**INSTITUTION:** uw colleges  
**AMOUNT REQUESTED:** $ 136,392

**PROJECT TITLE:** An alternate math pathway for non-STEM majors

**PRINCIPAL INVESTIGATOR:**
- Kavita Bhatia  
  Professor and Department Chair  
- Kirthi Premadasa  
  Assistant Professor

**DEPARTMENT:** Mathematics  
**PHONE:** 715 389 6548

**ADDRESS:**  
2000 W. Fifth St.  
Marshfield, WI 54449

**E-MAIL:** Kavita.bhatia@uwc.edu; Kirthi.premadasa@uwc.edu

**OTHER INVESTIGATORS:**
- Kyle Swanson, Professor Chair Department of Mathematics, UW-Milwaukee  
- Fe Evangelista, Associate Professor and Chair Department of Mathematics, UW-Whitewater  
- Cynthia McCabe, Professor Chair Department of Mathematics, UW-Stevens Point

**LIST OF NON-UW ESSENTIAL PARTNERS:**

**ONE-SENTENCE PROJECT DESCRIPTION:** This project deals with the development of a math literacy course that will enable students in non-STEM majors who placed into developmental mathematics to fulfill the general education mathematics requirement in one semester.

**Institutional Approval:**

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Electronic submission of proposals should be sent to: bjokisch@uwsa.edu
Title: An alternate math pathway for non-STEM majors

Project Abstract

This project deals with the development of a math literacy course that will enable students in non-STEM majors who placed into developmental mathematics to fulfill the general education mathematics requirement in one semester. The aim of the course is to develop critical thinking and quantitative reasoning skills in students while at the same time develop sufficient algebra skills to enable them to pursue higher level mathematics courses if they so desire. Statistics reveal that of the students who place into developmental mathematics courses only a quarter complete their mathematics requirement and a large percentage do not even complete their developmental courses. The lack of relevance of the material to the academic goals of these students is one reason for the lack of success. Our proposed alternate math pathway addresses this problem in a twofold manner. The pathway is based on research recommendations on content and pedagogy as well as experience gained by other pathways with proven success. Additionally, it will help increase the number of college degrees by improving retention and decreasing the duration of the math sequence of a non-stem major from three semesters to one semester.
Project Narrative

Over 60% of students entering community colleges place into developmental mathematics courses. Nearly two thirds of this large number of students never complete their developmental math sequence and out of those who eventually complete this sequence, less than a half ultimately complete College Algebra, the general education mathematics requirement at most institutions. A number of initiatives are now being nationally adopted to both refocus the subject of College Algebra and to find alternate pathways to the developmental mathematics sequence. We blend some of these emerging initiatives with our own to propose a redesigned solution to the mathematics curriculum at the UW-Colleges, where a student placed into developmental mathematics will be able to complete the general education mathematics requirement in one semester while obtaining the mathematical maturity and other necessary college skills to progress towards a college major. Our proposal addresses one of the main funding priorities of the Growth Agenda Grants which is to increase the number of Wisconsin college graduates.

