

UW Colleges Assessment Planning and Reporting Form 2005-2006

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Department	Mathematics
Assessment Coordinator(s)	Paul A. Martin and Colleen Vachuska

PART 1: Assessment of General Education Outcomes

Section 1: Identify the Proficiencies and Performance Indicators Assessed

- ❖ at the **Planning** stage, mark the performance indicators to be assessed in the left hand column below
- ❖ at the **Reporting** stage, report the numbers of students who did not meet, met, or exceeded expectations

	Proficiency	Performance Indicators	Courses Fall Semester (Exc., Met, DNM)	Courses Spring Semester (Exc., Met, DNM)
X	A. Analytical Skills	4. Select and apply scientific and other appropriate methodologies.	105 (136, 309, 245) 110 (206, 304, 215) 113 (12, 11, 12) 124 (5, 23, 28)	105 (59, 163, 106) 110 (100, 181, 87) 113 (11, 20, 12) 130 (20, 42, 21) 210 (4, 7, 2) 211 (13, 50, 19) 221 (28, 40, 36) 222 (26, 34, 23) 223 (15, 14, 11) 224 (0, 3, 1)

Section 2: Explain how, in general, the institutional rubric was applied to assessment activities. Please attach examples of assessment activities (i.e. modified rubric, assignment, questions) and measurements used to place individuals into the three categories (exceeds, meets, fails to meet).

The mathematics department has developed question pools for each course from which instructors choose problems to embed in their final exams. The question types can also be used on other exams for formative assessment, but the results that get reported in the end are students' performance on the questions that are embedded in their final exams. I have appended examples of the question pools for a lower level and a higher level course, College Algebra (MAT 110) and Calculus and Analytical Geometry (MAT 221). The question pools are located in the public folders and include instructions on which question types should be emphasized in each cycle and how to report the departmental and institutional results. Also included in each pool is a historical record of student performance on each question in the pool.

Each year, we work to enlarge the question pools to include another general category of problem. Last year, we added “simplify/evaluate” problem types. The UWC rubric is included in the question pools and along with the adaptation for Mathematics problems as indicated below. Each instructor uses 6 or more questions and assigns Exceeds/Meets/or Fails to Meet for each problem. Then the average of a student’s performance on all six or more problems is reported for the A.4 performance indicator.

Level of Achievement	UW-Colleges Statement of Rubric	Interpretation of Rubric For Math Problems
Exceeds Expectations	<u>Selection of Methodologies:</u> <ul style="list-style-type: none"> • The student indicates an understanding of the concept of multiple methodologies for solving problems <u>Application of Methodologies:</u> <ul style="list-style-type: none"> • The selected method is correctly applied • The student has described alternative ways of applying methodology (if applicable) • Documentation is complete and contains few errors (if applicable) 	<p>The solution is carried out correctly and clearly presented.</p> <p>This should correspond ~ to earning 90% or more of the points assigned to the problem.</p>
Meets Expectations	<u>Selection of Methodologies:</u> <ul style="list-style-type: none"> • The method selected is appropriate to the problem <u>Application of Methodologies:</u> <ul style="list-style-type: none"> • The selected method is generally applied correctly with few errors 	<p>The solution is carried out with at most minor errors or lacks clarity of presentation.</p> <p>This should correspond ~ to earning 70-90% of the points assigned to the problem.</p>
Fails to Meet Expectations	<u>Selection of Methodologies:</u> <ul style="list-style-type: none"> • The method selected is inappropriate to the problem or simply describes a randomly selected solution <u>Application of Methodologies:</u> <ul style="list-style-type: none"> • The application of the methodology is incorrect, incomplete, or has key steps 	<p>The solution contains major flaws or lacks appropriate supporting work.</p> <p>This should correspond ~ to earning less than 70% of the points assigned to the problem.</p>

Section 3: Use of Results

1. **Use by instructors** - Summarize the ways individual instructors plan to use assessment results to improve the instructional process.

Instructor responses included variations of the following to improve performance in the future.

- a. Spend more time on a particular type of problem or concept. This is not always possible, since doing so can shortchange other topics. This

brought about a discussion of reducing the amount of overlap and review being done at the beginning of Math 105 and 110 especially.

