CHAPTER 3: FINITE VOLUME METHOD

CHAPTER OUTLINE

1. Overview of numerical methods (handout 3.1)
   a. Finite difference method
   b. Finite element method
   c. Finite volume method

2. Finite volume method
   a. Grids
   b. Compass notation for structured grids
   c. Approximation of finite volume integrals

3. Interpolation methods
   a. Upwind interpolation (UDS)
   b. Linear interpolation (CDS)
   c. Quadratic upwind interpolation (QUICK)

CHAPTER OBJECTIVES

- Describe the different numerical approaches available to solve for partial differential equations
- Outline the basic steps of a finite volume analysis
- Explain the discretization of integral equations over a control volume
- Present different interpolations methods to approximate unknown quantity values at different locations in the control volume