a. Project Description

This project proposes the development and implementation of an alternate mathematics pathway for non-STEM majors that will enable a student placed into developmental mathematics to complete the general education mathematics requirement in one semester. Currently a student that places into developmental mathematics has to take at least three semesters of mathematics courses: Elementary Algebra, Intermediate Algebra and College Algebra to satisfy the Core mathematics requirement. The proposed course would be a five credit Math Literacy course which would develop quantitative reasoning skills and at the same time provide the students with the algebra skills necessary to pursue further mathematics courses. Technology, such as the Webassign program from Cengage Publishing or some similar user friendly software program, would be used to develop algebraic skills while class time would be used in developing critical thinking and quantitative reasoning
skills. Recent research, such as the paper by Deveans and Jackson\textsuperscript{1}, shows that supplemental programs such as Webassign are effective tools in undergraduate mathematics learning. The course would be designed using the best practices developed by national organizations like the Carnegie Foundation, American Mathematics Association of Two Year Colleges (AMATYC) and the Mathematical Association of America (MAA) as well as other UW-institutions. For students in non-STEM fields this course would fulfill the core mathematics requirement and at the same time the algebraic skills developed would prepare them for taking the next mathematics course, like a statistics course if they need to take one. The course would also prepare students in STEM related fields to take College Algebra. The idea behind the new pathways is to, rather than speed up, slow down or chunk content together, provide overall mathematical maturity to students to be successful in their future courses. Mathematical maturity is the formation of the ability and the capacity to reason abstractly in students. Dolciani and Wooton \textsuperscript{2}(1970) describe that in order to achieve this, we must: “…maintain a proper balance of emphasis on technique and on the ideas behind it. Students who manipulate symbols without understanding do not learn algebra. Those who understand the basic ideas, but who are slipshod in applying them are not doing satisfactory work. Thus, students must have the triple goal of learning “what to do, “how you do it” and “why you do it”.

\textit{b. Need}

UW Colleges is the primary institution of access for Wisconsin residents. As such a significant percentage of our students come from the lower quartiles of their high school class. We also attract a lot of non-traditional students who are apprehensive about their algebra skills due to their long

\textsuperscript{1} Deveans and Jackson, \url{http://www.usma.edu/cfe/Literature/DeveansJackson_07.pdf}

break from school. Both these groups would benefit from our proposed math literacy course as it would be an avenue for them to achieve success in math, something that has not been easily achieved in the past. This in turn supports the UW System’s goals of Inclusive Excellence of creating learning environments in which students of all background can thrive.

College Algebra is a core mathematics course for the Associates degree and fulfills the general education mathematics requirement at most 4-year institutions. In the years following World War II, the subject of College Algebra was introduced to the US student population as a stepping stone to Calculus. However in the current college bound population only a small fraction of students who take College Algebra in a liberal arts university go on to take Calculus. Evidence of this is seen in the 16 years long study by Dunbar\(^3\) in which he examined enrollment patterns of around 150,000 students at the University of Nebraska-Lincoln and found that only 10% of the students who pass College Algebra go on to take Calculus I and almost none go on to take Calculus III. So it seems that in reality, the large numbers of students that enroll in these courses (More than 1 million students in the year 2005 for instance) do so mostly to satisfy a general education requirement rather than use the knowledge gained as a stepping stone to a mathematically intensive field. This mismatch between why the students enroll in College Algebra and what we intend its syllabus to deliver has resulted in frustration for many students and teachers as well as a DFW rate which typically remains above 50%.

The development mathematics sequence too has it problems. Over 60% of the students entering liberal arts and community colleges in the United States enroll in developmental math courses

(Attewell, Lavin, Domina, & Levey\textsuperscript{4}, 2006; Bailey, Jeong, & Cho\textsuperscript{5}, 2010) and an astounding 70% of them do not succeed at these courses (Bailey et al., 2010). In addition to problems in retention, the ineffectiveness of the existing developmental math model was brought to life in a Florida based study (Calcagno, 2007; Calcagno & Long\textsuperscript{6}, 2008) which also went on to show a truly alarming result that, less than 50% of the students who had near perfect scores in the developmental math sequence actually passed a credit bearing math course such as College Algebra. The disconnected nature of the topics covered and their lack of relevance or connection to academic goals and the real world are regarded as two reasons for this situation.

Three impressive alternatives to this crisis in developmental mathematics have arrived since 2009. The Carnegie Foundation’s Quantway (a pathway that combines quantitative literacy and Developmental Mathematics together with “just in time” math to enable students coming from pre-algebra to earn college credit in two semesters) and Statway (similar to Quantway except it integrates Statistics and Developmental Mathematics) are two of these. A third initiative named MLCS (Math literacy for College Students) which has it is origins in Quantway was developed at the national level by AMATYC’s New Life for Developmental Mathematics project. The initial results of these pathways have been quite impressive. While traditional developmental mathematics goes through its main topics (Numbers, algebra, functions and proportions) sequentially in a disproportionate way, the MLCS approach is more layered and integrated with all four content


areas covered in each unit getting deeper and deeper as the units progress answering questions such as: “why do we algebra?”, “when do we algebra?”, rather than just “can we do algebra?”.