- b. Present the material or engage students in novel ways. This idea was the focus of a department assessment meeting in the summer of 2004 and resulted in many conversations and collaborations among small groups of instructors relating to the MAT 105-124 level materials.
 - c. Utilize alternative instructional modalities such as on-line materials. The department has done a Pilot study in using ALEKS (an on-line assessment and instructional program) for teaching College Algebra. The final report from the Pilot is not yet completed. Other, text book-linked, on-line homework programs are also being utilized by some instructors. The basic thrust seems to be to get students to spend more time with the material. There has not been a formal report from the ALEKS Pilot study. Anecdotally, there seems not to be a clear yes or no feeling from pilot instructors about the use of ALEKS in college algebra. This fall the DAC will analyze data about student success during and after taking Math 105 through ALEKS from a single instructor who teaches two sections with and two without ALEKS for the past three semesters.
2. **Use by department** - What changes will you and/or the department assessment committee recommend to your department. Include changes to:
- a. assessment process
The process is still being refined. Initially we focused our assessment on a particular type of problem, e.g. "Applied Problems" or "Solving Equations". We will still do this as we add more types of problems to the question pools, but we will suggest that we also focus on any questions that students performed poorly on in the previous cycle. In the next cycle, we have selected three problems from each course that all instructors will use. These problems were selected based on past poor performance or the importance of the concepts covered. The assessment committee will also collect and refine graphical-formula relationship type problems.
 - b. proficiencies selected
We have been alternating between the Analytical Skills 4 and Quantitative Skills 1 proficiencies so far and will propose to continue with this pattern for next year.
 - c. performance indicators used to measure proficiency
We may also include Quantitative Skills 2 on interpreting graphs and tables as we develop questions for our pools in that area.
We may also look into Communication Skills at some point if we can develop suitable tools at least for some courses.
 - d. assessment activities
We will propose to develop problems for the course question-pools on graphical-formula/equation concept. We will also consider developing

project/homework problems to try to assess life-long skills that we hope to be imparting to students for our courses. This may be difficult to come up with, but could also help us focus on why we want students to have a class such as 110 as a core course in our AA degree.

- e. evaluative rubrics
- f. student performance in a specific course

There has been a department discussion of using what are called GateWay tests in our Intermediate Algebra Course (MAT105). The idea is that students are given multiple opportunities to pass exams on concepts of fundamental importance for continuing on in Mathematics. The tests are high-stakes in that there would be a stiff penalty for not passing all or most of them. UWC-Fox has been doing this for ~10 years already. Students have multiple opportunities to practice and to take the exams. I have not heard any campuses other than Fox expressing interest in going this route since our discussion at our Spring Meeting.

- 3. **Course of action** - After discussion of the results by the department, what course of action will **the department** take to improve student performance with respect to the assessed proficiency?
 - a. At the department meeting we selected three problems from each pool that everyone will use in this next cycle as described above in 2a. We will also expand the pools to include graphical-equation type problems in the pools this year. We will also look into developing tools to assess the long-term desired outcomes for each course.

PART 2: Assessment of Department-Specific Outcomes
❖ at the ***Planning*** stage, complete section 1

Section 1: Identify department-specific learning objectives.

Outcomes/Performance Indicators	Courses Fall Semester	Courses Spring Semester
1. Solve equations appropriate to each course	105, 110, 113, 124	105, 110, 113, 124, 130, 210, 211, 221, 222, 223,
2. Simplify/Evaluate expressions	105, 110, 113, 124	105, 110, 113, 124, 211, 221, 222, 223,

Section 2: Insert the rubrics used here and explain how the rubric or standards were used to assess each outcome or performance indicator.

We use the same rubric as for the UWC-Performance Indicator as above. The department based objectives are clustered under area “Applied Problems”, “Solving Equations”, “Simplify/Evaluate Expressions” and some future areas like “Graphical-Formula relationships” etc. The main difference is the reporting to the department is done for each question, rather than for each student. This way we can gauge what particular questions are causing the most difficulty for students.

Section 3: Use of results.

