FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby

DATE: January 25, 2013

SUBJECT: Curriculum Proposal #12-13-27, REVISION #2
Final Faculty Senate Approval 2/12/2013

I recommend approval of the attached REVISION #2 of Curriculum Proposal #12-13-27 from the College of Science and Technology, Department of Computer Science, Mathematics, and Physics. This revision corrects typographical errors caught by the Curriculum Committee.

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby JKK

DATE: January 22, 2013

SUBJECT: Curriculum Proposal #12-13-27, REVISION #1

I recommend approval of the attached REVISION #1 of Curriculum Proposal #12-13-27 from the College of Science and Technology, Department of Computer Science, Mathematics, and Physics. This revision addresses numerous corrections required for final approval by the Curriculum Committee.

This proposal adjusts the mathematics program for BS in Mathematics, BA in Education with a Specialization in Mathematics 5-Adult, and Mathematics Teaching Specialization, Grades 5-9 to the following:

120 hour degree
Addition of MATH 1125 to all Math and Math Education Programs.
Make MATH 1125 a prerequisite for MATH 2212 and MATH 3372
Reduce MATH 1113 from 4 to 3 credit hours
Add MATH 1113 to the degree requirements of BS in Mathematics and BA in Education Specialization in Mathematics 5-Adult.
Include MATH 1113 as pre-requisite for MATH 3335.

c: Dr. Christina Lavorata
Dr. Anthony Gilberti
Dr. Susan Goodwin
Ms. Dennine LaRue
Ms. Evie Brantmayer

FAIRMONT STATE UNIVERSITY

Office of the President

1201 Locust Avenue
Fairmont, West Virginia 26554
(304) 367-4151
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www.fairmontstate.edu

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby JRK

DATE: December 6, 2012

SUBJECT: Curriculum Proposal #12-13-27

I recommend approval of the attached Curriculum Proposal #12-13-27 from the College of Science and Technology, Department of Computer Science, Mathematics, and Physics.

This proposal adjusts the mathematics program for BS in Mathematics, BA in Education with a Specialization in Mathematics 5-Adult, and Mathematics Teaching Specialization, Grades 5-9 to the following:

120 hour degree
Addition of MATH 1125 to all Math and Math Education Programs.
Make MATH 1125 a prerequisite for MATH 2212 and MATH 3372
Reduce MATH 1113 from 4 to 3 credit hours
Add MATH 1113 to the degree requirements of BS in Mathematics and BA in Education Specialization in Mathematics 5-Adult.
Include MATH 1113 as pre-requisite for MATH 3335.

c: Dr. Christina Lavorata
Dr. Anthony Gilberti
Dr. Susan Goodwin
Ms. Dennine LaRue
Ms. Evie Brantmayer

CURRICULUM PROPOSAL (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

Proposal Number:	12-13-27
School/Department/Program:	College of Science and Technology/CSMP/Math
Preparer/Contact Person:	Dr. Susan Goodwin & Dennine LaRue
Telephone Extension:	X4307 and X4621
Date Originally Submitted:	12-06-2012
Revision (Indicate date and label it Revision #1, #2, etc.):	1-18-2013 Revision #1
Implementation Date Requested:	August 2013

I. **PROPOSAL**. Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

This proposal seeks to adjust the math program for Bachelor of Science in Mathematics, Bachelor of Arts in Education: Specialization in Mathematics 5-Adult, and Mathematics Teaching Specialization, Grades 5-9.

Changes are the following:

1. 120 hour degree definition
2. Add MATH 1125 - Math Reasoning: Reading and Writing to the requirements to all Math and Math Education programs
3. Add Math 1125 as a pre-requisite for Math 2212 – Sets, Relations, and Functions & Math 3372—Modern Geometry
4. Reduce credit hours of MATH 1113 from 4 to 3.
5. Add MATH 1113 – Applied Statistics to requirements for the BS in Mathematics and BA in Education 5- Adult
6. Include MATH 1113 as pre-requisite for MATH 3335 – Probability and Statistics
7. Change course elective selection for Math minor.