The goals of MLCS as well as the other Carnegie Foundation pathways are to have students engaged, making connections, persisting (and even struggling) and intervening only when it is not productive so that they gain confidence in problem solving rather than in routine exercises. The practice or the homework too is different in the sense that it is more deliberate practice.

We would like to consider successful models such as these and other research based recommendations to create a course for our institution that addresses the needs of our students and at the same time transfers to four year schools in the UW System. In addition we would like to ensure that our students are prepared to take further mathematics courses if their major requires them to do so. Hence we would like to incorporate development of basic algebraic skills as part of the course. The practice needed to develop these skills will be provided using technology which is readily available these days and is a good tool as it provides instant feedback to the students. The need for such a course is also highlighted in the attached letter of support by Ed Stredulinsky, former chair of the UW Colleges mathematics department and a member of the UW System Remedial Education Workgroup.

**c. Alignment**

i) The current mathematics requirement is a hurdle for many students in acquiring their Associates degree and ultimately their Bachelor’s degree. Successful implementation of this course will enable students to fulfill their mathematics requirement in a timely manner. As a result it will increase the graduation and the retention rates of students, both of which are goals of the Growth Agenda and Inclusive Excellence.
ii) The UW-Colleges have also had a rich tradition of mathematics reform. As early as 1996 the Colleges were pioneers in developing a Quantitative Reasoning course, Math 108, which non-stem students could take to fulfill their core mathematics requirement. However this course does not transfer well to other 4 year institutions and has very low enrollments. As a transfer institution it is very important for the UW-Colleges to have courses that transfer easily to the 4-year institutions and the comprehensives. To address the transfer issue upfront we have contacted some 4 year schools and comprehensives. UW-Milwaukee, UW-Stevens Point and UW-Whitewater have agreed to collaborate with us in the development of the course content to ensure transferability of the course. UWM is in fact launching a similar one year math literacy pathway in fall 2014 for their developmental students. The strong letter of support from UWM (attached) is a testament to the need for such a course in the UW System and assurance of its potential transferability. In the last few years UW Colleges math faculty have redesigned many courses. Shubhangi Stalder and Paul Martin have successfully created a new course (MAT 103) that uses the flip model, which gives the students an opportunity to complete both elementary algebra and intermediate algebra in the same semester. Due to the success of the model they were invited to use their approach in doing a pilot for UW-M’s developmental mathematics courses. Other department members like Ed Stredulinsky and Janette Miller have made making significant progress in developing alternate pathways for the development mathematics sequence based on the Emporia model. UW-Whitewater has been involved in the re-focus College Algebra project. Their course closely aligns with general education goals of intellectual and practical skills, knowledge of human cultures and the physical and natural world. The data from their initiative looks very promising with the proportion of D/F/W’s in the reform sections being nearly half of those in the traditional sections.
All of these models however focus on success in the current algebra based sequences and speedier pathways through them. Our proposal differs from these, in that it focuses on helping students acquire math literacy, and not just completing the current algebra requirements, but giving them the algebra skills necessary for continuing their education and doing all this in a single five credit, one semester course.

\textit{d. Project Timeline}

In the summer of 2014, the principal investigators (PI) team will research existing work on alternate pathways as well as developmental mathematics. This will involve a literature survey, communication with national experts in this area as well as visits to other institutions which have conducted successful initiatives, within the UW-System (such as UW-Whitewater) as well as those in other states (such as the Rock Valley College Illinois, which implemented the MLCS pathway for developmental mathematics).

