Developmental Studies Student Learning Report

Revised August 2017

Department of Mathematics & Physical Sciences

Developmental Math and Science

For 2016-2017 Academic Year

PART 1

Developmental Studies Mission and Student Learning Outcomes

A. State the school, department, and development studies missions.

University Mission	School Mission	Department Mission	Developmental Studies Mission
Our mission is to ensure students develop the skills and knowledge required to achieve professional and personal goals in dynamic local and global communities.	Central to the mission of the School is the preparation of students to achieve professional and personal goals in their respective disciplines and to enable their success in dynamic local and global communities. Our strategy is to foster an academic setting of diverse curricula that inherently incorporates an environment of service and collegiality.	The mission of the Department of Mathematics and Physical Sciences at Rogers State University is to support students in their pursuit of knowledge in mathematics and physical science.	Our mission in Developmental Education is to ensure that skill deficient students develop the math and science skills necessary to be successful in their college-level classes to promote their future personal and professional success in their local and global communities.

B. Align school purposes, department purposes, and developmental studies learning outcomes with the appropriate University commitments.

University Commitments	School Purposes	Department Purposes	Student Learning Outcomes
To provide quality associate, baccalaureate, and graduate degree opportunities and educational experiences which foster student excellence in oral and written communications, scientific reasoning and critical and creative thinking.	The School offers innovative degrees, which focus upon developing skills in oral and written communication, critical thinking, creativity, empirical and evidenced-based inquiry, experimental investigation and theoretical explanation of natural phenomena, and innovative technology.	1. To increase the student's critical thinking and reasoning abilities. 2. To increase the student's understanding and appreciation of the physical world, and the ability to apply this understanding in his/her personal and professional life. 3. To increase the student's awareness of the benefits of incorporation of technology into Science and Math studies. 4. To increase the student's ability to interpret and understand his/her world mathematically.	1. Students will demonstrate mastery of mathematics skills necessary for entry-level collegiate study.
To promote an atmosphere of academic and intellectual freedom and respect for diverse expression in an environment of physical safety that is supportive of teaching and learning.	The School educates its majors to think independently and have the knowledge, skills and vision to work in all types of situations and careers and communicate with all types of people.		
To provide a general liberal arts	The School offers general education	5. To prepare a student to	

education that supports specialized academic programs and prepares students for lifelong learning and service in a diverse society.	courses of high quality and purpose that provide a foundation for life-long learning.	matriculate into a four-year degree program in math or science-related fields or graduate.	
To provide students with a diverse, innovative faculty dedicated to excellence in teaching, scholarly pursuits and continuous improvement of programs.	The School fosters a community of scholars among the faculty and students of the institution.		
To provide university-wide student services, activities and resources that complement academic programs.			
To support and strengthen student, faculty and administrative structures that promote shared governance of the institution.			
To promote and encourage student, faculty, staff and community interaction in a positive academic climate that creates opportunities for cultural, intellectual and personal enrichment for the University and the communities it serves.	The School will offer and promote artistic, scientific, cultural, and public affairs events on the campus and in the region.	6. To serve as a resource for the community, utilizing the expertise of the faculty.	

PART 2

Revisit Proposed Changes Made in Previous Assessment Cycle

Revisit each instructional/assessment change proposed in Part 5 of the developmental studies SLR for the preceding year. Indicate whether the proposed change was implemented and comment accordingly. Any changes the department implemented for this academic year, but which were not specifically proposed in the preceding report, should also be reported and discussed here. Please note if no changes were either proposed or implemented or this academic year.

Proposed Change	Implemented? (Y/N)	Comments
A corequisite model for college gateway courses College Algebra, MATH 1513 and Math. for Critical Thinking, MATH 1503 that reduces the number of traditional developmental sections has been introduced. This new model uses concurrent Math Foundations classes to ensure that skill-deficient students develop the math and science skills necessary to be successful in their college-level classes. Assessment data will be collected from Fall 2017 and reported in the next report for these Foundations classes.	Y	Change is expected to increase the student success in college gateway courses, College Algebra and Math. For Critical Thinking.

PART 3

Response to University Assessment Committee Peer Review

The University Assessment Committee provides written feedback on departmental assessment plans through a regular peer review process. This faculty-led oversight is integral to RSU's commitment to the continuous improvement of student learning and institutional effectiveness. UAC recommendations are not compulsory and departments may implement them at their discretion. Nevertheless, respond below to each UAC recommendations from last year's peer review report. Indicate whether the recommendation was implemented and comment accordingly. Please indicate either if the UAC had no recommendations or if the program was not subject to review in the previous cycle.