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-H, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s)

Total hours deleted. 0

B. Addition of course(s) or credit(s) from program(s)
MATH 1113 -- Applied Statistics
MATH 1125 -- Math Reasoning: Reading and Writing

Total hours added. 6 BS
6 Math 5-Adult
3 Math 5-9

C. Provision for interchangeable use of course(s) with program(s)

N/A

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

N/A

E. Other changes to existing courses such as changes to title, course number, and elective or required status.

Math 2212 – Sets, Relations, and Functions – Change pre-requisite to PR: MATH 1170 or (MATH 1190 and MATH 1125)

MATH 1113 – Applied Statistics - Reduce from 4 to 3 credit hours.
Require for BS in Math Program and Math Education Specialization 5-Adult.

MATH 3335 – Probability and Statistics – Change prerequisite to PR: MATH 1113 and (MATH 3316 or concurrent enrollment in MATH 3316).

MATH 3372 – Modern Geometry – Change pre-requisite to PR: MATH 1190 and MATH 1125.

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

   MATH 1125 – Math Reasoning: Reading and Writing
   3 credits
   PR: MATH 1115 or MATH ACT 24 or (MATH 2251 and MATH 2252)

   FSU owned

   Required course for BS in Mathematics, BA in Education: Mathematics 5-Adult, and Mathematics 5-9 teaching specialization.

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

   See Appendix I

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

   See Appendix I

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

   See Appendix II

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

   Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

III. **RATIONALE FOR THE PROPOSAL.**

A. **Quantitative Assessment**: Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

Taskstream data – Full report available upon request.

Data for MATH 1125 and Math 3372: Math 3372 (2010-2011 cycle – Outcome 1) and MATH 2212 (2008-2009 cycle – Outcomes 2 and 5.) – Data supports that students have very little experience writing original proof and their scores on the proof rubric met the standard, but the range of scores was almost the same as the maximum score. Students were weak in knowledge about algebraic and geometric properties since it may have been 8 years since this material was last covered prior to university admission. After instruction in the pre-requisite content, range of student scores was more compact and more than half the class achieved above average.

Data for MATH 1113: Course hours from twelve other WV college and universities which offer a similar course.

Data for MATH 3335: Math 3335 (2011-2012 cycle- Outcomes 3 and 6) – Data supports that students are not exceeding basic expectations which should occur in an upper level math class. This is due to lack of experience in applied statistics.

B. **Qualitative Assessment**: Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

Taskstream data – Full report available upon request. NXG Common Core Standards available upon request.

Qualitative Data for MATH 1125: NxG Common Core Standards are the new secondary school content standards adopted by the state of WV. Many students will enter the university with a deficiency in the ability to write mathematical proofs. Some may enter with no experience. In order to be successful in upper level courses, students need a strong background in formulating original mathematical proof. This will impact incoming freshman math majors within three years. See excerpt below.

The high school standards *emphasize mathematical modeling*, the use of mathematics and statistics to analyze empirical situations, understand them better, and improve decisions. For example, the draft standards state: "Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. It is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data."
From: http://www.corestandards.org

In addition, many math majors are also pursuing degrees in secondary education. In order to be effective secondary teachers, pre-service teachers should thoroughly understand the content they will be expected to teach and to understand why mathematical principles are true. When secondary students, ask why a principle is true the teacher should either know the reason or be able to locate mathematical articles to research the answer. The teacher must have the content knowledge to understand the material and explain this to their students.

Qualitative Data for MATH 1113: MATH 1113 (2010-2011 – Outcome 4 and 2011-2012 cycles – Outcome 4) and MATH 3335 (2011-2012 cycle – Outcome 3 and 6) Students now bring their own laptops with Minitab installed as part of required course materials and finish the labs on their own time outside of class. Reflections indicate that students would be better prepared if they had more experience in applied statistics before studying theoretical statistics and probability.

No new facilities or equipment will be required. Possible reference materials may be needed for MATH 1125. Some of the current material in the library will be more fully utilized. There will be no increase in the current need for new math faculty. There is always a demand for new faculty to cover classes currently taught by adjuncts.

