

# ENGR 8102: COMPUTATIONAL ENGINEERING

## Problem Set 1 (*due in class on Monday, 10/19*)

### Questions:

1. (7 pts.) Modify the code `laplace.m` given in class, to feature a 10x10 grid (including boundaries), instead of 5x5. Replace the zero boundary with the last two digits of your uga-ID (810-??-??XX), keep the other boundaries the same. Plot the temperature distribution and isothermal lines. Include a copy of your code, the temperature distribution matrix, and the graphs along with your solution. Submit a soft copy of your code to `caner@uga.edu`.
2. (7 pts.) Modify the code `gauss_seidel.m` to feature a 10x10 grid (including boundaries) instead of 5x5. Replace the zero boundary with the last two digits of your uga-ID (810-??-??XX), keep the other boundaries the same. Run enough iterations until the absolute value of the difference between componentwise temperature distribution difference between (1) and (2) is bounded above by  $1 \times 10^{-2}$ . Plot the temperature distribution and isothermal lines. Include a copy of your code, the temperature distribution matrix, difference of temperature distributions (between Laplace and Gauss-Seidel), and the graphs along with your solution. Submit a soft copy of your code to `caner@uga.edu`.