MET 330
Test I-Spring 2019 Reflection
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March 14, 2019

1. Purpose: As an Engineering student, with 8 weeks of Fluid Mechanics and a fast paced twelve chapters of learning; I have been tasked with designing a hydro-pneumatic tank of specific measures. Said tank empties into a trapezoidal open channel. The channel's job is to promote the flow of hickory logs. For each of the steps of the design, I have been meticulous about clarifying the needs of my employer and colleague civil engineer, through each of the nine required steps.
2. I take great pride in my drawings and printing. Throughout the exam, I have been very careful about placement of forces and measures and units. I have (per the guidance of the Professor) converted all units to SI. To my understanding, the first drawing was pre-consideration of the design of the manometer and use of mercury. Once, the employer understands considerations involved, per part F, it is apparent the direction of flow and height of mercury to the tank.
3. The source of our fluid mechanic undertakings is the Mott and Untener's *Applied Fluid Mechanics*, 7th edition (2015), published by Pearson. This text is very engaging with many real world examples and color drawings. The Appendix Tables and Chapter Charts are easy to use. The exam, itself, covered a vast amount of chapters, in the sense that the design requirements went from such as buoyancy of Chapter 5 to drag coefficients of Chapter 17.
4. Design Considerations were completed using (again per the Professor's guidance) the prior examinations, which had been posted to our Fluid Mechanics Blackboard site. Bullets indicating the overall general engineering principles, like constant properties and isothermal conditions, were included.
5. The Data and Variables Page was extremely helpful throughout the exam and project design steps. I found myself referring to it and adding to it, as I went through each of the nine steps.
6. For each part of the project, the purpose was carefully laid out step by step. It is extremely helpful to have an opportunity to put to paper, the reason that certain principles and calculations are needed.
7. Calculations were my favorite part of the exam because it was exciting to finally get to see if all the hard work and preparation would be realized! Would our answers make any sense? Would our hickory log really float through that narrow channel? I wish I knew more about logs floating down channels. I didn't even know that they still did this. I have only seen logs on trains and the semi-beds of trucks. I was sure to include all specific units for each and every step. Our Professor requires that we keep unit in the parenthesis and I did this. Iteration charts and Moody's Diagram were also included.
8. The example summaries of past exams were rather short and skimpy. The Professor re-stated each answer in his summary, which we were given post our exam. I liked this method a lot better because it is clear that the objectives of the design were indeed met.

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9. The Professor did not include a Materials Sheet in his answer sheet. However, I feel that it was included in his summary, which makes more sense to do it this way. I noted all relevant items, such as the blind flange, and mercury manometer, for example.
10. In keeping with the basic limited knowledge and experience, my analysis commented on the efficient use of the trapezoidal channel and the possibility of the Bourden Gauge. At the same time, I did have sense enough to know that this design set up would absolutely require some type of pump to keep the pressure up.

Overall, I think that it was a great exam to test knowledge and skill. We had never experienced such an involved problem. Perhaps, some guidance in design steps would be helpful for us future engineers.