Assessment Update for Math 111, 112, 123, 2010-2011.

The materials included with this memo are submitted to respond with the requirement from the Kansas Board of Regents that concurrent enrollment classes be reviewed annually by faculty in the discipline. As the Director of the Wichita State University College Algebra Program and a professor in the Department of Mathematics, Statistics, and Physics, I am the faculty member who has been requested to review the mathematics courses M111 (College Algebra), M112 (Pre-calculus), and M123 (Trigonometry).

I have included an updated Assessment Plan that details what and how we assess concurrent enrollment classes. I have also included department collected assessment data. With respect to the past year, university personnel have met periodically with the high school faculty who teach concurrent enrollment classes. We have offered advice and training and have interchanged ideas concerning how to deliver a consistent high quality mathematical product that meets or exceeds our on campus offerings. I review curriculum vitae and approve all faculty assignments with regard to mathematics concurrent enrollment classes. We make sure that our syllabi, course goals, and grading procedures are understood by concurrent enrollment faculty. I review final exams written by any faculty with a master's degree who are not required to give our exams. Course content and texts are monitored. Student teacher evaluations are the same ones given to the university faculty. We try to maintain good relationships with our high school faculty and try to encourage their efforts and provide all necessary support. Since (in any given year) almost all the mathematics concurrent enrollment classes are offered in the Spring, most of our contacts occur during the winter and spring. Overall, I can report that Spring 2011 went very well with no complaints from students or parents or faculty (of which I am aware). I believe high standards are being maintained. The concurrent enrollment faculty are high quality experienced teachers who have solid mathematical backgrounds and are enthusiastic about their participation.

As can be seen by looking at the date provided, the concurrent enrollment class grades averages are significantly higher than the class grades for courses taught on the university campus. This is due in part from the fact that only high school students with an A or B in the fall semester in one of the year long classes is allowed to enroll for WSU credit in the spring semester. Also, those students who take our equivalent university elementary mathematics courses on campus are students who either did not take these courses in high school or who failed these classes or who have had a long time gap between these courses and their prerequisites. We are comparing some of the best high school students in the concurrent enrollment classes with a much less qualified group in our on campus classes.

Overall, I am pleased with the concurrent enrollment results from Spring 2011.

Stephen W. Brady

Concurrent Enrollment Assessment Plan

Prepared by:
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Universities recommend that any high school student who wishes to attend any university or college should take four years of mathematics in high school. Three years of mathematics should be minimal preparation. The first college level course in mathematics at any university in the world is Calculus. All other courses before Calculus are remedial whether or not credit is given for those courses. Wichita State University's general education basic skill requirements in mathematics for graduation came from the realization that most of our students did not enroll initially with have enough prior training in mathematics. Due to our previous open admission policy many were admitted with less than adequate mathematics background to be successful in college. The idea was to raise them to a college entry level of mathematics before they graduated from WSU by requiring knowledge of College Algebra (or higher level mathematics) as part of the general education program. Although this goal has been made much easier to attain due to the recent rule that the basic skills must be achieved in the first forty-eight hours of coursework, it is much better if the skills are achieved before entering college. Concurrent enrollment classes in mathematics in College Algebra, Trigonometry, and Pre-calculus using the "carrot" of college credit have encouraged students to take more mathematics while still in high school in order to raise their mathematical knowledge level closer to where it should be for college entry.

College Algebra

For the last twenty years the comprehensive departmental final for Math 111, College Algebra has been used as part of an overall assessment of the course. The final is worth at least 30% of the course grade for each section of M111. A student successfully satisfies the final assessment by scoring at least 50% on the final together with a C- or better for the semester overall. The weight of 30% for the final brings the course grade down (in most cases) to the D or F level for anyone not achieving a score of at least 50% on the final exam. For courses taught as concurrent enrollment the same weight (30%) for the course grade will be used. If a high school has any mathematics concurrent enrollment class taught by a teacher who does not have a master's degree, all sections in the school use the same department final as that given by the university. In such cases, the assessment criteria are identical. When periodic overall assessments of the university courses are done, the concurrent enrollment classes will be included. Comparisons will be easy to draw concerning student learning outcomes in both environments and how closely concurrent enrollment classes mirror the university classes. In a high school whose mathematical concurrent enrollment classes are taught by teachers with master's degrees,

the final does not have to be the same as the university final but the assessment and grading weight are the same. Finals that are different from the one given by the university are approved by the College Algebra Program Director. These classes will be included in any overall assessment of college algebra courses. Comparisons will be made between these classes, university classes, and those concurrent enrollment classes using the university final. The university's SPTE assessment is used to assess each concurrent enrollment class to evaluate student perception of the instructor and course. In addition, any high school assessment of student learning outcomes that is part of a concurrent enrollment course will be requested from the school and compared with our own assessments.

