CE 397 **Flood Forecasting** **Spring 2015**
Final Exam

There are three questions on this exam. Do all three. For each question, prepare a 2-page typed essay (2 pages x 3 essays = 6 pages total). Combine the solutions together in the order of the questions into a single PDF document, and submit through the class Canvas website, by 5 PM on Friday, May 15.

This is a take-home exam. You are honor bound not to discuss this exam with your colleagues in the class. Your answers should be the result of your work and thought alone. Be assured that if essentially the same idea appears in answers from more than one person, it is fairly easy to recognize that when the grading is being done. If that happens, it is not clear from whom the idea originated and who is just using somebody else's knowledge. So, keep your ideas to yourself!

Questions 1 and 2 require you to read and synthesize information from term projects by other students in the class. The term papers that you choose to describe in answering Questions 1 and 2 should be mutually exclusive, that is, if you focus on particular term papers in answering one of the questions, don't focus on the same papers when answering the other question. The term projects can be found at:
http://www.caee.utexas.edu/prof/maidment/CE397Flood/TermProject/TermProj.htm

What I am looking for in grading your answers to this question is:

- **Knowledge of the facts.** Make sure you lay out the facts of what has actually been done before you start offering opinions about what could have or should have been done. Make sure you discuss what was actually done in the term papers not just about the general subject itself.
- **Thoughtful evaluation.** How do you evaluate the advantages and limitations of the principles, methods and data that have been used? How does the knowledge you've learned in this class relate to the world around us? I am looking for a sense of reflection here, of seeing you set individual situations and facts in a larger context in an intelligent way.

In your answers, you must refer specifically to work presented in term papers prepared in this course. In other words, I am not looking here just for a general statement about your opinions in the field but rather a deduction based on the term papers presented in this class of what has been done and how you judge the effectiveness of that.

Questions

1. Compare and contrast two papers dealing with the same theme

Choose two term papers that deal with the same or similar themes or topics. Neither of these papers should be your own term paper. The papers that you choose may be from any of the participating universities. Briefly summarize the contents of the papers (the problem examined, the method of analysis, the results achieved). Compare and contrast the approaches to the problem that the two papers took. Which technical approach do you think was more effective? Why? Which

paper does a more effective job of communicating its results? Why? Suppose you were undertaking a study of this same subject. Having studied these two papers, what have you learned about how to go about your investigation effectively? What would you do differently from what the authors of these papers did?

2. Write an Assessment of one of the components of the NFIE (Geo, Hydro, River, Response, Services)

Use the term papers and materials from any part of the course to write an assessment of one of the components of the National Flood Interoperability Experiment (ie NFIE-Geo, NFIE-Hydro, NFIE-River, NFIE-Response, NFIE-Services). What is working well? What is lacking? How can a more scientific approach be used? What are the advantages and limitations of the methods being used compared with alternatives that could be used? What developments are needed for the future beyond what we have now?

3. National Drought Interoperability Experiment

There is discussion that during 2016, a National Drought Interoperability Experiment will be conducted, similar to the National Flood Interoperability Experiment this year. What considerations will be different for drought as compared to flood? What new data and models will be needed compared to those we have now? What spatial scope should be considered? US? Global? What time scale should be used? How will drought prediction models be verified? If you were making recommendations for things that need to be done to extend the national hydrologic framework that we have already built for the NFIE so as to account for drought phenomena, what would be your top three priorities?