For MATH 1113, it will make scheduling of the class easier since it will not overlap into another time period. Much of the fourth credit hour was dedicated to the students using Minitab in the classroom.

IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal. N/A

By signing here, you are indicating your college's/school's notification of this proposal.

College/School	Dean	Signature
SOEHHP	11/15/12	Dan O. Dengate
SAT	12/6/12	

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

VI. ADDITIONAL COMMENTS.

APPENDIX A
B.S. Degree in Mathematics
Current Program

Required Major Courses			**HRS**	
MATH 1190	Calculus I		4	
MATH 2200	Mathematical Logic		3	
MATH 2212	Sets, Relations, & Functions		3	
MATH 3315	Calculus II		4	
MATH 3316	Calculus III		4	
MATH 3335	Probability & Statistics		3	
MATH 3361	Abstract Algebra		3	
MATH 3362	Linear Algebra		3	
COMP 1102	Principles of Programming I		3	
	Any one of the following science courses			
CHEM 1101	General Chemistry I			
CHEM 1105	Chemical Principles			
PHYS 1101	Introduction to Physics I			
PHYS 1105	Principles of Physics I		4 - 5	
TOTAL Required Major Courses				34
Major Electives				9
Choose three courses from Groups A and B. At least one course must be chosen from Group A.				
Group A				
MATH 3375 Topology			3	
MATH 3391 Real Analysis			3	
Group B				
MATH 2206 Introduction to the Theory of Numbers			3	
Math 2216 Introduction to Discrete Mathematics			3	
MATH 3342 Numerical Analysis			3	
MATH 3372 Modern Geometry			3	
MATH 4401 Differential Equations			3	
Minor Electives				18-24
TOTAL HOURS FOR MAJOR				**43**
Required General Studies Courses				
First Year Experience				15-16
ENGL	1104	Written English I	3	
ENGL	1108	Written English II	3	
INFO	1100	Computer Concepts and Applications	3	
MATH			3-4	
COMM	2200, 2201, OR 2202	Communication	3	
Scientific Discovery				8
Cultural / Civilization Exploration				9
Society / Human Interactions				6
Artistic / Creative Expression				6
TOTAL GENERAL STUDIES HOURS				**37**
TOTAL FREE ELECTIVES				**24-30**
TOTAL HOURS				**128**

B.S. Degree in Mathematics
Proposed Program

Required Major Courses		HRS
MATH 1113	Applied Statistics	3
MATH 1125	Math Reasoning: Reading & Writing	3
MATH 1190	Calculus I	4
MATH 2200	Mathematical Logic	3
MATH 2212	Sets, Relations, & Functions	3
MATH 3315	Calculus II	4
MATH 3316	Calculus III	4
MATH 3335	Probability & Statistics	3
MATH 3361	Abstract Algebra	3
MATH 3362	Linear Algebra	3
COMP 1102	Principles of Programming I	3
	Any one of the following science courses	
CHEM 1101	General Chemistry I	Counted as General Studies hours XX
CHEM 1105	Chemical Principles	
PHYS 1101	Introduction to Physics I	
PHYS 1105	Principles of Physics I	

TOTAL Required Major Courses		36
Major Electives		9
Major Electives	Choose three courses from Groups A and B. At least one course must be chosen from Group A.	
	Group A MATH 3375 Topology MATH 3391 Real Analysis **Group B** MATH 2206 Introduction to the Theory of Numbers Math 2216 Introduction to Discrete Mathematics MATH 3342 Numerical Analysis MATH 3372 Modern Geometry MATH 4401 Differential Equations	
Minor Electives		18-24
TOTAL HOURS FOR MAJOR		63-69