In the fall of 2014, the PI team will start designing the course. This will involve careful planning as we will need to merge in expert recommendations for two different pathways into one and create course materials that are relevant and accessible to students. The PI’s will also have several meetings with their collaborators at UW-Milwaukee, UW-Stevens Point and UW-Whitewater to obtain their feedback on enhancing the quality of the course and tuning it to align it with their institutions. Detailed content will be designed such as lesson plans, examples and exercises.

In the spring of 2015, the PI’s will continue developing the materials and will start writing the materials, potentially in the form of a textbook for the course. The team will also attend two national conferences on nationwide initiatives on alternate pathways and the refocussing of the subjects in concern. Once the main course development is done, the course will be submitted for
approvals from the departmental curriculum committee and the senate curriculum committee. The PI team will also have meetings with the different campus leadership personnel of the 13 campuses of the UW Colleges to inform them about the course and its potential. We will also work on achieving transferability of the course to other UW four year institutions. In the summer of 2015 the team will continue to finalize and proofread the materials with the target of having them ready for the pilot delivery in fall 2015. The first pilot delivery of the course will take place in the fall of 2015 by the two PI's in their respective campuses. Needless to say, it is this actual run which will point out the most realistic situation with respect to the course. Therefore, the PI team will be making continuous adjustments and improvements while collecting performance and student perception data and conducting further editing of materials during the semester as the course progresses. The PI team will use the spring 2016 period, the last period of the grant to make changes based on the results of the pilot and conduct professional development and training workshops for UW System instructors who intend to teach the course in the fall of 2016. The PI team will also disseminate the different data obtained from the delivery in at least two SOTL related conferences. The grant period will end in May 2016 and the course will be run in the different campuses in fall 2016.

e. **Assessment and Evaluation**

To assess the impact of the project data will be collected on student completion and success rates, as well as on student motivation. Students will also be surveyed to see if there is any change in their perception of mathematics since students who place into developmental mathematics have often been unsuccessful in it in the past and have negative opinions about mathematics and their ability to do mathematics. Performance and retention data will be collected on some of the subsequent courses (such as Statistics for non-STEM majors and
college algebra for stem majors). In order to measure student motivation, we plan to use an established instrument such as the Motivated Strategies for Learning Questionnaire (MSLQ), an 81-item, self-report instrument designed to measure college students' motivational orientations and their use of different learning strategies.

f. **Project Impact and Benefits**

Based on the 2013 report on Remedial Education by Mark Nook, Senior Vice President for Academic and Student Affairs, in fall 2012 more than 20% of the freshmen at UW System placed into developmental mathematics and this number was 35% for the UW Colleges. All these students could be potentially impacted this course. The course we propose is grounded in national level recommendations and pathways which have been tried out nationally and have a track record of success. It is poised to provide UW-Colleges students with a significantly shortened math pathway focused to train them to be mathematically mature, independent learners. It is also unique in the sense it espouses both the best practices of recommendations in developmental mathematics and quantitative reasoning. Table 1 below gives a comparison between the current mathematics pathway and the proposed one.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Current sequence</th>
<th>Proposed Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to complete the math requirement for non-STEM majors (starting at MAT 091)</td>
<td>3 semesters</td>
<td>1 semester</td>
</tr>
<tr>
<td>Time to complete the math requirement for possible stem majors (starting at MAT 091)</td>
<td>3 semesters</td>
<td>2 semesters</td>
</tr>
<tr>
<td>Goals</td>
<td>Mainly to develop</td>
<td>Overall mathematical maturity</td>
</tr>
</tbody>
</table>
ability to perform algebraic manipulations and literacy to find answers to problems in future courses and work discipline with the necessary algebra ability

<table>
<thead>
<tr>
<th>Student Focus</th>
<th>Mostly mathematical content released to the students from a teacher-centered approach</th>
<th>Student centered problem solving dealing with realistic problems</th>
</tr>
</thead>
</table>

| Content and delivery                | Grounded in research using recommendations of many national level studies on developmental mathematics and college algebra |

