

# PROGRAM REVIEW

## Fairmont State Board of Governors

Program with Special Accreditation    Program without Special Accreditation

Date Submitted March 18, 2019



Program B.S., Mathematics \_\_\_\_\_  
Degree and Title

### INSTITUTIONAL RECOMMENDATION

The institution is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for its recommendation:

- 1. Continuation of the program at the current level of activity;
- 2. Continuation of program with corrective action (for example, reducing the range of optional tracks or merging programs);
- 3. Identification of the program for further development (for example, providing additional institutional commitment);
- 4. Development of a cooperative program with another institution, or sharing courses, facilities, faculty, and the like;
- 5. Discontinuation of the Program

Rationale for Recommendation:

 Signature of person preparing report:	<u>RIESEN</u>	<u>3/18/19</u> Date
 Signature of Dean		<u>3/18/19</u> Date
Signature of Provost and Vice President for Academic Affairs:		_____ Date
Signature of President:		_____ Date
Signature of Chair, Board of Governors:		_____ Date

**B.S., Mathematics**  
**Fairmont State University**  
**Five-Year Program Review**  
**(2013-2018)**  
Submitted Spring 2019



**B.S., Mathematics**  
**Five-Year Program Review**  
**(2013-2018)**  
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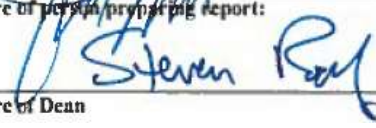
Program B.S., Mathematics Degree and Title

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Signature of Chair, Board of Governors:			Date

# Executive Summary for Program Review

(not to be more than 2-3 pages)

## **Name and degree level of program**

Mathematics – Bachelor of Science Degree

Mathematics Education – Bachelor of Arts Degree

Mathematics (Comprehensive; grades 5-Adult) Certification

General Mathematics through Algebra I (grades 5-9) Certification

MAT (5-Adult) – Master of Arts in Teaching Degree

## **External reviewer(s)**

CAEP (Council for the Accreditation of Educator Preparation)

Note: Although not all mathematics students are Mathematics Education majors, programmatic assessment occurs in courses common to both degrees.

## **Synopses of significant findings, including findings of external reviewer(s)**

The recommendation of the 2014 State Program Review Committee was to continue the Mathematics Program. NCATE (National Council for Accreditation of Teacher Education) recognized the program with full accreditation through 2018. On July 1, 2013, NCATE merged with the Teacher Education Accreditation Council (TEAC) to form the Council for the Accreditation of Educator Preparation (CAEP). Upon the creation of CAEP, the standards were rewritten. In 2017, CAEP recognized all three Mathematics Education programs as fully accredited for the next 5-7 years (minimally until 2023), depending on the date of our next CAEP on-site visit.

Our program design is supported by the Guide to Majors in the Mathematical Science from MAA-CUPM 2015 (Mathematical Association of America Committee on the Undergraduate Program in Mathematics) and the Conference Board of Mathematical Sciences Report MET II (Mathematical Education of Teachers Part II, 2012.) The program demonstrates a successful approach to sustainability, viability and assessment.

## **Plans for program improvement, including timeline**

The Mathematics Program intends to pursue improvements in program offerings for applied Mathematics courses and internship experiences to prepare the B.S. mathematics major for more varied employment opportunities.

In Fall 2014, the Mathematics program piloted co-requisite credit-bearing Mathematics courses in College Algebra, Fundamental Concepts of Mathematics, and Technical Mathematics. By Fall 2015, co-requisite offerings were at scale, meaning that all entering freshman who tested below the minimum test score for three entry level courses could take the credit-bearing course within the first year of enrollment. Since full implementation, the Mathematics program now teaches on average 400-500 more students per year than prior to the implementation of co-requisite courses.

Prior to 2015, these students were placed in remedial courses offered by Pierpont Community and Technical College. More adjunct faculty were needed in this review than in the previous review due to the development of co-requisite courses. The co-requisite model for remediation

was required to be offered by the WVHEPC and was instituted at Fairmont State University without the hiring of additional full-time faculty. Although 3 FEAP positions were created in the College of Science and Technology, there was still a large number of adjuncts needed to teach lower level courses. See pages 26-29 of this review for adjunct use and Appendix E on page 85.