The prerequisites for university College Algebra classes are two years of high school algebra or equivalent and a satisfactory score on the department placement exam or math ACT exam or math SAT exam. Satisfactory scores have been determined to be 15 of 32 on the department placement exam, 20 for math ACT, and 480 for math SAT. The department placement exam, while not a post-assessment tool for College Algebra is an assessment tool for our remedial courses and for a student's previous mathematical preparation. Part of the way we can affect student learning outcomes in College Algebra is to make sure the student is (mathematically) ready to enroll in the course. The department feels that our remedial courses themselves have been excellent preparation. The placement exam is also working well. Most high school mathematics concurrent enrollment courses involve the second semester of a two-semester sequence. In order to qualify for concurrent enrollment in such a course, an A or B is required in the first semester. So, a concurrent enrollment student shows they are ready for college credit by above average achievement in previous semesters.

College Algebra has the following overall course outcomes.
> The student will understand the body of mathematical knowledge identified as College Algebra in order to:
>> 1. Build a foundation for mathematical problem solving.
>> 2. Apply problem-solving techniques to model both mathematical and real-world contexts.
>> 3. Use mathematical language and symbols as a means of communication while reading, writing, speaking, and listening.
>> 4. Apply critical thinking and analytical reasoning skills in mathematical settings.
>> 5. Retrieve and utilize mathematical skills as opportunities arise.
>> 6. Make connections between mathematical problem solving and its application in other settings.

These outcomes are part of a Course Syllabus that spells out in detail the sections to be covered in College Algebra, the time to be spent on each text section, and the outcomes for each text section. The university final exam is closely tied to these outcomes. Each

university class section in College Algebra uses the same book and materials. Each concurrent enrollment section in each school district uses the same text. Although textbooks may be different from ours and differ from district to district, this is not a problem since texts used in the high schools are standard college level texts acceptable for our courses and cover the same material. The university course syllabus for College Algebra (together with the goals and outcomes) are distributed to the high school concurrent enrollment teachers as well as both sample finals and previous university course finals. Concurrent enrollment teachers are encouraged to utilize as much of this material as is possible. One or two meetings (training sessions) have been held each year since 2006 with all the mathematics concurrent enrollment teachers. Course procedures, final exams, assessments, and curricula have been discussed at these meetings with the goal of tying the concurrent enrollment experience as closely as possible with the university course. Meetings with the concurrent enrollment teachers will be conducted each fall for preparation for the spring concurrent enrollment classes. Meetings will be held in the spring to discuss the spring classes and finals. This past summer a concurrent enrollment instructor sat in on a university calculus course for the purpose of gaining additional training and experience. More such training experiences are being encouraged.

A standing committee composed of experienced faculty oversees the university course contents, the textbook, the length of time to be spent on topics, etc. The mathematics portion of the basic skills requirement is overseen by a professor in the department of Mathematics and Statistics who carries the title of College Algebra Director. Concurrent enrollment mathematics courses and assessment will be overseen by the same Director. The overall rules governing College Algebra as concurrent enrollment will be the same as those for the university equivalent.

Trigonometry, Math 123 and Math 112, Pre-Calculus

The College Algebra portion of Pre-calculus (a combination of Algebra and Trigonometry), M112, is considered to be equivalent to M111 and is an alternate path that can be used to satisfy the basic skills requirement. It is usually taken by those who have a need or desire to take higher level mathematics but who do not feel ready to take Calculus. Trigonometry at our university has College Algebra as a pre-requisite. Both courses have course syllabi with similar outcomes as those stated above for College Algebra. The classes are taught mostly by regular faculty with some classes taught occasionally by our more senior graduate teaching assistants. Each instructor gives their own final and is responsible for all aspects of the course. Finals for concurrent enrollment classes are submitted and approved by the College Algebra Program Director. Historically, the only assessment done is by the faculty teaching the course and by grade distributions. With respect to concurrent enrollment, all rules and goals governing the College Algebra course discussed above are the same for Trigonometry and Pre-calculus. Concurrent enrollment class assessments will be compared to our Instructor's assessments of their courses.

Spring 2011

Concurrent 111	14 classes
Concurrent 112	13 classes
Concurrent 123	1 class
WSU 111	14 classes
WSU 112	2 classes
WSU 123	3 classes

Fall 2010

There were no Concurrent classes Fall 2010

WSU 111	19 classes
WSU 112	2 classes
WSU 123	3 classes

SPRING 2011 Percentages for WSU Math 111 Authorization/Waiver Success Rate

Transcript Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
65	5	8	14	5	17	15	0	1

Passed with C or better: 27 = 42%
Passed with C or better minus drops/withdraws: 27 = 54%

Final Test Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	No Show	Audit
65	2	5	6	9	15	15	12	1

Passed with C or better: 13 = 20%
Passed with C or better minus drops/withdraws: 13 = 26%

