Warm-Up, August 27th 2024 (INTD262)

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1 The Demarcation Problem

1. Rank the following areas of study from the *most* scientific to the *least* scientific: (a) political science, (b) economics, (c) physics, and (d) mathematics. Discuss how you chose the order.

2. Group the following areas of study into *scientific*, *un-scientific*, and *pseudo-scientific* categories:

   - A: techniques within digital music production
   - B: the effect of global warming on glacial melt in polar regions
   - C: the biological evolution of human beings
   - D: a branch of engineering associated with GPS signal processing
   - E: the atomic spectroscopy of large organic molecules
   - F: psychological studies of implicit bias
   - G: cold nuclear fusion reactions
   - H: the economics of minimum wage in adjacent states in the USA
   - I: comparative studies of sacred texts in Southeast Asia
   - J: the link between vaccines and autism

2 The Scientific Method, Deductive and Inductive Reasoning

1. (a) Write down a version of *the scientific method* that you potentially learned in high school, or at Whittier College. (b) From the list of areas of study in the previous exercise, choose an area you deemed scientific. (c) Design and discuss a hypothetical experiment or analysis within that area that follows the scientific method from part (a).

2. Determine whether the following statements are examples of *inductive* or *deductive* reasoning: (a) There are no camels in Germany, and Hamburg is a city in Germany, so there are no camels in Hamburg. (b) Each swan we have observed are white, so we conclude that all swans are white.