Peer Review Feedback	Implemented (Y/N)	Comments
No changes were recommended; was not peer-reviewed.		

PART 4

Evidence of Student Learning

Evidence and analyze student progress for each of the developmental studies student learning outcomes (same as listed in Part I B above). See the *Appendix* for a detailed description of each component. Note: The table below is for the first student learning outcome. Copy the table and insert it below for each additional outcome. SLO numbers should be updated accordingly.

A. Student Learning Outcome					
SLO#1 Students will demonstrate mastery of mathematics skills necessary for entry-level collegiate study. :					
B. Assessment Measure	**C. Performance Standard**	**D. Sampling Method**	**E. Sample Size (n)**	**F. Results**	**G. Standard Met (Y/N)**
1a. Posttest in Elementary Algebra Plus with four course objective areas of Order of Operations, Algebraic Expressions, Algebraic Equations, and Applications.	1a. 65% of the students taking both the pretest and the posttest will score at least 65% on the posttest.	1a. Students who took the posttest in day, evening, and online sections taught by both fulltime and adjunct faculty on all three campuses in fall and spring semesters.	1a.136 Students (Online-13 On campus-123)	1a. Posttest results: % score # % < 20 2 1 21-30 0 0 31-40 0 0 41-50 7 5 51-64 7 5 65-70 27 20 71-80 39 29 81-90 36 27 91-100 18 13	1a. Y

1b. Posttest in Intermediate Algebra with four course objective areas of Slope &Line, Functions, Systems & Equations, and Quadratic Equations.	1b. 65% of the students taking both the pretest and the posttest will score at least 65% on the posttest.	1b. Students who took the posttest in day, evening, and online sections taught by fulltime and adjunct faculty on all three campuses in fall and spring semesters.	1b. 101 students. (Online 20 On campus-81)	1b. Posttest results: **% score # %** 0-10 0 0 11-20 0 0 21-30 2 2 31-40 4 4 41-50 7 7 51-64 13 13 65-70 16 16 71-80 21 21 81-90 24 24 91-100 14 14	1b. Y
1c. Pre/Post Test Elementary Algebra Plus with four course objective areas of Oder of Operations, Algebraic Expressions, Algebraic Equations, and Applications.	1c. 70% of the students taking both the pretest and the posttest in Elementary Algebra Plus will improve at least 30%.	1c.Students who took the posttest in day, evening, and online sections taught by both fulltime and adjunct faculty on all three campuses in fall and spring semesters.	1c. 136 Students (Online-13 On campus-123)	1c. Pretest results: **% score # %** 0-10 3 2 11-20 6 4 21-30 33 24 31-40 48 35 41-50 36 27 51-64 8 6 65-70 1 1 71-80 1 1 > 80 0 0	1c. Y
1d. Pre/Post Test Intermediate Algebra with four course objective areas of Slope & Line, Functions, Systems & Equations, and Quadratic Equations.	1d. 70% of the students taking both the pretest and the posttest in Intermediate Algebra will improve at least 30%.	1d. Students who took the posttest in day, evening, and online sections taught by fulltime and adjunct faculty on all three campuses in fall and spring semesters.	1d. 101 students. (Online 20 On campus-81)	1d. Pretest results: **% score # %** 0-10 9 9 11-20 24 24 21-30 23 23 31-40 30 30 41-50 7 7 51-64 4 4 65-70 0 0 71-80 1 1 81-90 3 3 91-100 0 0	1d. Y