### **Identification of weaknesses or deficiencies from the previous review and the status of improvements implemented or accomplished**

The previous Program Review in 2014 did not cite any weakness or deficiencies. The Mathematics Program was deemed essential to both the state and the region. See page 31 of this review for complete comments. CAEP evaluation of Mathematics Education did not find any weaknesses or deficiencies, but there was a request for updated information about historical elements in subsequent reviews for the General Mathematics through Algebra 1 (grades 5-9) program. (See Appendix D on page 78.)

### **Five-year trend data on graduates and majors enrolled**

Fairmont State Mathematics Program percentage of graduates in Mathematics/Mathematics Education is higher than the national average and is supplying the region and state with mathematics graduates. According to the National Center for Educational Statistics, in 2016-17 undergraduate mathematics degrees nationwide accounted for approximately .9% of the total number of Bachelor's degrees awarded. Mathematics Education degrees were .07%.

Data from the HEPC website indicates that from 2014-2017, the Fairmont State Mathematics Program's yearly average is 6 B.S. degrees in Mathematics and 3 B.A.E. degrees in Mathematics Education. Fairmont State's average number of Bachelor's degrees awarded was approximately 650 per year. The percentage of Fairmont State University B.S. in Mathematics and B.A.E. in Mathematics Education were .9% and .4% of the Fairmont State total, respectively. If Master of Arts in Teaching (Mathematics) and Mathematics 5-9 certified teachers were included in the education total, the Mathematics Education degree percentage would increase to .9% which is twelve times the national percentage for 2016-17.

All of the BS Mathematics completers are not represented in the data published on the WVHEPC website. Research of student transcripts shows that, for the Mathematics B.S., the average would increase to 1.1%. In addition, students use mathematics as a minor, but no data is currently collected on minors. Due to confidentiality of student records, student specific data is not included in this report. Substantiating evidence is available upon request.

During the past five years, the math program has averaged 17 mathematics majors per semester and 6 mathematics education majors. These is likely to be overlap in these two numbers. Further, a significant number of students do not declare mathematics as a major until they apply for graduation since many of our majors declare either computer science or mathematics education as their first major with the full intention of earning a double major.

### **Summary of assessment model and how results are used for program improvement**

The Mathematics program utilizes a departmental continuous improvement plan to meet institutional assessment needs. The continuous improvement plan consists of course assessment, programmatic assessment, and program modifications that are determined to be necessary by outcome assessments. The purpose of the Continuous Improvement Plan (CIP) is to



identify, track, and remediate programmatic weaknesses. The evaluation of competencies and program components leads to modifications of content, delivery, and other factors deemed instrumental in the pursuit of programmatic improvement.

The CIP occurs at three levels. These levels include:

- Assessment of Course Outcomes
- Assessment of Program Outcomes
- Program Modifications as determined necessary by the assessment practices.

Course Outcomes are linked to appropriate Program Outcomes through Taskstream. The Course Outcomes are assessed using various tools such as course exams, assignments, quizzes, projects, labs, etc. The program has established a benchmark for each program outcome to demonstrate competency in each outcome. If the students cannot demonstrate success, a plan of improvement is established for the assessment point. These continuous improvement plans are approved by a collaborative agreement of the program faculty. Every program course has clearly defined outcomes and assessment points to be evaluated. Specific course outcomes were chosen to use as the assessment points for each program outcome. A curriculum map has been developed to organize program assessment. (See examples in Appendix A on page 46.)

The CIP motivated the development of MATH 1561 (Introduction to Mathematical Reasoning), a new entry-level mathematics course designed for the Mathematics and Computer Science Programs. This course streamlines our course offerings by replacing two courses that were previously offered (MATH 1125 and MATH 1170). The content of MATH 1561 includes content requested by Computer Science, in response to changes in their required mathematics course offerings. As a result, this course enables students to more easily double major in Mathematics and Computer Science.

The Mathematics Support Program, which replaced what was formerly known as Developmental Education, has been at full scale since Fall 2015. HEPC has recognized Fairmont State as one of the leaders in the development of mathematics co-requisite courses in West Virginia.

**Data on student placement (for example, number of students employed in positions related to the field of study or pursuing advanced degrees)**

Forty completers who received either a B.S., B.A.E., or Mathematics 5-9 certification in the past 5 years were surveyed. Of the 28 responses, 11 have either attended or are attending graduate school. Seven have already earned their degrees. Twenty-seven respondents are currently employed and one is not looking for work. Approximately 75% of the surveyed graduates are employed or attending graduate school in West Virginia.

Mathematics faculty are aware of information about many other graduates who did not respond to the survey and are not included in this report. Appendix C on page 68 contains detailed information about the graduates who did respond and many of their comments about the program.