1. **Use by instructors** - Summarize the ways individual instructors plan to use assessment results to improve the instructional process.
Same as above.
2. **Use by department** - What changes will you and/or the department assessment committee recommend to your department. Include changes to:
Same as above
3. **Course of action** - After discussion of the results by the department, what course of action will the department take to improve student performance with respect to the assessed proficiency?

PART 3: Additional Assessment and Contributions

Section 1: Please discuss activities that were supported by the assessment budget for the department assessment committee.

The department assessment committee (four members) had five ~one hour teleconferences to finalize question pools, and planning for the department meeting

assessment activities. The committee solicited simplify/evaluate problems from faculty in Fall of 2005 and then winnowed these down to ~eight or so problems for each course question pool. We also developed an assessment activity for the Spring 06 Department Meeting. A summary of the instructions for that activity is given under section 2 below.

Section 2: Please discuss activities that were supported by the assessment budget for overall department assessment activities.

We had a department exercise to identify the questions which were most troublesome and ways to try to improve performance on these questions at our spring meeting. \$1000 of the cost for this meeting was covered by the department assessment budget. An outline of the activity is given below:

Assessment Activity

Closing the Loop, April 22, 2006

One of the components of assessment that is most difficult to implement formally, but also has the potential to make assessment worthwhile is to provide feedback to the instructional process. In that spirit, we hope to reflect on the results of our past assessments and try to consolidate and share strategies that will improve student success.

We have available to you historical results from assessment in Math 105, 110, and 113. Each person should choose a course to focus on and then within that course, convene small groups of 3-5ish to focus on one question with poor performance. Then each of the groups should:

- A. Identify up to three factors that you feel are primary in causing students to flounder on this type of problem.
- B. Use your combined group experience to come up with strategies to address these factors.
- C. Identify resources that would be helpful for instructors to employ while addressing these factors.
- D. Course-Based Large Groups reconvene and consolidate common flounder factors and strategies to address them.
- E. Have each course group deliver a summary of their efforts.
- F. General Discussion about whether/how/when to implement these ideas as widely as possible.
- G. Delegate somebody to organize implementation teams and Assessment Committee can help monitor the effects of these interventions.

Section 3: Please ask for and include in the report information from department members about any other assessment activities they have conducted, particularly in conjunction with grant-funded innovations. Also ask for and describe briefly any additional contributions to assessment such as publications, presentations, qualitative classroom innovations (**such as** Scholarship of Teaching and Learning activities), and other items relating to assessment that the department wishes to note.

PART 4: Historical Trends

Section 1: History of General Education activities. Please add more rows as necessary. This should be an on-going list copied from each previous report.

Proficiency	Year Assessed	Results	Year Assessed	Results	Year Assessed	Results
Analytical Skills 4.	2003-04	E = 583 (29%) M = 865 (44%) F = 541 (27%)	2005-06	E = 625 (24%) M = 1211 (46%) F = 814 (30%)		E = M = F =
Quantitative Skills 1.	2004-05	E = 824 (27%) M = 1504 (49%) F = 762 (24%)	2006-07	E = M = F =		E = M = F =
		E = M = F =		E = M = F =		E = M = F =

Section 2: History of department learning objective activities. Please add more rows as necessary. This should be an on-going list copied from each previous report.

Objective	Year Assessed	Results	Year Assessed	Results	Year Assessed	Results
Applied Problems	2003-04	E = 583 (29%) M = 865 (44%) F = 541 (27%)	2004-05	E = 824 (27%) M = 1504 (49%) F = 762 (24%)		E = M = F =
Equation Solving	2003-04	E = 582 (41%) M = 338 (24%) F = 487 (35%)	2004-05	E = 1896 (41%) M = 1269 (27%) F = 1522 (32%)	2005-06	E = 894 (45%) M = 434 (22%) F = 672 (33%)
Simplify/Evaluate	2005-06	E = 1914 (46%) M = 899 (21%) F = 1376 (33%)		E = M = F =		E = M = F =

There are more detailed historical results for each question in each question pool. These can be accessed in the question pools themselves as seen in the sample question pools for MAT110 and MAT221 which are attached.