**3D Bone Prototype Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Score earned 🡺** | **4 (best)** | **3** | **2** | **1** |
| **BoneDiagrams** | Diagrams are neat with clear measurements and labeling for all components. | Diagrams are neat with clear measurements and labeling for most components. | Diagrams provide clear measurements and labeling for most components. | Diagrams do not show measurements clearly or are otherwise inadequately labeled. |
| **Construction Materials** | Appropriate materials were selected and creatively modified in ways that made them even better. | Appropriate materials were selected and there was an attempt at creative modification to make them even better. | Appropriate materials were selected. | Inappropriate materials were selected and contributed to a product that performed poorly. |
| **Construction** | Great care was taken in the fabrication process so that the structure is neat, attractive and follows plans accurately. | Fabrication was careful and accurate for the most part, but 1-2 details could have been refined for a better end product. | Fabrication accurately followed the plans, but 3-4 details could have been refined for a better end product. | Fabrication appears careless and/or haphazard. Many details need refinement for a strong or attractive product. |
| **Testing / Modifications** | Clear evidence of troubleshooting, testing and refinements based on data or scientific principles. | Clear evidence of troubleshooting, testing and refinements. | Some evidence of troubleshooting, testing and refinements. | Little evidence of troubleshooting, testing or refinements. |
| **Knowledge** | Explanations by all group members indicate a clear and accurate understanding of scientific principles underlying the construction and modifications. | Explanations by all group members indicate a relatively accurate understanding of scientific principles underlying the construction and modifications. | Explanations by most group members indicate relatively accurate understanding of scientific principles underlying the construction and modifications. | Explanations by several members of the group do not illustrate much understanding of scientific principles underlying the construction and modifications. |
| **Mass** | The mass of the bone is within 5% of the real turkey femur mass. | The mass of the bone is within 15% of the real turkey femur mass. | The mass of the bone is within 25% of the real turkey femur mass. | The mass of the bone is not within 25% of the real turkey femur mass. |
| **Density** | The density of the bone is within 5% of the real turkey femur density. | The density of the bone is within 15% of the real turkey femur density. | The density of the bone is within 25% of the real turkey femur density. | The density of the bone is not within 25% of the real turkey femur density. |