Required General Studies Courses		
Attribute IA – Critical Analysis		X
	Major Course – MATH 2212	
Attribute IB – Quantitative Literacy		X
	Major Course -- MATH 1107 or higher in IB	
Attribute IC – Written Communication		3
	ENGL 1104* or any course in IC	
Attribute ID - Teamwork		3
	COMM 2200* or any course in 1D	
Attribute IE – Information Literacy		3
	ENGL 1108* or any course in 1E	
Attribute IF – Technology Literacy		3
	Any course in IF	
Attribute IG – Oral Communication		X
	COMM 2200* (Met in ID) or any course in 1G	
Attribute III - Citizenship		3
	POLI 1103* or any course in III	
Attribute IV - Ethics		3
	ENGL 2220* or any course in IV	
Attribute V - Health		2
	PHED 1100* or any course in V	
Attribute VI - Interdisciplinary		X
	POLI 1103* (Met in III) or any course in VI	
Attribute VIIA - Arts		3
	Any course in VIIA	
Attribute VIIB - Humanities		X
	ENGL 2220* (Met in IV) or any course in VIIB	
Attribute VIIC – Social Sciences		3
	GEOG 2210* or any course in VIIC	
Attribute VIID - Natural Science		4-5
	Required choices: PHYS 1101, PHYS 1105, CHEM 1101, CHEM 1105	
Attribute VIII – Cultural Awareness		X
	GEOG 2210* (Met in VIIC) or any course in VIII	
Additional General Studies hours		X
	Major Course – MATH 3361 writing intensive course	
	*Starred courses are recommended choices. Choosing a different course may result in more than 120 hours needed to graduate.	
TOTAL GENERAL STUDIES HOURS		**30-31**
TOTAL FREE ELECTIVES		**20-27**
TOTAL HOURS		**120**

APPENDIX A
B.A. in Education Degree: Specialization Mathematics 5-Adult
Current Program

Required Major Courses			**HRS**	
MATH 1190	Calculus I		4	
MATH 2200	Mathematical Logic		3	
MATH 2212	Sets, Relations, & Functions		3	
MATH 2216	Introduction to Discrete Mathematics		3	
MATH 3315	Calculus II		4	
MATH 3316	Calculus III		4	
MATH 3335	Probability & Statistics		3	
MATH 3361	Abstract Algebra		3	
MATH 3362	Linear Algebra		3	
MATH 3372	Modern Geometry		3	
MATH 4431	Methods & Materials of Teaching Math		3	
COMP 1102	Principles of Programming I		3	
	Any one of the following science courses			
CHEM 1101		General Chemistry I		
CHEM 1105		Chemical Principles		
PHYS 1101		Introduction to Physics I		
PHYS 1105		Principles of Physics I	4 - 5	
TOTAL Required Major Courses				43
Major Electives				3
Choose one of the following				
MATH 3375	Topology		3	
MATH 3391	Real Analysis		3	
Minor Electives				xx
Professional Education				39
TOTAL HOURS FOR MAJOR				**85**
Required General Studies Courses				
First Year Experience				15-16
ENGL	1104	Written English I	3	
ENGL	1108	Written English II	3	
INFO	1100	Computer Concepts and Applications	3	
MATH			3-4	
COMM	2200, 2201, OR 2202	Communication	3	
Scientific Discovery				8
Cultural / Civilization Exploration				9
Society / Human Interactions				6
Artistic / Creative Expression				6
TOTAL GENERAL STUDIES HOURS				**34**
TOTAL FREE ELECTIVES				**9**
TOTAL HOURS				**128**

B.A. in Education Degree in Specialization Mathematics 5-Adult
Proposed Program

Required Major Courses		HRS	
MATH 1113	Math Reasoning: Reading & Writing	3	
MATH 1125	Applied Statistics	3	
MATH 1190	Calculus I	4	
MATH 2200	Mathematical Logic	3	
MATH 2212	Sets, Relations, & Functions	3	
MATH 2216	Introduction to Discrete Mathematics	3	
MATH 3315	Calculus II	4	
MATH 3316	Calculus III	4	
MATH 3335	Probability & Statistics	3	
MATH 3361	Abstract Algebra	3	
MATH 3362	Linear Algebra	3	
MATH 3372	Modern Geometry	3	
MATH 4431	Methods & Materials of Teaching Math	3	
COMP 1102	Principles of Programming I	3	
	Any one of the following science courses		
CHEM 1101	General Chemistry I	Counted as General Studies hours XX	
CHEM 1105	Chemical Principles		
PHYS 1101	Introduction to Physics I		
PHYS 1105	Principles of Physics I		
TOTAL Required Major Courses			45
Major Electives			3
	Choose one course from the following:		
	MATH 3375 Topology MATH 3391 Real Analysis		
Professional Education as required by School of Education			39
TOTAL HOURS FOR MAJOR			**87**