**Final recommendations approved by governing board**

# PROGRAM REVIEW

FAIRMONT STATE UNIVERSITY	
<b>Program:</b>	<b>Mathematics/Mathematics Education</b>
<b>School:</b>	<b>College of Science and Technology</b>
<b>Date:</b>	<b>March 18, 2019</b>

## Program Catalog Description (17-18 Catalog):

The mission of the mathematics degree programs is to equip students with analytic and problem-solving skills for careers or graduate study. Classes develop a student's ability to apply mathematical methods and ideas to problems in mathematics and other fields. Students learn to communicate ideas effectively, assimilate new information, and to be self-reliant learners.

The department cooperates fully with the School of Education in meeting its mission for candidates for a B.A. degree in education with mathematics teaching specialization for either the 5-9 or the 5-Adult grade levels.

Students interested in mathematics have the option of selecting one of the following degree programs:

- 1) Bachelor of Science degree in Mathematics, as preparation for immediate employment or for graduate school.
- 2) Bachelor of Arts in Education degree with a 5-Adult comprehensive specialization as preparation for teaching mathematics. Students receiving a B.A. in Mathematics Education also satisfy the degree requirements for a B.S. in Mathematics. Students pursuing these degrees are advised in the Mathematics department. NOTE: MATH 1550, 1561, 2563, 2501, 2502, and 3503 are required for both degrees and should be completed early in the program.
- 3) Mathematics 5-9 teaching specialization can be added to an Elementary Education degree or as a second specialization with a B.A. in Education.

It is expected that incoming students in this field will present a minimum of four units of high school mathematics, including the equivalent of two units of algebra, one unit of geometry, and one advanced unit such as Pre-Calculus. Students without this background may be required to complete appropriate lower-level courses in addition to the stated requirements.

Students should consult with their advisor concerning credit for prerequisites and special examinations for course credit. All students majoring in mathematics must complete a minor. Students who are receiving a teaching certificate use Education as their minor.



## VIABILITY (§ 4.1.3.1)

### Enrollment -- Applicants, graduates

#### Applicants:

There are no specific program requirements for students to declare a major in mathematics. Any student admitted to the university can declare a major in mathematics. University admission requirements are stated on pages 10-15 of the Fairmont State University 2017-18 catalog.

The Mathematics program catalog description indicates expectations concerning types of high school courses which should have been taken. It is expected that students will enroll in Calculus 1 during in their first semester provided they meet a minimum test score of Mathematics ACT 25 or new Mathematics SAT 590. Students without this background may still declare a Mathematics major and may be required to complete appropriate lower-level courses prior to admittance to Calculus 1. These courses will be in addition to stated requirements.

Many students do not declare Mathematics as a major when first admitted to Fairmont State, but later choose a Mathematics or Mathematics Education major.

Data in the table below is from the common data base searched using the Mathematics Major Code of 5611. Therefore, this only counts those who chose math as a first choice and may not include Math Education majors or those who listed Mathematics as a second choice to Computer Science or some other field.

Academic Year	Number of Applicants Expressing Interest in Mathematics	Number of Applicants Admitted to Fairmont State University Declaring Mathematics	Number of Applicants Enrolled in Mathematics
2013-2014	18	7	4
2014-2015	22	13	5
2015-2016	24	11	4
2016-2017	17	11	4
2017-2018	11	6	1
<b>Total</b>	<b>92</b>	<b>48</b>	<b>18</b>

**Graduate Data:**

Data from the HEPC website indicates that from 2014-2017, the Fairmont State Mathematics Program has averaged 6 B.S. degrees in Mathematics and 3 B.A.E. degrees in Mathematics Education. In addition, students also use Mathematics as a minor, but there is no data currently collected about minors.

Data in the table below is from the WVHEPC Certificate & Degrees Conferred spreadsheet, the 2019 Report Card, and research of student transcripts. A review of both institutional data and student transcripts revealed a larger number of Mathematics B.S. completers than the number of graduates reported by the HEPC. Completers are students who completed all of the coursework required to receive a Mathematics degree, but were not counted in statistics on the HEPC website. Due to confidentiality of student records, student specific data is not included in this report. Substantiating evidence is available upon request.

