BMEN 3010 BME I
Professor Wang
Homework Coversheet

Homework Policy

1) You are welcome to discuss class concepts and the homework problems with one another. However, all final answers, calculations, and explanations on the homework you turn in must be your own work.
2) You may not use copies of homework assignments (from previous years or the current year) or accept help from students who took the class in previous years. You may not share your graded homework with next year's class or help them with their assignments.
3) All homework assignments must be turned in before the deadline and must be accompanied by a signed coversheet. Unexcused late homework will be assessed a 5% penalty each day.

SEAS Contract of Academic Integrity

I affirm that I will not plagiarize, use unauthorized materials, or give or receive illegitimate help on assignments, papers, or examinations. I will also uphold equity and honesty in the evaluation of my work and the work of others. I do so to sustain a community built around this Code of Honor.

I certify that my work on this assignment is original and in compliance with the class homework policy and the SEAS Code of Honor.

Signature_____ Date _____

To my knowledge, no member of this class has violated the homework policy, breached the SEAS Code of Honor, or acted unethically with respect to this class.

Signature_____ Date _____

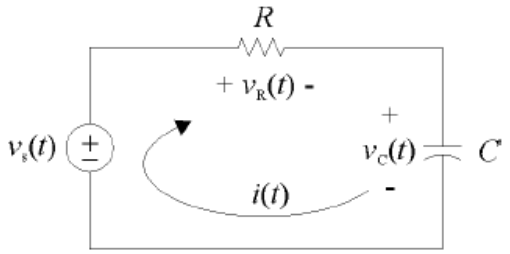
Name (Print)_____

If you are unable to sign this coversheet, please meet with Professor Wang as soon as possible to discuss the issue.

BMEN 3010 Biomedical Instrumentation module

Homework 2 Due: 11:59pm on Nov. 3rd, 2025

1. Find the voltage across the resistor R of an RC circuit (see below) in response to a unit step function input.



2. Use methods that we discussed in lecture 5 to demonstrate that the voltage across the resistor of the RC circuit in problem 1 is high-pass-filtered input signal. You may assume RC=1.

Hint: you may need to use equation:

$$A \cdot \sin(x) + B \cdot \cos(x) = K \cdot \sin(x + \emptyset)$$

where $k = \sqrt{A^2 + B^2}$, and $\emptyset = \tan^{-1}\frac{B}{A}$