Table 1: Comparison of Current and Proposed Math pathway

**g. Outcomes and Dissemination**

We will collect and analyze the data to measure the success of the model. The model will be disseminated by presentations at state mathematics conferences such as the Wisconsin Section MAA, OPID conference and the UW Colleges Colloquium. We will also organize and conduct a training workshop for UW System instructors wanting to offer the course.
**UNIVERSITY OF WISCONSIN SYSTEM - GROWTH AGENDA FOR WISCONSIN**  
**INSTITUTIONAL CHANGE GRANTS (ICG)**  
2014-2015 BUDGET FORM

### Personnel / Salary

Provide basic calculations and totals on this form. See GPR Fringe Table on web site for appropriate rates. Justify each entry in the Budget Narrative. If Match funds are pledged, provide details in the Budget Narrative.

1. Faculty/Staff (course release, overload, stipend, etc.)
   - Fringe Benefits for Faculty/ Staff positions greater than .5 FTE
     - Grant Funding Request: $55,400
     - Match (if applicable): $55,400
     - Total: $69,900
     - Grant Funding Request: $69,900
     - Match (if applicable): $69,900

2. Classified Staff
   - Fringe Benefits for Classified positions greater than .5 FTE

3. Limited Term Employees (LTEs)
   - Fringe Benefits for LTE positions greater than .5 FTE

4. Graduate Assistants
   - Fringe Benefits for Graduate Assistant positions greater than .5 FTE

5. Student Employees
   - Rate: $70.00
   - Total: $140

**Personnel / Salary Sub Total**

**SUPPLIES & EXPENSES**

Note that out of state travel is not permitted for UW personnel. If Match funds are pledged, describe in the Budget Narrative.

1. Travel (refer to http://www.uwsa.edu/fadmin/travel.htm)
   - Airfare
     - Miles: 3200
     - Rate: $0.510
     - Total: $1,224
   - Lodging
     - # Nights: 2
     - Rate: $70.00
     - Total: $140
   - Meals
     - # Days: 2
     - Rate: $60.00
     - Total: $120
   - Other

2. Office supplies
3. Photocopying
4. Instructional Materials
5. Other Promotional Materials
6. Other (list items and provide details in Budget Narrative)
7. Other (list items and provide details in Budget Narrative)
8. Other (list items and provide details in Budget Narrative)
9. Other (list items and provide details in Budget Narrative)

**Supplies & Expenses Sub Total**

**PROJECT FUNDING TOTALS**

**GRAND TOTAL INCLUDING GRANT REQUEST & MATCH (3 YEARS):**

**TOTAL MATCH (3 YEARS):**

**TOTAL GRANT REQUEST (3 YEARS):**

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**REFER TO THE PROGRAM’S REQUEST FOR PROPOSALS FOR PROGRAM-SPECIFIC INSTRUCTIONS, ALLOWABLE EXPENSES, AND DEADLINES**

*The Budget Narrative must be included on (a) separate sheet(s) following the Budget Form*
Budget and Budget Narrative: Grant funding for the proposed project will support the following expenses.

A) **Summer 2014 research existing pathways and recommendations stipends ($6600 x 2)** for the two PIs of the grant to research the existing alternate pathways, study recommendations by national organizations, communicate with national experts and visit academics at other UW institutions, attend in-state conferences and participate in professional development activities.

B) **Summer 2014, Spring 2015, Spring 2016 travel money ($946 x 2)** for the two PIs to visit two UW institutions with successful initiatives as well as travel and lodging for the UW workshop.

C) **Fall 2014 and Spring 2015 half time course release ($19600 x 2)** for the two PIs for design of the course which will involve finding and creating optimal content, planning an appropriate lesson flow and pace of delivery, creating online and in-class assessments, creating optimal exercises and example sets, creating a complete set of text and multimedia based student resources, creating over sixty detailed lesson plans for the five credit course, holding meetings (both online and on-site) meetings with the collaborators, attending conferences in the spring, submitting the course to curriculum committees, promoting the course among the campuses and communicating with UW-institutions to ensure transferability.

