**VIP Senior Design Reflection, Outcomes, and Rubric**

Student: Major: Course: ECE 47900

Team/Project: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Term: \_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Outcome** | **Describe how you have demonstrated each outcome, and the location of the evidence to support each claim.** |
| 1. An ability to apply engineering design to create a product that meets the specified needs of this engineering design experience with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
 |  |
| 1. An ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions related to the development of the product of this engineering design experience.
 |  |
| 1. An ability to identify, formulate, and solve complex engineering problems arising from this engineering design experience by applying principles of engineering, science, and mathematics.
 |  |
| 1. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives associated with this design experience.
 |  |
| 1. An ability to communicate effectively with a range of audiences appropriate to this design experience in both a written report and oral presentation.
 |  |
| 1. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the engineering design experience associated with this course.
 |  |
| 1. An ability to recognize ethical and professional responsibilities associated with this engineering design experience and make informed judgments which must consider the impact of the product of this engineering design experience in global, economic, environmental, and societal contexts.
 |  |

1. Describe your personal contributions to the project.
2. Describe how your contributions to this project built on the knowledge and skills you acquired in earlier course work.
3. Describe how you acquired and applied new knowledge as needed to contribute to this project. What learning strategies[11](#_bookmark11) did you employ to do so?
4. Discuss your ethical and professional responsibilities as they relate to this engineering design experience.
5. Consider what the impact of the product of this engineering design experience could have in economic, environmental, societal, and global contexts. Discuss how you would make (or did make) an informed judgement[12](#_bookmark12) as to your product’s impact in each of these four contexts?

9 Engineering standards are documents that define the characteristics of a product, process or service to meet technical, economic, environmental, and/or societal challenges. The IEEE is a good source for finding appropriate standards (standards.ieee.org).

10 Basic audience types include executives, managers, investors, marketers, peers, subordinates, and the general public. The composition of these audiences can include experts, knowledgeable non-experts, and laypersons. Actual audiences may be very specific or be a mixture of these types and compositions. The nature of any of these audiences can be sympathetic, persuadable, apathetic, critical, hostile, or a combination of these.

11 Learning is “the acquisition of knowledge or skills through study, experience, or being taught.” Specific methods to acquire and apply new knowledge include: self-study, short courses, professional conferences/forums, review of the professional literature, consultation with experts, etc.

12 An informed judgement is based on information, not personal opinion.

*To be completed by the VIP advisor:*

|  |  |
| --- | --- |
| **Accomplishments and effort:** \_\_Quantity of project accomplishments\_\_ Quality of project accomplishments\_\_ Completion of team assignments \_\_ Initiative \_\_ Learning needed for the project **\_\_ Overall** **Documentation:**\_\_ Individual documentation\_\_ Contributions to team documentation\_\_ Contributions to team poster\_\_ Use of appropriate tools (e.g., Git)**\_\_ Overall**  | **Teamwork and Interactions:** \_\_ Team/sub-team meeting attendance (\_/\_)\_\_ On-time attendance\_\_ Team/sub-team meeting participation\_\_ Contributes useful ideas\_\_ Recognizes others’ ideas\_\_ Focuses effort on achieving goals\_\_ Involves others in efforts\_\_ Assists others with their efforts\_\_ Manages time and tasks well\_\_ Leadership skills\_\_ Written communication skills\_\_ Oral communication skills\_\_ PDH participation/attendance (\_\_/10)**\_\_ Overall** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicators**(rate each indicator on a scale from 1 to 4, where 4 is “Excellent”, 3 is “Good”, 2 is “Adequate/Acceptable”, and 1 is “Inadequate/Unacceptable” | **Overall Rating for Outcome** | **Weight** | **Rating x Weight** |
| 1. An ability to apply engineering design to create a product that meets the specified needs of this engineering design experience with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
 |  | 30% |  |
| 1. An ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions related to the development of the product of this engineering design experience.
 |  | 15% |  |
| 1. An ability to identify, formulate, and solve complex engineering problems arising from this engineering design experience by applying principles of engineering, science, and mathematics.
 |  | 15% |  |
| 1. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives associated with this design experience.
 |  | 10% |  |
| 1. An ability to communicate effectively with a range of audiences appropriate to this design experience in both a written report and oral presentation.
 |  | 10% |  |
| 1. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the engineering design experience associated with this course.
 |  | 10% |  |
| 1. An ability to recognize ethical and professional responsibilities associated with this engineering design experience and make informed judgments which must consider the impact of the product of this engineering design experience in global, economic, environmental, and societal contexts.
 |  | 10% |  |
| **Total** |  |

**Expected Grade Based on Current Performance:**

**Comments:**

**Senior Design Learning Outcomes Rubric - VIP**

Student: Major: Course: \_\_\_\_ECE 47900\_\_\_\_\_

Team: Term:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Outcome** | **Indicators**(rate each indicator on a scale from 1 to 4, where 4 is “Excellent”, 3 is “Good”, 2 is “Adequate/Acceptable”, and 1 is “Inadequate/Unacceptable” | **Rating** |
| i. | An ability to apply engineering design to create a product that meets the specified needs of this engineering design experience with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. | Student was proficient at applying engineering design processes to create the product resulting from this senior design experience. |  |
| Careful consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors was evident. |  |
| ii. | An ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions related to the development of the product of this engineering design experience. | Student demonstrated a strong ability to develop and conduct experimentation, analyze and interpret data in the context of this senior design experience. |  |
| Student demonstrated sound engineering judgment to draw conclusions related to the development of the product of this senior design experience. |  |
| iii. | An ability to identify, formulate, and solve complex engineering problems arising from this engineering design experience by applying principles of engineering, science, and mathematics. | This design experience contained elements associated with complex engineering problems (see definitions). |  |
| Student demonstrated ability to apply principles of engineering, science, and mathematics in the context of this senior design experience. |  |
| iv. | An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives associated with this design experience. | Student demonstrated leadership. |  |
| Student contributed to creating a collaborative and inclusive environment. |  |
| Student fully participated in establishing team goals, planning tasks, meeting objectives. |  |
| v. | An ability to communicate effectively with a range of audiences appropriate to this design experience in both a written report and oral presentation. | The quality of the student's contributions to the written report(s) associated with this senior design experience was excellent. |  |
| Student demonstrated effective oral presentation skills. |  |
| vi. | An ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the engineering design experience associated with this course. | Student demonstrated an ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the product of this senior design experience. |  |
| vii. | An ability to recognize ethical and professional responsibilities associated with this engineering design experience and make informed judgments which must consider the impact of the product of this engineering design experience in global, economic, environmental, and societal contexts. | Student demonstrated an ability to recognize ethical and professional responsibilities associated with this engineering design experience. |  |
| Student demonstrated an ability to make informed judgments in the context of this senior design experience. |  |
| Careful consideration of the impact of the product of this senior design experience in global, economic, environmental, and societal contexts was evident. |  |