<b>Academic Year</b>	<b>No. of B.S. Graduates</b> <i>wvhepc.edu</i> Program/Institution	<b>No. of B.S. Completers</b> <i>Transcripts</i>	<b>No. of B.A.E. Completers</b>	<b>No. of Mathematics 5-9 Completers</b>	<b>No. of MAT In Math Completers</b>
<b>2013-2014</b>	3/598	3	1	4	1
<b>2014-2015</b>	8/665	10	3	7	0
<b>2015-2016</b>	6/673	8	4	1	0
<b>2016-2017</b>	7/667	10	3	1	1
<b>2017-2018</b>	6/est. 650	6	4	2	0
<b>Total</b>	<b>30</b>	<b>37</b>	<b>15</b>	<b>15</b>	<b>2</b>

## VIABILITY (§ 4.1.3.1) CONTINUED

### Enrollment -- Program courses

Five-year course enrollment and success rate for all Mathematics program courses is provided below. A list of course titles and descriptions follow the table. Success rate is based on the number of students passing the course with a letter grade of D or better.

**The success rate for all courses is greater than or equal to 70%.**

MATH Course Number*	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Total Enrollment (2013-2018)	Five-year Success Rate
1550 (1113)	55	59	75	121	66	376	80%
1561 & 1125	11	10	10	19	66	116	81%
2501 (1190)	90	89	66	70	80	395	70%
2502 (3315)	31	25	25	32	29	142	87%
2510 (2200)	26	24	21	24	10	105	84%
2520 (2206)	8	NA	9	NA	3	20	90%
2562 (2216)	28	24	19	22	29	122	87%
2563 (2212)	21	9	10	8	9	57	91%
3503 (3316)	15	15	10	12	12	64	92%
3504 (4401)	NA	4	NA	10	NA	14	100%
3520 (3362)	18	10	11	7	14	60	92%
3540 (3342)	5	NA	NA	NA	NA	5	100%
3550 (3335)	10	12	7	13	9	51	90%
3570 (3372)	NA	10	NA	8	NA	18	94%
4400	1	NA	NA	NA	NA	1	100%
4520 (3361)	13	7	8	4	6	38	100%
4531 (4431)	11	6	4	5	4	30	100%
4580 (3375)	NA	9	NA	9	NA	18	100%
4590 (3391)	13	NA	7	NA	7	27	93%
4498	NA	3	1	3	4	11	100%
<b>Total</b>	356	317	283	367	348	1671	82%

\* Nearly all course numbers were changed by Fall 2017. An explanation of the renumbering system and course descriptions follows the next table on page 10 of this report.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Enrollment -- Success rates for Program Courses

Each column depicts the number of students that passed and failed the major course per academic year. The last column provides the five-year % success rate for each major course. The success rate is the number of students passing the course with a letter grade of D or better.

MATH Course Number	Number of Students Passed or Failed/Withdrew Per Academic Year										Five-year Success Rate
	2013 – 2014		2014-2015		2015-2016		2016-2017		2017-2018		
	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	
1550(1113)	40	15	44	15	66	9	92	29	57	9	80%
1561 & 1125	11	0	8	2	9	1	15	4	51	15	81%
2501(1190)	60	30	58	31	49	17	49	21	62	18	70%
2502(3315)	25	6	22	3	24	1	30	2	22	7	87%
2510(2200)	19	7	21	3	17	4	21	3	10	0	84%
2520 (2206)	7	1	Not offered		8	1	Not offered		3	0	90%
2562(2216)	25	3	22	2	14	5	19	3	26	3	87%
2563(2212)	17	4	9	0	10	0	7	1	9	0	91%
3503(3316)	13	2	15	0	9	1	11	1	11	1	92%
3504(4401)	Not offered		4	0	Not offered		10	0	Not offered		100%
3520(3362)	18	0	10	1	9	1	6	1	12	2	92%
3540(3342)	5	0	Not offered		Not offered		Not offered		Not offered		100%
3550(3335)	9	1	12	0	7	0	10	3	8	1	90%
3570(3372)	Not offered		9	1	Not offered		8	0	Not offered		94%
4400	1	0	Not offered		Not offered		Not offered		1	0	100%
4520(3361)	13	0	7	0	8	0	4	0	6	0	100%
4531(4431)	11	0	6	0	4	0	5	0	4	0	100%
4580(3375)	Not offered		9	0	Not offered		9	0	Not offered		100%
4590(3391)	13	0	Not offered		6	1	Not offered		6	1	93%
4498	Not offered		3	0	1	0	3	0	4	0	100%
<b>TOTAL</b>	287	69	259	58	242	41	299	68	291	57	<b>82%</b>

## The Mathematics Program offers the following program courses:

\*Nearly every course was renumbered in the mathematics program in 2017. Most of the content in the courses was not changed. This renumbering of courses facilitated the introduction of new support courses and allowed courses to be numbered sequentially in order of prerequisite and/or type of course. Further, the renumbering allowed us to decrease confusion with courses taught by Pierpont Community and Technical College with the same or similar names and numbers.