1e. Based on results in the Entry-Level Assessment Through Fall 2013. Report compiled by Office of Accountability and Academics.	1e. Students completing Elementary Algebra and enrolling in Intermediate Algebra will make a grade of C or higher at the same percentage rate or higher than those students who waive/clear remediation.	1e. Student success (A, B, C) tracked from Elementary Algebra through Intermediate Algebra for Fall 2013 students.	1e. Requiring remediation: n=73 Waived or cleared remediation: n=237	1e. 62% of the students completing Elementary Algebra made a C or higher in Intermediate Algebra in the Fall of 2013 compared to 57% of the students who made a grade of C or better in Intermediate Algebra that waived or cleared remediation requirement.	1e. Y
1f. Based on results in the Entry-Level Assessment through Fall 2013. Report compiled by Office of Accountability	1f. Students completing Int. Alg. And enrolling in College algebra (Math 1513) or Math for Critical Thinking (MATH 1503) in the next semester will make a grade of C or higher at the same percentage rate or higher than those students who waive/clear remediation.	1f. Student success (A, B, C) tracked from Intermediate Algebra through both College Algebra and Math for Critical Thinking for Fall 2013 students.	1f. Requiring remediation: MATH 1513: n=96 MATH 1503: n=7 Waived or cleared remediation: MATH 1513: n=475 MATH 1503: n=23	1f. 61% of the students completing Intermediate Algebra made a C or higher in College Algebra in fall 2013 compared to 64% of those students who made a grade of C or better that waived or cleared remediation requirement. 43% of the students completing Intermediate Algebra made a C or higher in Math for Critical Thinking in fall 2013 compared to 22% of those students who made a grade of C or better that waived or cleared remediation requirement.	1f. N

H. Conclusions
1a. Overall 88% of the students taking the posttest in Elementary Algebra Plus with four course objective areas of Order of Operations, Algebraic Expressions, Algebraic Equations, and Applications made 65% or above. Out of online sections, 100% of the students taking posttest made 65% or above. Out of on campus sections, 87% of the students made 65% or above. Both online and on campus sections met the standards. 1b. Overall 73% of the students taking the posttest in Intermediate Algebra with four course objective areas of Slope &Line, Functions, Systems & Equations, and Quadratic Equations made 65% or above. Out of online sections, only 45% of the students taking posttest made 65% or above. Out of on campus sections, 80% of the students made 65% or above. Online sections alone did not meet the standards. 1c. Overall 78% of the students taking both the pretest and the posttest in Elementary Algebra Plus with four course objective areas of Oder of Operations, Algebraic Expressions, Algebraic Equations, and Applications improved more than 30%. Out of online sections, 92% of the students improved at least 30%. Out of on campus sections, 76% of the students improved at least 30%. Both online and on campus sections met the standards. 1d. Overall 75% of the students taking both the pretest and the posttest in Intermediate Algebra with four course objective areas of Slope &Line, Functions, Systems & Equations, and Quadratic Equations improved more than 30%. Out of online sections, only 55% of the students improved at least 30%. Out of on campus sections, 79% of the students improved at least 30%. Online sections alone did not meet the standards. 1e. A 11-year trend continues where students remediating through Elementary Algebra improve their math skill deficiencies to such an extent that they out perform on a competitive level, students not requiring the first course in the remediation sequence. 1f. These data continue a 11-year trend for Students in College Algebra after completing Intermediate Algebra. They are consistently performing below (about 3%) compared to those who waive or clear remediation.

PART 5

Proposed Instructional or Assessment Changes

Learning outcomes assessment can generate actionable evidence of student performance that can be used to improve student success and institutional effectiveness. Knowledge of student strengths and weakness gained through assessment can inform faculty efforts to improve course instruction and program curriculum. Below discuss potential changes the department is considering which are aimed at improving student learning or the assessment process. Indicate which student learning outcome(s) will be affected and provide a rationale for each proposed change. These proposals will be revisited in next assessment cycle.

Proposed Change	Applicable Learning Outcomes	Rationale and Impact

Proposed Change	Applicable Learning Outcomes	Rationale and Impact
The new Math Foundations classes will be assessed; assessment data will be collected from Fall 2017 and reported from the next report onward.	Students will demonstrate mastery of mathematics skills necessary for entry-level collegiate study.	Change is expected to improve quality of Foundations classes and increase the student success in college gateway courses, College Algebra and Math. For Critical Thinking.

PART 6
Summary of Assessment Measures

A. How many different assessment measures were used? Three measures per course.

B. List the direct measures (see appendix): (1) Percentage of students passing the posttest at 65% or higher and (2) the percentage of students improving 30% from pretest to posttest in each of the three courses.

