EE255 Project Proposal
Spring 2006

The broad goal for the project is to pick a topic, read 2–3 research papers on the topic, reproduce some key results of a paper, and report to the class in a 15–20 minute presentation at the end of the quarter. Although extending results of the papers is not required, extensions are encouraged, and the new work may lead to future submissions to conferences and journals.

1 Project Proposal

- Select a topic.
- Write a short 2–3 paragraph description of what you are working on and what papers you are reading. Describe the key idea and what results you intend to reproduce to extend.

2 Project Presentation

- Final presentations: tentatively on Friday, 9th June 2006 in class.
- Presentations should last about 15–20 minutes each.
- Clearly explain background, motivation, and problem formulation before discussing any details.

3 Project Report

- Prepare short (4-page, including figures and references) report in 2-column IEEE format and submit on last day of class (Friday, 9th June 2006).

4 Some Project Ideas

- MIMO channel mutual information properties and statistics
- Multiuser systems
• Ergodic / outage capacities
• Diversity-multiplexing tradeoffs
• Precoding
• Partial channel state information
• MIMO-OFDM
• Space-time coding
• Channel estimation
• Opportunistic techniques
• Iterative receivers
• MIMO channel coding
• Performance tradeoffs
• Cooperative MIMO systems
• Antenna selection
• Cross-layer design
• Interference reduction techniques
• Channel modeling
• Sphere decoding
• Implementation of MIMO systems (standards, etc.)