Out of 65 students

		Out of 50 students(minus drops/withdraws)	
Current Qualifying Place/ACT/SAT Score	8 = 12%	Passed / Current Qualifying Place/ACT/SAT Score	6 = 12%
Beginning Algebra (previously)	4 = 6%	Passed/ Took 011	1 = 2%
Intermediate Algebra (previously)	9 = 14%	Passed/ Took 012	1 = 2%
Beg. & Int. Algebra (previously)	20 = 31%	Passed/ Took 011 & 012	5 = 10%
Repeats	37 = 57%	Passed / Repeat 111	13 = 26%
Authorizations	65 = 100%	Passed/ Authorized	27 = 54%
Enrolled Students (at finals)	50 = 77%	Failed/ with Qualifying Scores (3 years or less)	2 = 4%
Final Test 50% +	27 = 42%	Failed / Old Qualifying Scores (4 + years old)	1 = 2%
Final Test 0-49%	10 = 15%	Failed / with Prereqs	6 = 12%
Final Test No Show	12 = 18%	Failed / Old Prereq(4 + years old)	3 = 6%
F/NS that had Qualifying Prereqs/Scores	4 = 6%	Failed / with Authorizations / No Prereqs	15 = 30%
Withdrew/Prereqs	2 = 3%	Math 012 NCR Students	2
Withdrew/No Prereqs	6 = 9%	Passed	0
Withdrew/Old Prereqs	7 = 11%	Withdrew	1
		Failed	1

SPRING 2011 Percentages for WSU Math 111 Grades

Transcript Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
477	78	89	83	52	97	77	0	1

Passed with C or better: 308 = 52%

Passed with C or better minus drops/withdraws: 308 = 77%

Final Test Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	No Show	Audit
477	41	45	65	65	117	77	67	1

Passed with C or better: 151 = 32%

Passed with C or better minus drops/withdraws: 151 = 38%

Out of 477 students

Current Qualifying Place/ACT/SAT Score	299	= 63%
Beginning Algebra (previously)	124	= 26%
Intermediate Algebra (previously)	208	= 44%
Beg. & Int. Algebra (previously)	97	= 20%
Repeats	201	= 42%
Authorizations	65	= 14%
Enrolled Students (at finals)	401	= 84%
Final Test 50% +	274	= 57%
Final Test 0-49%	59	= 12%
Final Test No Show	67	= 14%
F/NS that had Qualifying Prereqs/Scores	31	= 6%
Math 012 NCR Students	8	= 2%
Passed	0	
Withdrew	0	
Failed	8	= 2%

Out of 400 students(minus drops/withdraws)

Passed / Current Qualifying Place/ACT/SAT Score	181	= 45%
Passed/ Took 011	11	= 3%
Passed/ Took 012	47	= 12%
Passed/ Took 011 & 012	42	= 11%
Passed / Repeat 111	87	= 22%
Passed/ Authorized	27	= 7%
Failed/ with Qualifying Scores (3 years or less)	30	= 8%
Failed / Old Qualifying Scores (4 + years old)	13	= 3%
Failed / with Prereqs	4	= 1%
Failed / Old Prereq(4 + years old)	2	=.05%
Failed / with Qualifying Scores (3 years or less) & Prereqs	18	= 5%
Failed / with Authorizations / No Prereqs	21	= 5%
Failed/with Authorizations/Prereqs	4	= 1%
Failed/with Authorizations/Old Prereqs	2	=.05%
Failed / Outside Prereqs/No Authorization/Scores	3	= .06%

SPRING 2011 Percentages for CONCURRENT Math 111 Grades

Transcript Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
135	48	65	18	1	0	3	0	0

Passed with C or better: 131   = 97%
Passed with C or better minus drops/withdraws: 131   = 99%

SPRING 2011 Percentages for CONCURRENT and WSU Math 111 Grades

Transcript Grade Distribution

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
612	126	154	101	53	98	79	0	1

Passed with C or better: 381   = 62%
Passed with C or better minus drops/withdraws: 381   = 72%

SPRING 2011 Percentages for WSU Math 112 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
51	16	15	3	2	8	7	0	0

Passed with C or better:	34	=	67%
Passed with A:	16	=	31%
Passed with B:	15	=	29%
Passed with C:	3	=	6%

SPRING 2011 Percentages for CONCURRENT Math 112 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
221	109	86	23	1	0	2	0	0

Passed with C or better: 218   =   99%

Passed with A: 109   =   49%

Passed with B: 86   =   39%

Passed with C: 23   =   10%

SPRING 2011 Percentages for WSU and CONCURRENT Math 112 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
272	125	101	26	3	8	9	0	0

Passed with C or better: 252   =   93%

Passed with A: 125   =   46%

Passed with B: 101   =   37%

Passed with C: 26   =   10%

SPRING 2011 Percentages for WSU Math 123 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
124	26	25	13	10	27	23	0	0

Passed with C or better: 64 = 52%

Passed with A: 26 = 21%

Passed with B: 25 = 20%

Passed with C: 13 = 10%

SPRING 2011 Percentages for CONCURRENT Math 123 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
30	11	9	7	3	0	0	0	0

Passed with C or better: 27 = 90%

Passed with A: 11 = 37%

Passed with B: 9 = 30%

Passed with C: 7 = 23%

SPRING 2011 Percentages for WSU and CONCURRENT Math 123 Grades

# of Students	Grade A	Grade B	Grade C	Grade D	Grade F	Drp / Wd	INC	Audit
154	37	34	20	13	27	23	0	0

Passed with C or better: 91   =   59%

Passed with A: 37   =   24%

Passed with B: 34   =   22%

Passed with C: 20   =   14%