Pre-lab Homework

1. Write down the **overall** energy balance equation for the system. What quantities will you need to measure in order to check the energy balance?

2. Can temperature of the cold water at the outlet be higher than temperature of the hot water at
   (a) the inlet,
   (b) the outlet?
   Justify your answer.

3. What is the overall heat transfer coefficient \( U \) of a heat exchanger? Describe how you will measure \( U \) experimentally.

4. What component of the overall heat transfer resistance (convective or conductive) do you expect to be dominant? Explain why,

5. List factors affecting the convective heat transfer coefficient. Which of these factors will be varied in this experiment? Explain how you will vary these factors and how you will identify the convective heat transfer coefficients based on your experimental measurements.