Computer Science Department
Middle States Assessment

- 4 different plans in place - one for each program
- Assessment of some learning outcomes in each program are scheduled for each year
- Most learning outcomes are assessed on a 3 year rotation – but the more statistical ones are done yearly
- Scheduled and done for Spring 2006
  - 4 assessment for the undergraduate program
    - Programming skills
    - Mathematical and Analytical Reasoning
    - Project Management and Large Scale Programming Skills
    - Research, Writing and Presentation Skills
  - 4 assessments for the graduate program
    - Project Development
    - Peer Reviewed Publication at 3 years
    - Peer Reviewed Publication at graduation
    - Presentation at a conference at graduation

Process for Each Assessment
April – December, 2006

- From list of scheduled assessments
- Created a small committee for assessment
- Gave committee with assessment description
- Provided ideas for methods of assessment
- Reports filed and consolidated
- Committees Chosen
  - Faculty members not directly associated with that semester of the course
  - Somehow connected to the course in general
    - Previously taught that course
    - Taught a similar course on different level
    - Teaches the course following it in the sequence
  - Maximize involvement of the faculty members of the department
Undergrad Assessments

- **Programming skills:** Chau-Wen Tseng and Nelson Padua-Perez
  - Looked at project descriptions and student implementations
  - Suggestions for improving what is expected of students – open ended and less string I/O

- **Mathematical and Analytical Reasoning:** Bill Gasarch and Evan Golub
  - CMSC 250 Final exam
  - Graded student exams on their own scale
  - Found that at least 75% were “Very Good”

- **Project Management and Large Scale Programming Skills:** Pete Keleher and Udaya Shankar
  - Used 3 student implementations of one stages of the project from CMSC 412
  - 2 of the 3 did well on the criteria they were looking at – 1 did not

- **Research, Writing and Presentation Skills:** Bill Gasarch and Don Perlis
  - Honors paper writing for: originality, significance, and presentation
  - Determined all were excellent

Grad Assessments

- **Project Development:** James Reggia
  - Looked at project description and student implementation of CMSC 726 (Machine Learning)
  - Assessed based on criteria of originality, content, implementation effort, and report quality
  - Concluded that not only the objective was being met, but in addition the students were getting experience formulating a “research” project too.

- **Peer Reviewed Publication at 3 years:** Michael Hicks, Neil Spring and Jan Plane
  - There were 29 3rd year students who were still active in the program in April of 2006
  - 20 of those students had at least one reviewed publication since entering Maryland.
  - This is a rate of 69% of those who are completing their third year have had at least one publication

- **Peer Reviewed Publication at graduation:** Samir Khuller, Heather Murray and Jan Plane
  - There were a total of 34 Ph.D. Graduates in Summer 2005 – Spring 2006
  - 26 of those Ph.D. Graduates had published one or more articles in refereed journals
  - This is a rate of 76% of those who are completing their Ph.D. program have had at least one publication

- **Presentation at a conference at graduation:** Samir Khuller, Heather Murray and Jan Plane
  - From the same total 34 Ph.D. Graduates in Summer 2005 – Spring 2006
  - 29 of those Ph.D. Graduates had presented at one or more conferences
  - This is a rate of 82% of those who are completing their Ph.D. program have had at least one conference presentation
Lessons Learned about the Programs in Our Department

- Need to make sure we are thinking about programming assignments in the introductory sequence being more open-ended and less I/O specified
- The one topic checked for analytical reasoning may be successful, but there could be others that need evaluation
- When they get to the 400 level courses students need to be able to use sophisticated debugging techniques and better design style for the large projects
- The Honors Graduates are doing good research and writing/presenting, but this should probably be evaluated on a larger population
- In the graduate program the programming expected on assignments is at an appropriate level
- In publications and conference presentations – the department on a whole is on an acceptable pace, but close to the limits set before the assessment done

Lessons Learned about the Assessment Process Itself

- Many lessons learned that will modify how future assessments are conducted
- More guidance to faculty selected for the committees
  - Qualitative rather than Quantitative – difficult to compare to goals
  - Make sure there is a large enough sample size even if the number of criteria has to be reduced to make it practical
  - Most have a significant report of what they did but were shorter about the details of their assessment
- More realistic evaluation methods
  - Wording of the learning outcome
  - Clearer specification of assessment measure
  - More specific criteria