Convection in Noncircular Ducts

Use equivalent diameter, D_e

$$D_e = \frac{4 \times \textit{free area}}{\textit{wetted perimeter}}$$

Flow Past Immersed Objects

Examples:
Spray Drying

Drying of granular material in packed beds

Flow past single spheres, when the sphere may be heated or cooled

$$N_{Nu} = 2 + [0.60 N_{\mathrm{Re}}^{0.5} \times N_{\mathrm{Pr}}^{1/3}]$$

The fluid properties are evaluated at the film temperature, T_f, where

$$T_f = \frac{T_{wall} + T_{medium}}{2}$$