COMPUTATIONAL FLUID DYNAMICS LAB

Course Code: 15CH2123	**L**	**P**	**C**
	0	**3**	**2**

Course outcomes: On successful completion of the course, the student should be able to

CO1: Recognize the importance of CFD in Heat and Fluid flow.

CO2: Analyze forced convection heat transfer coefficient over regular bodies like sphere, cylinder.

CO3: Estimation of drag coefficient in circular pipe under turbulent flow and bent pipe.

CO4: Recognize how to handling moving boundaries and wall effects in motion of fluid.

CO5: Analyze how to handle power law fluids in CFD.

*Student should also submit a detailed report for all the above laboratory practicals.

All simulation results should be validated with correlations available. The student is expected to attach the simulation predictions and the literature results when he presents the record.

1) Natural convection over a sphere.
2) Mixed convection over a sphere.
3) Forced convection over a sphere.
4) Forced convection over two cylinders in tandem arrangement.
5) Calculation of Nusselt number for staggered and in line arrangement of shell and tube heat exchanger.
6) Turbulent flow in a circular pipe: generating the friction coefficient versus Reynolds number.
7) Calculation of forces over a bent pipe.
8) Calculation of flow and heat transfer in a lid driven cavity.
9) Wall effect on a sphere in a cylindrical tube.
10) Flow of a power law non Newtonian fluid over an elliptic cylinder.