CHAPTER 6: TURBULENCE MODELING

CHAPTER OUTLINE
1. Characteristics of turbulent flows
   a. Properties
   b. Averages
   c. Modeling approaches
2. Mean-flow equations
   a. Reynolds decomposition
   b. Reynolds-averaged Navier-Stokes (RANS) equations (handout 6.1)
   c. Equation summary for incompressible and compressible flows (handout 6.2)
3. Turbulence models overview
4. Eddy viscosity models
   a. Mixing length model (handout 6.3)
   b. $k-\varepsilon$ model (handout 6.4)
   c. $k-\omega$ model
5. Reynolds stress equation model (RSM) (handout 6.5)

CHAPTER OBJECTIVES
- Introduce the characteristics of turbulent flows
- Describe the differential analysis of turbulent fluid flows
- Describe the different turbulence modeling approaches available in commercial CFD packages