

## ESM 5734

### Homework Assignment #5

**Due on Friday 30 September 2022 at 11:15 AM**

Use piecewise FE basis functions of your choice and uniform FE meshes of 10 and 20 elements to find an approximate solution of the following boundary-value problem.

$$y'' + \frac{\pi^2}{\alpha} y + 0.01(1-x) = 0, \quad 0 < x < 1,$$
$$y(0) = 0, \quad y(1) = 0.$$

For  $\alpha = 4, 1.01, 0.99$  and  $0.25$ , plot the approximate solutions, and comment on their accuracy.