Required General Studies Courses		
Attribute IA – Critical Analysis		X
	Major Course – MATH 2212	
Attribute IB – Quantitative Literacy		X
	Major course - MATH 1107 or higher in IB	
Attribute IC – Written Communication		3
	ENGL 1104* or any course in 1C	
Attribute ID - Teamwork		3
	COMM 2200* or any course in 1D	
Attribute IE – Information Literacy		3
	ENGL 1108* or any course in 1E	
Attribute IF – Technology Literacy		3
	Any course in IF	
Attribute IG – Oral Communication		X
	COMM 2200* (Met in ID) or any course in 1G	
Attribute II - Citizenship		3
	POLI 1103* or any course in II	
Attribute IV - Ethics		3
	ENGL 2220* or any course in IV	
Attribute V - Health		2
	PHED 1100* or any course in V	
Attribute VI - Interdisciplinary		X
	POLI 1103* (Met in III) or any course in VI	
Attribute VIIA - Arts		3
	Any course in VIIA	
Attribute VIIB - Humanities		X
	ENGL 2220* (Met in IV) or any course in VIIB	
Attribute VIIC – Social Sciences		3
	GEOG 2210* or any course in VIIC	
Attribute VIID - Natural Science		4-5
	Required choices: PHYS 1101, PHYS 1105, CHEM 1101, CHEM 1105	
Attribute VIII – Cultural Awareness		X
	GEOG 2210* (Met in VIIC) or any course in VIII	
Additional General Studies hours		X
	Major Course – MATH 3361 writing intensive course	
	*Starred courses are recommended choices. Choosing a different course may result in more than 120 hours needed to graduate	
TOTAL GENERAL STUDIES HOURS		**30-31**
TOTAL FREE ELECTIVES		**2-3**
TOTAL HOURS		**120**

Currently the School of Education is applying for a waiver for all education programs.

MATHEMATICS TEACHING SPECIALIZATION, GRADES 5-9 32 SEM. HRS.

Required courses (32 hrs.)

MATH 1112 COLLEGE ALGEBRA*.....3
MATH 1113 APPLIED STATISTICS.....4
MATH 1115 TRIG. AND ELEMENTARY FUNCTIONS.....3
MATH 1125 MATH REASONING: READING AND WRITING.....3
MATH 1185 APPLIED CALCULUS I.....4
MATH 2216 INTRODUCTION TO DISCRETE MATHEMATICS.....3
MATH 2251 STRUCTURE OF THE REAL NUMBERS.....3
MATH 2252 DATA ANALYSIS AND GEOMETRY.....3
MATH 3353 MATH METHODS FOR ELEMENTARY TEACHERS.....3
MATH 4431 METHODS & MATERIALS IN TEACHING MATH. 3

Total hours for specialization = 32

* omit if Math ACT greater than or equal to 23

MATHEMATICS MINOR 24 SEM HRS.

Required Courses (12 hrs.)
MATH 1190 Calculus I
MATH 3315 Calculus II
MATH 3316 Calculus III

Electives(12 hrs.)
(Choose four courses from the following list with at most one 1000 level course and at least one 3000/4000 level course.)
MATH 1113 Applied Statistics
MATH 1125 Math Reasoning: Reading and Writing
MATH 2200 Mathematical Logic
MATH 2206 Introduction to the Theory of Numbers
MATH 2212 Set, Relations and Functions
MATH 2216 Introduction to Discrete Mathematics
MATH 3335 Probability and Statistics I
MATH 3342 Numerical Analysis
MATH 3361 Abstract Algebra
MATH 3362 Linear Algebra
MATH 3372 Modern Geometry
MATH 3375 Topology
MATH 3391 Real Analysis
MATH 4401 Differential Equations

Appendix I

MATH 1125: Math Reasoning: Reading and Writing.....3 hrs.

