**Online Appendix**

**Rubric and Course Schedule**

**Elements of Graph Interpretation in Context of Experimental Design in Behavioral Biology**

***Rubric Used for Research Purposes With Each Element Worth 1 Point (16 Points Total)***

|  |  |
| --- | --- |
| **Elements of Graph Interpretation in Context of Experimental Design in Behavioral Biology** | **Point Value** |
| 1. **Formulating a Research Question from a Graph** |  |
| * 1. Statement includes correct Independent Variable (IV) | 1 |
| * 1. Statement includes correct Dependent Variable (DV) | 1 |
| * 1. Directionality and reasoning, e.g., DV impacts IV is clear | 1 |
| ***Score for 1. Research Question Subcategory*** | **3** |
| 1. **Formulating a Hypothesis from a Graph** |  |
| * 1. Statement includes correct IV | 1 |
| * 1. Statement includes correct DV | 1 |
| * 1. Directionality and reasoning, e.g., DV impacts IV are clear | 1 |
| ***Score for 2. Hypothesis Subcategory*** | **3** |
| 1. **Graphed Variables (Extracting Experimental Design Details from a Graph)** |  |
| * 1. Correctly identifies (names) the IV | 1 |
| * 1. Correctly identifies (names) the DV | 1 |
| * 1. Evidence of relationship between the IV and DV provided | 1 |
| ***Score for 3. Graphed Variables Subcategory*** | 3 |
| 1. **Graph Purpose** |  |
| * 1. Recognize the nature of the data, e.g. raw data, averages, proportions, percentages, etc. | 1 |
| * 1. Alignment between the research question and data summary techniques used to display data | 1 |
| * 1. Shows evidence of purpose of the graph displayed (from Guide to Data Displays) | 1 |
| ***Score for 4. Graph Purpose Subcategory*** | 3 |
| 1. **Conclusions Reached from the Graph** |  |
| * 1. Conclusion includes an accurate relationship between the IV and DV | 1 |
| * 1. Focus on specific data trends or summary statistics (error bars, components of box and whisker plots, etc.) shown in the graph that are aligned with the question posed by the graph maker | 1 |
| * 1. Conclusion includes a description of the trends in data displayed | 1 |
| * 1. Places conclusion in context of disciplinary (biology) content knowledge | 1 |
| ***Score for 5. Conclusions Subcategory*** | 4 |
| **TOTAL GRAPH INTERPRETATION SCORE** | 16 |

**Course Schedule**

| **Week** | **Topic** |
| --- | --- |
| 1 | Course introduction  Science of Animal Behavior  Methods in Animal Behavior |
| 2 | Evolution and Animal Behavior |
| 3 | Behavioral Genetics |
| 4 | Sensory Systems and Behavior |
|  | ***EXAM 1*** |
| 5 | Communication |
| 6 | Learning and Cognition |
| 7 | Foraging and Antipredator Behavior |
|  | ***EXAM 2*** |
| 8 | Dispersal and Migration |
| 9 | Habitat Selection, Territoriality, and Aggression;  Sociality |
| 10 | Mating Behavior and Mating Systems |
| 11 | Parental Care |
|  | ***EXAM 3*** |