

Name \_\_\_\_\_

**Directions:** As you listen to the presentation, take notes and answer the following questions.

1. Describe three ways that the body resembles a machine. What are some of its limitations?

1.

2.

3.

Limitations:

2. What is biomedical engineering? How does it address the body as a machine?

3. List the general steps of the BME Design Process. For each step, compare how the engineering and medical fields approach each step.

1.

2.

3.

4.

5.

6.

4. What do you think is the most important ethical obligation that a biomedical engineer has? Why? Name 2-3 situations where this obligation would be relevant. *There is no single correct answer—just provide reasoning to back up your answer.*

### **Brainstorm Applications**

**Directions:** Name a specific problem or application related to biomedical engineering (for example, a disease, treatment, medicine, device, surgery, organ, tissue type, complication, lab technique, medical instrument, etc.) that can be addressed or enhanced by BME.

1. What is the problem or application that can be solved or improved?



- c. **Generate ideas:** What solutions already exist, and what aspects of these solutions can be improved upon? If no solutions exist, why haven't they been proposed yet?
- d. **Select approach:** Why is your solution advantageous? How does it meet the conditions and specifications stated in part (a)? What risks and benefits does it offer? Why is it appropriate for the patient population you have in mind? Is it feasible?
- e. **Develop design:** How would the solution function? What would the structure be like? *The structure does not need to be complete—just demonstrate that you've thought of how this might be executed or implemented. It may be useful to sketch out the design.*
- f. **Test solution:** How might you test your solution/improvement? List 2-3 potential options. How will you know that your product is meeting the specifications? What feedback or data would you collect? What ethical considerations might you need to have when testing? *Examples such as animal testing, clinical trials, lab experiments, surveys (either before or after treatment), observations, interviews, user testing*