Course Description: This course includes topics to prepare students for mathematical reasoning by reading and writing using technical mathematics terminology and valid reasoning methods. In addition, it will prepare students for the rigor of mathematical proof in 2000 level math classes. Topics to be covered include the role of definitions in proofs, how to write definitions, the role of the conditional statement in a proof, proofs based on algebraic and trigonometric properties, two-column geometry proofs, and induction. PR: MATH 1115 or MATH ACT 24 or (MATH 2251 and MATH 2252) Fall Semester Only.

Course Outline:

I. Definitions
   - A. What is a definition and why is it important?
   - B. How to read and write definitions

I. Aristotelian Logic
   - A. Types of Reasoning/Fallacies in Reasoning
   - B. Direct versus indirect proof (syllogism versus contraposition)
   - C. Types of Statements – Conjunction, Disjunction, Negation, Conditional
   - D. Basics of Truth Tables
   - E. Converse, Inverse, Contrapositive
   - F. Negating a quantified statement

II. Mathematical Systems
   - A. Components of a Mathematical System
   - B. Role of Definitions, Postulates, Theorems, Corollaries, Lemmas
   - C. Basic properties of the Real Numbers
   - D. Field of Complex Numbers

III. Proof Analysis and Construction
   - A. Proving theorems in the Field of Real Numbers
   - B. Proving theorems in the Field of Complex Numbers
   - C. Proofs from Math 1112-College Algebra
     1. Basic number theory proofs – even, odd, multiples
     2. Inequality Proofs
     3. Absolute Value Proofs
     4. Quadratic Proofs
     5. Log Proofs
     6. Properties of Proportions
   - D. Proofs from Math 1115–Trigonometry and Elementary Functions
     1. Derivation of Trig Identities
     2. Proving Trig Identities
   - E. Proofs from high school geometry
   - F. Other types of proofs as time permits
     1. Induction
     2. Arithmetic and Geometric Sequences, Binomial Theorem
     3. Limit Proofs from Calculus

Appendix II

Course: Math 1125 : Math Reasoning: Reading and Writing

Faculty Contact (name/email): Dennine LaRue alarue@fairmontstate.edu

Date: 10-26-2012

Submitted for General Studies Attribute(s): ID. Teamwork

Course Outcomes	**General Studies Mapping**	**Direct assessment measures**	**Student Evaluation Tool**	**Satisfactory performance standards**
Upon successful completion of this course, students will be able to...	The associated course outcome maps to the general studies outcome…	Student performance with respect to this course outcome will be measured by	Student performance on the direct assessment measure will be evaluated using ...	Satisfactory student performance on the direct assessment measure will consist of…
1. Analyze and compose rigorous definitions of mathematical concepts.		Exam/quiz question(s) in which students will be asked to analyze the structure of a rigorous definition and will be asked to state the precise definition of mathematical terminology.	Arizona Math Rubric	Average score of greater than 2.5 on the Arizona Math Rubric.
2. Construct truth tables for compound statements as in introduction to the principles of Aristotelian logic.		Exam/quiz question(s) in which students will be asked to construct truth tables for conjunction, disjunction, negation, conditional, bi-conditional, converse, inverse, and/or contrapositive.	Arizona Math Rubric	Average score of greater than 2.5 on the Arizona Math Rubric
3. Apply principles of Aristotelian logic by analyzing arguments.		Exam/quiz question(s) in which students will analyze an argument to determine if the method of reasoning is valid or invalid according to Aristotelian logic rules.	Arizona Math Rubric	Average score of greater than 2.5 on the Arizona Math Rubric.
4. Demonstrate the ability to identify the structural parts of a mathematical proof which contain hypotheses, conclusion, undefined terms, defined terms, axioms, theorems, and the use of logic.		Exam/quiz question(s) in which students will be asked to identify the various structural parts of the hypotheses, conclusion, undefined terms, defined terms, axioms, theorems, and the use of logic.	Arizona Math Rubric	Average score of greater than 2.75 on the Arizona Math Rubric.

