CE 3305 Engineering Fluid Mechanics
Exercise Set 21
Summer 2018 – GERMANY

1. (Problem 15.7 pg 592) Estimate the discharge of water (T=10^oC) that flows 1.5 m deep in a long rectangular concrete channel that is 3 m wide and is on a slope of 0.001.
2. (Problem 15.25 pg 593) Water flows at a rate of $8m^3/s$ in a rectangular channel 2 m wide.
   (a) What is the Froude number for depths of 30 cm, 1.0 m, and 2.0 m?
   (b) Classify the flow (sub-, super-, or critical) type for these three depths.
3. (Problem 15.26 pg 593)A rectangular channel 3 m wide carries a discharge of 12 m^3/s.
   (a) What is the alternate depth to a 30 cm depth?
   (b) What is the specific energy for these conditions?
4. (Problem 15.32 pg 592) A long rectangular channel that is 8 m wide and has a mild slope ends in a free outfall. If the water depth at the brink is 0.55 m, what is the discharge in the channel?