from though out the semester into a single document.

3. Comprehend appropriate content and style of oral presentations

We were given two opportunities during the semester to speak as a team in front of the class and discuss various topics. This was a good opportunity for our team to collaborate and come up with specific topics of interest and choose who would speak about each specific topic.

4. Access relevant standards and interpret their meaning and application

Since our project used Wi-Fi, we needed to learn and understand how the protocol works in order to enable two devices to communicate with each other. Radio Signal Strength (RSS) is expressed in decibels and phase is expressed in degrees and we needed to ensure that the code we wrote outputted the raw data in the correct units. This included taking the log of the raw data for decibel and arctangent of the raw data for phase.

5. Delineate the principal design criteria and constraints for an electrical or computer engineering design project

One driving factor in the initial stage of our project was cost. Aside from the fact that we had issues securing a sponsor, it was obvious from the beginning that our project was unique from a cost prospective and no matter what, we would have to go over the listed budget criteria given to the class. However, through doing research and contacting manufactures we were able to arrive at a dollar figure that all parties could agree on. We did a great amount of research and read many technical papers regarding the subject of our project, including how to use signal phase to discover signal Angle of Arrival (AOA) and how to write scripts in Python to carry out needed tasks programmatically.

6. Describe and understand the overall engineering design process

Our team worked both together as a group and individually. Once we outlined the high level tasks of the project. Each person took responsibility for a specific task, such as: Coding in Python, setting up a development board to run Linux, Wi-Fi connections, GPS, setting up components in software radio, keeping an eye on due dates ensuring that documents are being turned in on time.

7. Describe and understand contemporary industry practices and trends and key tools with respect to electrical and computer engineering

The heart of our team's project was a Software Defined Radio (SDR). These SDRs have been around for about ten years and are used primarily in education and research areas. Due to the fact that they are relatively new, there is not a great deal of information about them. Basically, everything that we wanted to do had to be coded from scratch in Python, which took a lot of time. We also made use of a Beagle Bone development board, which is a current 'hot' item in project development – So hot in fact that we almost could not obtain one.

8. Understand the benefits and potential problems of teaming, describe qualities and processes of effective teams, and describe the role of teamwork in system design

Designing with a team certainly gives the opportunity to get many tasks done in a small amount of time and then string the individual tasks together to make a great project.

9. Acquire and understand information contained in contemporary technical literature—e.g., trade journals, magazines, books, conference proceedings, and supplier literature—about hardware components, software, design tools, third-party suppliers and browse the web to acquire information about electrical and computer engineering, software, design tools, third-party suppliers, etc.

Just about everything that we did for this project was learned by reading relevant technical literature on the web. The successful completion of this project was based on one's ability to parse information from the web and understand it as it related to what we were trying to do. Even writing to Python code required hundreds of trip to the web and interaction with user forums to understand how to write certain functions.

What have I learned about the design process from my work on the design project?

I learned from the design process that it is just that – A process. There really are no short cuts in doing a design project, it requires an initial high level outline, research, team meetings, individuals doing specific tasks, threading together all of the tasks to make them all work together, meeting as a group to test smaller ‘beta’ portions of the project and tweaking all of the smaller ‘beta’ portions so that they all work together.

What technical communications have I done this semester?

I have had many technical communications this semester, starting with reaching out to the software radio manufacture and opening up a back and forth discussion about what product that we need to meet our project goals and budget. Additionally, I worked with the company’s technical support on how to set up some of the software radios configuration parameters. I also had multiple technical communications in online user groups with regards to how to code specific functions within Python

What is the impact of this course on my career objectives and professional goals?

I basically already have a pretty strong back ground in RF, but have not had any exposure to software radios and now I know enough about them to work the experience into a job resume and be able set one up without a problem. Additionally, I learned more about writing Python scripts than I ever cared to know; however, I was able to add ‘Python Scripts’ to my resume.

What are my primary strengths and weaknesses?

My primary strengths are in RF Communications, I have a distinct advantage over my fellow students in that I already have 20 years experience in the RF industry, for the RF part of our project I was very helpful to the team and offered lots of practical advice giving them practical

insight into how to set things up. My goal in recent years has been to become better at programming, so I can be a better rounded engineer.

Where would I like to be professionally five years after graduation?

As alluded to in the above paragraph, I have more experience and time in the field than other students and so my goals will be distinctly different than a typical student. In five years, I will have 25 years in with MSU and most likely will retire from the university and consult with the private sector wireless industry.

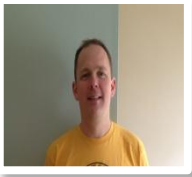
What lifelong-learning steps must I plan to undertake in order to achieve this five-year professional goal?

My goal is to ensure that I am ready to work as a wireless engineering consultant by keeping up on the relevant technologies, protocols and design software being used in the wireless industry, primarily what cell phone companies are doing with regards to next generation products. I have already reached out to companies about doing some design work for them, so I can be ready to make the switch to consulting in about six to seven years.

Appendix

Current Resume

George Godby



2198 Hamilton Rd
Okemos, MI 48864
godby@msu.edu

OBJECTIVES

Obtain an Electrical Engineering position specializing in RF Engineering

EDUCATION

Michigan State University

December 2014
Bachelors Degree
Engineering – Electrical

Lansing Community College

May 1997
Associate Degree
Electronics – Digital Systems

Lansing Community College

December 1996
Associate Degree
Electronics – RF Communications

EXPERIENCE

Broadband Mechanic II - RF Specialist | Michigan State University

March 1995 - Present

Maintenance, installation and repair of RF equipment and electronics. Electronic bench repair, including use of various meters, oscilloscope and spectrum analyzer. RF site surveys. Design RF Distributed Antenna Systems (DAS) for campus buildings and service tunnels. Performing RF calculations for system and component design. Experience in computer programming languages and scripts. Experience in analyzing data and writing algorithms to extract necessary information. Exposure to Matlab, circuit design software and Autocad. Well versed in design using Microsoft Visio and advanced training in Excel spreadsheets.

SKILLS

- ☐ Repair, installation and trouble-shooting of equipment associated with RF communications
- ☐ Base Station Optimization, Tuning and Alignment
- ☐ Design of RF communication networks
- ☐ Distributed Antenna Systems (DAS)
- ☐ Link Budget Analysis
- ☐ Project Engineering and management
- ☐ Wireless Site survey with spectrum analyzer of buildings and outdoor areas for RF characteristics typically associated with cell phone, Wi-Fi and two way radio communications
- ☐ FCC General Class License
- ☐ Advanced certifications in Microsoft Word and Excel
- ☐ Well versed in the use of Microsoft Visio for system and schematic design
- ☐ Programming languages: C, C# and HTML
- ☐ Scripting languages: Python
- ☐ Familiar with computer networks operation and configuration

BACKGROUND

I am a self starter and work well under limited supervision with 19 years of experience working as an RF specialist for Michigan State University. I pride myself on being well organized and I have excellent time management skills.

I am currently a senior in Electrical Engineering at Michigan State University and I have one remaining engineering classes to complete. I am on track for graduation in 2014.