

1 PROFESSIONAL SELF-ASSESSMENT REPORT

Matthew Christy
April 18, 2007

Question 1:

How have I satisfied the learning objectives in this course and contributed to team and course outcomes? Cite each learning objective and refer to examples throughout the term. The course learning objectives were listed on the course syllabus distributed the first week of class (see the course web site).

Answer:

As stated in the course syllabus, each design team had to develop a product containing an embedded computer, design and build a digital circuit, program a microprocessor and understand ethical issues faced by engineers. With the conclusion to this course, I have achieved these objectives in numerous ways. With the required lab work for this course, I was able to learn how to communicate/program between a microprocessor and fellow components. These components consisted of several diodes and resistors. Not only did lab work affect my learning abilities, but also the team project.

Through this project I was required to research and discuss with fellow members of my group and draw conclusions on the best way to store data and the amount of space needed. Going through several trials and errors, a conclusion was finally drawn. The best component that need for the purpose of our project was serial flash memory with 10 megabits of memory. After determining which component would suffice for our project, the next step was communication between the flash memory and the microprocessor. Programming and communication between the two took several hours to accomplish.

As for the ethics side of the course, I have learned that ethical problems reside throughout the engineering field. Depending on how you were raised and the religion you grow up learning has a great influence on your ethical decisions. The example used in class about the antenna dilemma is a great example of ethical problems in the engineering environment. Although this case turned out to be fatal and drew great attention from the media, not all ethical decisions are

this major.

Question 2:

What have I learned about the design process from my work on the design project. Restate your portion of the overall project as defined in your team's design proposal, which was developed and completed in week 6 of the semester. Describe your work during the semester on your TECHNICAL portion of the design project. In your write-up discuss your work in terms of the overall engineering design process – e.g., project justification, identification of constraints, establishment of design criteria, establishment of timetables, the partitioning of work, project monitoring, and project evaluation. Also discuss your work in terms of design iterations that occurred during the semester.

Answer:

One of the tasks I was in charge of for this project was to research how much energy is currently being consumed in the state of Michigan as compared to the nation as a whole. An interesting fact that I found was that forty percent of energy consumed in the home is consumed by HVAC (heating, ventilation and air-conditioning) equipment. With the development of our project, we are hoping to decrease this number significantly. After this data was gathered I then assisted in the design and construction of the power supply along with communication between the memory and the microprocessor.

When determining the right amount of space needed to store data, I had to take into consideration the amount of temperature samples our sponsor required us to record. Knowing this number, a conclusion was made that the amount of space on-board the microprocessor was not enough and additional flash memory was needed. An estimated amount of 10 megabits would be sufficient and would contain enough space for future upgrades. While memory was on order, I assisted in the design of the power supply. Before designing the circuit, we had to consider our constraints. In order to run the thermostat, 600mA of current was needed along with five volts and three watts of power. Knowing these dimensions, we then had to decide between which components to use to meet these specifications. The completion of this circuit took several days.

Question 3:

What technical communications have I done this semester? List the reports and presentations you have help prepare. Also indicate those presentations for which you were a speaker.

Answer:

At the beginning of the semester, a proposal was required. Being the documentation manager for the group, I had the privilege to learn what a proposal was and how one was written. This paper took me numerous hours to write. The reason being, I had to fully understand the project and the design the team wanted to follow while also understanding the need of the customers. The paper had to be written in a way to grab the attention of the customer. This was done by providing supporting details to our project and presenting the features of the project in a way the customer would buy it. Not only did I write the proposal but the majority of the following reports throughout the semester such as the progress reports and the technical write up.

As for presentation purposes, I assisted in writing and designing both the technical and proposal presentations. I took charge along with another group member in organizing and explaining to each group member who was going to talk about what. In order for me to determine who was going to talk about certain aspects of the presentations, I had to fully understand all the material in order to divide it evenly. For my portion of the oral presentations, I researched and explained the impact power consumption has on the environment and the possibility of our product decreasing the amount of energy consumed. For the technical lecture, I explained how I²C (inter-integrated circuit) communicated between to two serial wires. These wires are known as the master and slave.

Question 4:

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

Answer:

The impact that this course on my career objectives and professional goals gave me good incite to working on engineering teams. This is my first experience working in a team environment. I believe that this experience has helped me in understanding how engineering team work out in the real world. By learning from this experience I will be better prepared for what is to come in future endeavors.

Question 5:

What are my primary strengths and weaknesses?

Answer:

Throughout the course I have developed recognition for both my strengths and my weaknesses. One of my strengths is team management. Even though this was not my role within the group, I still took charge in scheduling meeting and organizing group deadlines. Another one of my strength is organization. I made sure the team was on time for required assignments and presentations, and would always organize the group to achieve the specified deadlines.