C. List the indirect measures (see appendix): Students success in subsequent college-level coursework.

PART 7
Faculty Participation and Signatures

A. Provide the names and signatures of all full time and adjunct faculty who contributed to this report.

Faculty Name	Assessment Role	Signature
Roya Namavar	Collected data	Roya Namavar
Dr. Ram Adhikari	Collected and analyzed data, prepared the report	
Dr. Suhkitha Vidurupola	Collected and analyzed data, prepared the report	Suhkitha Vidurupola

B. Reviewed by:

Titles	Name	Signature	Date
Department Head	Dr. Jamie M. Graham	Jamie M Graham	10/2/17
Dean	Dr. Keith Martin	Keith N. Martin	10/3/17

Appendix

Student Learning Outcome

Student learning outcomes are the observable or measurable results that are expected of a student following a learning experience. Learning outcomes may address knowledge, skills, attitudes, or values that provide evidence that learning has occurred. They can apply to a specific course, a program of study, or an institution. Outcomes should be worded in language that clearly implies a measurable behavior or quality of student work. Outcomes should also include Bloom's action verbs appropriate to the skill level of learning expected of students.

Examples:

Students will be able to apply principles of evidence-based medicine to determine clinical diagnoses and implement acceptable treatment modalities.

Students will be able to articulate cultural and socioeconomic differences and the significance of these differences for instructional planning.

Assessment Measure

An assessment measure is a tool or instrument used to gather evidence of student progress toward an established learning outcome. Every program learning outcome should have at least one appropriate assessment measure. Learning outcomes are frequently complex, however, and may require multiple measures to accurately assess student performance. Assessment plans should try to incorporate a combination of direct and indirect assessment measures. Direct provide concrete evidence of whether a student has command of a specific subject or content area, can perform a certain task, exhibits a particular skill, demonstrates a certain quality in their work, or holds a particular value. Because direct measures tap into actual student learning, it is often viewed as the preferred measure type. Indirect measures assess opinions or thoughts about the extent of a student's knowledge, skills, or attitudes. They reveal characteristics associated with learning, but they only imply that learning has occurred. Both types of measures can provide useful insight into student learning and experiences in a program. Each also has unique advantages and disadvantages in terms of the type of data and information it can provide. Examples of common direct and indirect measures are listed below.

Direct Measures

- Comprehensive exams
- Class assignments
- Juried review of performances and exhibitions
- Internship or clinical evaluations
- Portfolio evaluation
- Pre/post exams
- Third-party exams such as field tests, certification exams, or licensure exams
- Senior thesis or capstone projects

Indirect Measures

- Graduate exit interviews
- Focus group responses
- Job placement statistics
- Graduate school placement statistics
- Graduation and retention rates
- Student and alumni surveys that assess perceptions of the program
- Employer surveys that assess perceptions of graduates
- Honors and awards earned by students and alumni.

Performance Standard
A performance standard is a clearly-defined benchmark that establishes the minimally-acceptable level of performance expected of students for a particular measure.

Examples:
At least 70% of students will score 70% or higher on a comprehensive final exam.
At least 75% of students will earn score a "Proficient" or higher rating on the Communicate Effectively rubric.

Sampling Method
Sampling method describes the methodology used for selecting the students that were assessed for a given measure. In some cases, such as most course-embedded measures, it is possible to assess all active enrolled students. In other cases, however, it is not feasible to measure the population of all potential students. In these cases, it is important that a well-designed sampling scheme be used to ensure the sample of students measured is an unbiased representation of the overall population. Where multiple instructors teach a particular course, care should be taken to assess students across all instructors, including adjuncts.

Examples:
All students enrolled in BIOL 4801 Biology Research Methods II
All majors graduating in the 2016-17 academic year.

Sample Size
Sample size is the number of students from which evidence of student learning was obtained for a given assessment measure.

Results
Results are an analytical summary of the findings arising from the assessment of student performance for a particular assessment measure. Typical presentation includes descriptive statistics (mean, median, range) and score frequency distributions.

Standard Met?
This is a simple yes/no response that indicates whether the observed level of student performance for a particular measure meets or exceeds the established standard. An N/A may be used where circumstances prevented the department from accurately assessing a measure.

Conclusion
The conclusion is a reflective summary and determination of the assessment results obtained for a specific learning outcome. Questions to consider in this section include the following:

- Does the assessment evidence indicate the learning outcome is being satisfactorily met?
- Where multiple measures are used for a single outcome, do the results present a consistent or contradictory pattern?
- What are the most valuable insights gained from the assessment results?
- What strengths and weaknesses in student learning do the results indicate?
- What implications are there for enhancing teaching and learning?
- How can the assessment process be improved?