

# Manual V&V for CFDLab1

## 58:160 Intermediate Mechanics of Fluids

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Date: September 11, 2009

Due to a software problem, Flowlab cannot run the automatic procedure for V&V. We are trying to fix the problem, but meanwhile you need to postpone Exercise 4 until further notice.

You need to do exercises 2 and 3 by manually creating the “fine”, “medium”, and “coarse” meshes and running Flowlab for each case to obtain the Friction Factors. Then you need to calculate the  $P_g$ ,  $C_g$ ,  $U_g(\%)$ , and  $U_{gc}(\%)$  by consulting the “V&V instructions” posted on class website. The grids to be created manually are summarized in the following Table:

Mesh No.	Grid Points (X×R)	Intervals (NX×NR)
8	452×45	451×44
7	320×32	319×31
6	226×22	225×21
4	113×11	112×10
3	80×8	79×7
2	56×5	55×4
0	28×3	27×2

**Note1:** For exercises 2 and 3 you won't need to show the Flowlab “Errors” panel and “verification” panel in your CFDLab1 report. Instead, include XY plots for “Wall Friction Factor Distribution” for all grids used in each exercise. You also need to show your V&V calculations.

**Note2:** Writing the CFDLab reports is time consuming. You need to start working on it before the deadline (Sep. 21) approaches.