As for my weaknesses, technical work and analysis was one of them. Although I have taken numerous classes throughout my college career I felt I lacked technical information. Most of the group members have already been exposed to engineering work or have prior experience before this course. Although this was a struggle for me, I still made effort to understand and have my fellow group members to teach me. One other weakness is public speaking. I was nervous speaking in the first presentation given by the group. Once this presentation was over I was able to learn from it and feel more comfortable speaking in front of large groups.

Question 6:

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

Answer:

Five years from now I plan on continuing my education to another level. I would like to

have a steady job and hopefully complete my master's degree in a business related field. While achieving my master's degree I would like to broaden my range of experience by working at several different jobs. This would make me more volatile in the work force, yet give me a better idea of what I want to do.

Question 7:

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

Answer:

In order to achieve these professional goals, I first have to understand and gather information on what it takes to accomplish them. For my master's degree, after deciding what school I plan on attending, I would need to figure out what is required to be accepted into the program. For the purpose of finding a job, my resume has to continually be edited and adjusted to meet specified job applying for.

1 Matthew E. Christy

christym@msu.edu

Current Address

164 W. Shaw Hall
East Lansing, MI 48825
Cell Phone (801) 529-3214

Permanent Address

1531 East 2700 North
Layton, UT 84040
(801) 771-4470

OBJECTIVE Internship in an electrical engineering related field.

EDUCATION Michigan State University, *East Lansing, MI*
B.A. in Electrical Engineering - expected graduation Dec 2007
Accepted into Michigan State College of Engineering Sept 2005
G.P.A. 2.8
Courses in computer aided design, electromagnetic fields and waves, communication systems, communication and computer security, digital and analog circuit analysis and power systems.

CLASSROOM EXPERIENCE

- Operated programmable robotic arm to complete tasks using a lathe and mill.
- Designed a Y-shaped micro-strip to meet predetermined designed specification.
- Designed and built an antenna that successfully transmitted and received signals from a communication satellite.

WORK HISTORY

Fall 2006 Research Assistant, Michigan State University, MI

- Researched and implemented four-point conductivity measurement on flat surface metals to determine metals characteristics.
- Gathered data during non destructive inspection using eddy current analysis at very low frequencies to detect cracks beneath the surface of the test metal.
- Designed and built an aluminum electronic cabinet to house an analog-to-digital card for video analysis.

Summer 2006 Research Assistant, University of California at Davis, CA

- Designed a machine to analyze ambient air particles using optical analysis. This analysis was used to determine air quality and was computable through factors of time, size and composition.
- Simulated natural vegetated habitat within a wind tunnel and gathered data on carbon decay.
- Collected acrolein samples in the field environment and used the data to support human health studies.

Summer 2005 & 2004 Facility Engineering (Assistant), Hill Air Force Base (HAFB), UT

- Aided design of new duct system for sand blasting units to maximize particle collection.
- Monitored and recorded velocity and pressure readings of multiple sand blasting units to

troubleshoot air volume shortages.

- Helped redesign damper to improve facility industrial HVAC system.
- Supervised contractor installation of several industrial stand-by power generators.
- Performed as LEAN Team member
 - o Aided Time-Motion study to reduce cost and time required to remanufacture F-16 and C-130 landing gear parts.
 - o Prepared slide shows to present to high level Air Force decision makers who monitor the progress and guide the LEAN team.
- Drafted floor plan for the F-16 testing facility to efficiently arrange ventilation systems, JP-8 fuel piping and facility drainage system.

Summer 2003 Missile Transportation & Handling Section (Laborer), HAFB, UT

- Prepared tractors and trailers for transportation of Minuteman and Peacekeeper ICBM solid rocket motors.
- Loaded, unloaded and secured motor carriages for transportation and storage
- Monitored warehouse inventories of ICBM support equipment and test equipment valued over \$1.3 million.

SPECIAL SKILLS

- Proficient in Microsoft Office Suite, Matlab, AutoCAD, C++, UniGraphics and PSpice.

ACTIVITIES/HONORS

- Eagle Scout 2001
- Volunteered well over 200 hours in support of various service projects
- Competed in intramural soccer leagues – 2005 MSU champions

GOALS IN LIFE

- Work with state-of-the-art technology
- Continue engineering education to doctorate level
- Be a significant participant in the team to achieve American energy independence
- Contribute to safe and efficient space exploration
- Patent five designs or processes

REFERENCES

Alex Abela	2390 Lake Marie Dr., Santa Maria, CA 93455	805-934-2873
Lee Wise	517 Carina Dr., Lompoc, CA 93436	805-733-4246
Thomas Cahill	University of California – Davis	530-752-1120
Jeff Gresham	6253 Hickory Ave., HAFB, UT 84056	801-430-1410