Suggestions for Topics for Projects

1. Markov Chain Monte Carlo Methods
2. Value at Risk and Conditional VaR
3. Stochastic Differential Equations
4. ARCH-GARCH with non-Normal errors.
5. Applications of ARCH, GARCH
6. Kalman Filter
7. Extreme Value Distributions
8. Market Microstructure
9. Artificial Neural Network Models
10. Machine Learning
11. Genetic Algorithms
12. Derivatives
13. Weather Derivatives
14. Applications of Markov processes
15. Cellular automata – specifically the game of life
16. Adaptive Least Squares
17. Any other topic after discussion with me

Project – from the course outline

The project will develop your research skills, and the presentation help prepare you for the necessary part of future study and career, that of presenting your work in public. The presentation will be in the week of October 15, October 22, with the report due on November 2. Note that external students can negotiate about the presentation and mode. I will give suggestions on topics for the project. They are extensions or applications of the work we have done in workshops and practicals. You will find material on the topic, either from the reference books, or in other books or research articles. Write it up in a form that will be understandable to the other students and include a working example. This will make setting up the presentation easier, as it should be an opportunity for the other students to learn about the topic.

Form

Without forcing you into following a recipe, I suggest the following parts should be present, but you might favour another style:

1. Since this is a report on a study topic, it needs a good introductory section, giving the rationale behind why a student at this level would benefit from knowledge of this topic. So this is the motivation for study, and it should contain some short references, perhaps taken from your literature review, if on the same topic.
2. What the method of analysis entails – this is obviously flexible in presentation, and some will do this part many in mathematical form and others in a more descriptive mode.
3. Examples of usage – one or more with discussion on whether the descriptions that are given are complete or are lacking in some way.

4. Discussion of what can be improved or where else the methods can be applied.
5. Conclusion – including what you personally have got from the investigation.