THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI-15

(A Govt. Aided Autonomous Institution affiliated to Anna University)

- where Quality and Ethics matter

QEEE COURSES

CONCEPTS IN FLUID MECHANICS - FLUID MECHANICS

COURSE CONTENT:

- Fluid Kinematics: Eulerian and Lagrangian approach, concept of streamline, streakline, pathline, deformation and rotation, vorticity and angular velocity, constraint of incompressibility and continuity equation, stream function and velocity potential

- Dynamics of inviscid flows: Euler and Bernoullis equation and their applications

- Reynolds Transport Theorem (RTT): Derivation of Reynolds Transport Theorem, Application of RTT to Conservation of Mass and Momentum

- Differential form of Conservation Equations: Continuity and Navier-Stokes equations and their derivation

- Some exact solutions of Navier-Stokes equation for steady incompressible flows:Fully developed low between two infinite parallel plates (plane Poiseuille flow), Shear driven flow between two parallel plates, Thin film flow along an inclined wall, Flow through circular tube / pipe (Hagen Poiseuilleflow), concept of friction factor and application to pipe flow design