

Christian DiPietrantonio  
ME M311: Computational Methods to Viscous Flows  
January 31, 2026

## **Computer Assignment 01:**

**Numerical and Analytical Solutions to Parabolic Partial Differential Equations:  
prerequisite for solving boundary layer problems**

### **Description of the problem**

The goal of this assignment is to derive the analytical solution of the parabolic equation with given initial and boundary conditions. Then, a numerical solution will be obtained using the explicit finite difference method. Finally, the numerical solution will be compared to the analytical solution to verify the accuracy of the numerical method.