Appendix II

5. Design proofs for algebraic, trigonometric, and geometric propositions at a mathematical level below Calculus I.		Exam/quiz/homework proof(s) in which students will be asked to prove propositions in algebra, trigonometry, and geometry.	Proof Rubric	Average score of greater than 9 on the proof rubric.
6. Demonstrate the ability to work as a team to solve problems using knowledge at a mathematical level below Calculus I.		Activity in which students work as a team to solve an unfamiliar problem.	Team preparation questionnaire, team member evaluation form, team leader evaluation form, and self-evaluation form.	Completion of the team preparation questionnaire and average score of greater than 2.5 on the evaluation forms

Note – If the mean, which includes all student scores, does meet the performance standard, then the median and the mode will be evaluated.

Larue, Alice

From: Larue, Alice
Sent: Tuesday, November 13, 2012 11:30 AM
To: Dempsey, Van
Cc: Larue, Alice
Subject: Reqeust for signature for math curriculum proposal
Attachments: math curriculum proposal 11-9-2012.pdf

Dear Dr. Van Dempsey

The Math Department is submitting a curriculum proposal that will affect the education programs of

Bachelor of Arts in Education: Specialization in Mathematics 5-Adult, and Mathematics Teaching Specialization, Grades 5-9.

Attached is a copy of the proposal which includes the current and the proposed program.

Please note that students **will be able to meet the new 120 hour degree definition** even with the addition of two classes to the degree.

Items 2 and 3 affect the School of Education.
The proposal seeks to satisfy the following:

1. The 120 hour degree definition
2. Add MATH 1125 - Math Reasoning: Reading and Writing to the requirements to all Math and Math Education programs
3. Add MATH 1113 – Applied Statistics to requirements for the BS in Mathematics and BA in Education 5- Adult
4. Reduce credit hours of MATH 1113 from 4 to 3.
5. Include MATH 1113 as pre-requisite for MATH 3335 – Probability and Statistics.

What time would be a good time for me to get your signature on the proposal? I am free the rest of today, Wednesday 8-9:30 a.m., and all day on Thursday 11/15.

If you have any questions, please feel free to contact us.

Sincerely,

A.Dennine LaRue
Temporary Assistant Professor of Mathematics
Fairmont State University
417 Engineering Technology Building
1201 Locust Ave.
Fairmont, WV 26554

Larue, Alice

From: Larue, Alice
Sent: Tuesday, November 13, 2012 12:32 PM
To: Larue, Theodore; Baker, Randall; Hossain, Mahmood; Tobin, Donald
Cc: Larue, Alice
Subject: FW: Notification of Math Curriculum Proposal

From: Larue, Alice
Sent: Tuesday, November 13, 2012 11:45 AM
To: Murphy, Kimberly; Abbott, Melissa; Scanlon, Matthew; Harvey, Erica; Baur, Andreas; Boni, Mary; Baxter, Harry; Morris, Tony; Flood, Mark; Trisel, Donald; Yeager, Phillip; Huggins, Pamela; Magro, Albert; Roof, Steven
Cc: LaRue, Dennine
Subject: Notification of Math Curriculum Proposal

Dear Affected Departments

Computer Science
Occupational Safety
Forensics
Biology
Pre-pharmacy
Chemistry with BioTechnology Emphasis
Nursing

The Math Department is submitting a curriculum proposal that may affect your program.

Item 4 in the proposal may help your ability to meet the new 120 hour degree definition if your program requires MATH 1113 and the credit hours are being reduced.

The proposal seeks to satisfy the following:

1. The 120 hour degree definition
2. Add MATH 1125 - Math Reasoning: Reading and Writing to the requirements to all Math and Math Education programs
3. Add MATH 1113 – Applied Statistics to requirements for the BS in Mathematics and BA in Education 5- Adult
4. Reduce credit hours of MATH 1113 from 4 to 3.
5. Include MATH 1113 as pre-requisite for MATH 3335 – Probability and Statistics.

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