**Graduate Attribute Assessment**

**ELEC 291**

*Lab section: 20C Team bench #: 2A*

*Student name Student number*

Clarence Su 36387132

Andy Ruan 36863141

Kevin Wong 31205132

**1) Role of Engineering**:

Answer the following questions. You can either consider the general role of computer engineering or, narrowed down to those that pertain more to what we have learned in ELEC 291.

A) Briefly describe an example of the role of computer engineering in health.

Computer Engineers combine computer science and electrical engineering in order to build computer systems to perform a certain task. For health, a computer engineer could be making a system for Electronic Patient Records (EPR). This EPR system could help different doctors monitor the same patients more efficiently and effectively because there will be communicate between different doctors that indicates the patient’s history of illnesses.Therefore, it will allow patients to receive better health treatment from doctors.

B) Briefly describe an example of the role of computer engineering in safety.

Computer Engineers are crucial for safety as well. They design and implement security features such as security cameras, fingerprint recognition software and many more computer devices in order to protect the safety of people. Security cameras are used to monitor any criminal activities to help the police investigate issues in order to protect human safety.Devices such as fingerprint recognition help ordinary humans protect their property such as household, cars and cellphones.

C) Briefly describe an example of the role of computer engineering in public welfare.

Computer engineers are capable of developing computer systems for public welfare. For instance, computer engineers could be developing computer systems for nonprofits to work in third world countries where technology is not as advanced as the first world countries. A simple example could be a simple communication device for the workers in developing countries that build schools or infrastructure. The communication device could be an immense impact because it could help these workers relay messages back and forth in order to to work more efficiently and completing the construction faster.

D) Briefly describe an example of the role of computer engineering in the environment

Computer Engineering has been damaging the environment with the electronic components of computers. The waste from the metal components are leaking into rivers and damaging animal’s habitat.

One way that Computer engineers are improving the environment is the development of electric vehicles such as Tesla vehicles. Computer Engineers are designing efficient computer systems that do not rely on fossil fuels in order to drive a car. Reducing the use of fossil fuels reduces carbon dioxide emissions in the atmosphere. As many people know, carbon dioxide is a main contributor to event called global warming. Therefore, by reducing carbon dioxide emissions, computer engineers are reducing the likelihood of global warming.

**2) Professional Behaviour**:

Consider that you are about to demo a project for ELEC 291. For such a scenario, answer the following questions:

E) Describe and elaborate the accepted good engineering practice (you may look up APEG-BC for good engineering practice).

APEG-BC states that engineers should “hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace”. For demoing a project for ELEC 291, students should consider all safety procedures regarding the project and regarding the laboratory. For instance, students should be wearing safety goggles if their demo requires it, they should be cleaning the benches of anything hazardous to the project that may cause explosions or fires.

Additionally, APEG-BC states that engineers should “Keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practice and provide opportunities for the professional development of their associates; “ For ELEC 291 demos, students should discuss engineering design considerations in order to advance the body of knowledge outlined by APEG-BC’s Code of Ethics.

Lastly, according to APEG-BC, “Conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment;”. Students should collaborate effectively with their peers and give credit where it is due. This allows students to gain good teamwork and communication skills among other engineers.

F) Describe accepted professional etiquette and conduct.

Accepted professional etiquette and conduct when demoing a project for ELEC 291 is when students are punctual, courteous and display competence in the work they have completed. Students can clearly explain to the TA the theory used in the labs. Students should also show respect to the TA and accept criticism when given.

**3) Integration of Standards**:

Consider that you are planning the ELEC 291 Project 2. For such a scenario, answer the following questions:

G) Explain the importance of assessing and understanding regulations and standards. Elaborate with examples, such as the use of radio spectrum, or WiFi, …

For project 2, the requirement is that the project needs to use the Internet to do some processing like in Internet of Things. It is required for students to follow this restriction otherwise they would be violating one of the rules for APEG-BC’s Code of Ethics: “Report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by members, licensees or others”. For project 2 in ELEC 291, students must understand the use of Internet and implement it in their project. It is important to follow standards in project because in the real world, there are safety and economic concerns with a project. By not following the standard, engineers are making projects that are potentially illegal and dangerous for the users. For analogy is for a bridge construction project, if there was a standard tension for the bridge to stay balanced and an engineer ignored that specification, the bridge may collapse. This analogy indicates the importance of following regulations and standards for engineering projects.

H) Look up *life cycle analysis*. Describe how understanding life cycle analysis would help.

Life cycle analysis is the systematic approach of looking at project 2’s complete life cycle. From the raw materials of the project until the final product. In ELEC 291, the final product is the completed project used for the demo. It is necessary to plan out the steps our team needs to take in order to build the project into the something our team could demo, because team needs to pace ourselves in order to complete the project in time. For project 2, the team needs to come up with the idea themselves and complete the project in approximately 3 weeks. Using the life cycle analysis, the team should be able to determine the steps needed to complete the project. For instance, figuring out which wifi should the team should use in order to use the Internet, writing code to implement desired functionality, designing the hardware to interact with the software. These are all steps in the life cycle analysis for project 2. If teams are clear on what is required to get the project from raw materials to a demo-able project, the team will certainly finish the project on time.