Error in Lecture (at 23:36 mark): this negative sign was not present in this intermediate step, and the preceding rough work (Hat tip to Muhammad Utoro for identifying the error)

$$\frac{(\rho dxdydz)D(u)}{Dt} = -\frac{\partial p}{\partial x}dxdydz + \frac{\partial \tau_{xx}}{\partial x}dxdydz + \frac{\partial \tau_{yx}}{\partial y}dxdydz + \frac{\partial \tau_{zx}}{\partial z}dxdydz + f_x(\rho dxdydz)$$

$$\frac{\rho D(u)}{Dt} = -\frac{\partial p}{\partial x} + \frac{\partial \tau_{xx}}{\partial x} + \frac{\partial \tau_{yx}}{\partial y} + \frac{\partial \tau_{zx}}{\partial z} + f_x\rho$$