D) **Summer 2015 getting the course ready for pilot delivery stipends ($6600 x 2)** for the two PIs for finalizing the multimedia and printed content, the lesson plans, the online and in-class assessments, researching the optimal third party on line printed content, attending in-state conferences and participating in professional development activities.

E) **Fall 2015 half time course release($9800 x 2)** for the two PIs for managing the first pilot run of the course and making continuous adjustments which will be needed during this run of the course.
F) **Spring 2016 half time course release ($9800x2)** for the two PIs to conduct a professional development workshop for instructors in the UW System, make revisions to the course based on the Fall 2013 experience, present the course at conferences and prepare articles for publication.

G) **Stipends for instructors ($10,000)** for the initial team of 10 instructors to participate in the program and teach the course in the fall of 2016. Instructors will receive a $1000 stipend for participating in the training workshop, providing “live” feedback during the course (adjusting when necessary) and facilitating the data collection.

H) **Workshop coordinator stipend ($4000)** for organizing and conducting a workshop that will be open to mathematics instructors of the entire UW-System.

I) **UW System workshop expenses ($6200)** for meals for participants (60 x $15 = $900), materials for participants ($250), lodging (15 x $70=1050) and travel (15 x $200=$3000), honorarium ($500) and travel ($500) for visiting resource person.

J) **Stipend for Data collector and analyst ($1500 x 2 (years))** to collect and analyze data and provide reports to measure the success of the pathway.

K) **Stipend for Collaborators from UW-W, UW-M and UW-SP ($1000 x 3)** for feedback on content, assessment and aligning the course with the needs of their institutions and help the course transfer as well as share their own experiences about creating alternate pathways in their campuses.

L) **General Supplies and Equipment allowance ($3000)** needed for the design and delivery of the course such as the purchase of different software, instructional technology equipment, book etc.
Kavita G. Bhatia
Brief Curriculum Vitae

Education
1997 Ph.D. University of Oklahoma
1990 M.A. Indiana University

Employment
Present Professor and Chair, Department of Mathematics, University of Wisconsin Colleges
2002-2013 Associate Professor of Mathematics, University of Wisconsin Colleges
1996-2002 Assistant Professor of Mathematics, University of Wisconsin Colleges

Awards and Honors
2013 Graduate of The Academy of Leadership and Innovation
2009-2010 UW-Colleges Wisconsin Teaching Scholar

Grants
2011 UW-Colleges Summer Research Grant
2011-2013 Virtual Teaching and Learning Center Grant received each year

Publications
2014 Bhatia K., Premadasa, K., & Martin, P., Teaching Integration Applications using Manipulatives, PRIMUS (Problems, Resources, and Issues in Mathematics Undergraduate Studies), January 2014
2011 Bhatia, K., & Premadasa, K., Using Think Alouds to Remove Bottlenecks in Mathematics, RUME (Research in Undergraduate Mathematics Education) XIV Conference Proceedings, Volume IV 2011

Presentations (in 2013)


Resume for Kirthi Premadasa

Education
1990-1994, PhD, Purdue University
1987-1990, MS, Purdue University

Current Positions

 8/08– present, Assistant Professor  (University of Wisconsin Colleges)

Key Positions currently held.

 Director of Mathematical Association of America’s Project NExT (Wisconsin)
 Advisory Committee member for UW College’s Flex Degree Initiative.

Recent Recognitions

 UW System’s The Alliant Energy Underkofler Excellence in Teaching Award 2013
 UW Colleges Chancellor Award for Teaching Excellence 2012
 Wisconsin Teaching Fellow 2010-2011
 Arthur M Kaplan Award winner 2010-2011

Recent Grants received (Securing the grant as primary investigator)

 Kirthi Premadasa, Paul Martin, Paul Whitaker, Hamid Milani, Marlowe Embree, Joel Case, G. Samaranayake and Fe Evangelista "A Learning Community for Mathematics Using Excel", Curricular Redesign Grant (2010-2011) of the Learning Technology Development Council (LTDC), University of Wisconsin System
 UW-Colleges Summer Research Grant 2013
 UW Colleges lesson study and small group research grants in 2010,2011,2012 and 2013

Recent Peer Reviewed Publications

 Martin ,P.,& Premadasa, K.(2010). Effective use of Wikis in college mathematics classes. Accepted for publication at the Journal of Systemics, Cybernetics and Informatics.

Books published.

 Premadasa, K. Amarasinghe, R. Vega, Advanced Algebra for Teachers. (2010). Published by University Readers (This book is now adopted by California State University Fresno and California State University San Jose)
2/12/2014

I am a member of former UW System President Reilly's Remedial Education Workgroup, the subgroup looking at UW System and UW Board of Regents policy, and on former UW Colleges Chancellor Cross' Developmental Education Taskforce. I have been the Project Director for a UW System COBE grant overseeing projects at UW-Whitewater, UW-Parkside, and several UW Colleges campuses, whose purpose is to explore a variety of new approaches to teaching developmental mathematics. I am also the Project Director for a UW System Growth Agenda for Wisconsin Conference grant under which a group of UW System faculty and staff set up an October 2013 Conference exploring new approaches to developmental mathematics, and will be designing a workshop in June giving detailed training in some of the most promising methods.

Due to the above activities I have developed a good sense of what approaches seem most promising and are of the most interest to a variety of UW System institutions for teaching the algebra sequence leading up to math general education requirements.

One approach which has garnered a lot of interest in all of the above committees and grant groups is the Alternate Pathways movement which recognizes that the needs of non-STEM majors are in general different from those of STEM majors. A second underlying principle is that various types of higher order thinking skills taught to STEM majors can also be taught to non-STEM majors, but in a more accessible and applicable format.

In my estimation the UW System Remedial Education Workgroup will probably recommend Alternate Pathways courses as a Best Practice in its final report. My sense is also that such courses will be the wave of the future on many UW System campuses. Because of this, and also because of the impeccable credentials of the grant applicants in educational reform I strongly support this grant application.

Sincerely,

Ed Stredulinsky
Professor of Mathematics
University of Wisconsin-Rock County
2909 Kellogg Avenue
Janesville, Wisconsin 53546
Telephone: 608.758.6565 ext. 750
E-mail: ed.stredulinsky@uwcr.edu
February 12, 2014

RE: UW System Growth Agenda Grant

To Whom It May Concern:

I enthusiastically support the UW Colleges effort to develop an alternate Math Course for non-STEM majors, as it meshes well with plans for the developmental math program underway at UW-Milwaukee, and am willing to be a consultant for this project. In this capacity I will provide feedback during the development on content, assessment and transfer issues of the course to UW-Milwaukee. I agree to meet with UW Colleges staff remotely or in-person several times each semester during the 2014-2015 academic year, as well as on an as-needed basis during summer of 2014 and 2015.

Sincerely,

Kyle Swanson
Chair
UW System Growth Agenda Grant

I am willing to be a consultant for the development of the alternate Math Course for non-STEM majors for the UW Colleges.

In this capacity I will provide feedback during the development on content, assessment and transfer issues of the course to UW-Stevens Point.

I should be free to meet with you remotely or in-person a few times each semester during the next academic year and possibly this summer.

Sincerely,

Cynthia McCabe

Professor and Chair, Department of Mathematical Sciences

UW- Stevens Point
UW System Growth Agenda Grant

I am willing to be a consultant for the development of the alternate Math Course for non-STEM majors for the UW Colleges.

In this capacity I will provide feedback during the development on content, assessment and transfer issues of the course to UW-Whitewater.

I should be free to meet with the principal investigators remotely or in-person a few times each semester during the next academic year and possibly this summer.

Sincerely,

Fe Evangelista
Chair, Department of Mathematics
UW-Whitewater
evangelf@uww.edu
(262) 472-2764