The numbering convention is:

- 14xx courses are mathematics courses with support
- 15xx, 25xx, 35xx, 45xx are mathematics courses with no support component

### **MATH 1550 (1113) Applied Statistics (3 hrs.)**

This course is an introduction to statistics with appropriate applications. Topics covered include descriptive statistics, probability, binomial distribution, normal distribution, sampling, hypothesis testing and regression and correlation. A problem-solving approach and modern software will be used.

PR: MATH ACT score of 21 or MATH SAT of 500 or COMPASS score of 49 or MATH 1102 or MATH 1112 or MATH 1520 or MATH 1430 or MATH 1530.

### **MATH 1561 Introduction to Mathematical Reasoning (3 hrs.)**

This course is designed to help students transition into upper level college mathematics. Students will learn how to reason mathematically by reading and writing using technical mathematical terminology. Topics covered include basic set theory, mathematical logic, basic methods of proof including mathematical induction, properties of the field of real numbers, basic number theory and function notions, as well as sequences and series.

PR: C or better in MATH 1115 or MATH 1540 OR MATH ACT score of 24 OR (MATH 2251/2551 and 2252/2552).

### **MATH 2501 (1190) Calculus I (4 hrs.)**

This course is the calculus of one variable, beginning with an intuitive study of limits and a geometric interpretation of the derivative. Topics include differentiation of functions and the application of the derivative to graphing functions, approximating functions, solving max/min problems and related rate problems, anti-differentiation and its link to the signed area under a curve, the fundamental theorem of calculus and applications of the definite integral.

PR: MATH ACT score of 25, or MATH SAT 570, or COMPASS 73, or MATH 1115 or MATH 1540 or MATH 1170 or MATH 1186 or MATH 1586.

### **MATH 2502 (3315) Calculus II (4 hrs.)**

This course is a continuation of MATH 2501. Topics include applications of the definite integral, exponential and logarithmic functions, inverse trigonometric functions, techniques of integration, conic sections, plane curves and polar coordinates, limits involving indeterminate forms, improper integrals, sequences, and infinite series. Spring semester only.

PR: MATH 1190 or MATH 2501.

**MATH 2510 (2200) Mathematical Logic (3 hrs.)**

This course covers sentential and general theory of inference, theory of proof and definition and elementary intuitive set theory.

PR: MATH 1115 or MATH 1540 or MATH 1170 or MATH 1561 or MATH 1185 or MATH 1585 or MATH 1190 or MATH 2501. Spring semester only.

**MATH 2520 (2206) Introduction to the Theory of Numbers (3 hrs.)**

Topics include prime numbers, the unique factorization theorem, congruences, Diophantine equations, primitive roots and the quadratic reciprocity theorem.

PR: MATH 1190 or MATH 2501. Spring Semester Even Years Only.

**MATH 2562 (2216) Introduction to Discrete Mathematics (3 hrs.)**

This course is designed to provide a survey of the reasoning and objects of study found in discrete mathematics. Topics considered include sets, relations, functions, combinatorics, graphs, trees, discrete probability, algorithms, and recurrence relations. Interspersed throughout the course will be material on the nature of proofs.

PR: MATH 1115 or MATH 1540 or MATH 1170 or MATH 1561 or MATH 1185 or MATH 1585 or MATH 1190. Fall semester only.

**MATH 2563 (2212) Transition to Higher Mathematics (3 hrs.)**

The goal of this course is to transition the student into the more formal and proof-oriented world of advanced mathematics. The focus of the course will be developing the requisite skills needed to write an effective and elegant proof. The course will use as its means of approaching proofs the subjects of number theory, relations, and functions.

PR: MATH 1170 or MATH 1561 or (MATH 1125 and MATH 1190/2501). Fall semester only.

**MATH 3503 (3316) Calculus III (4 hrs.)**

This course is a continuation of Math 2502. Sequences and series will be followed by a study of calculus of two and three variables. Topics include vectors, dot product, cross product, lines, planes, vector functions and their derivatives and integrals, the study of quadric surfaces, partial differentiation, gradient, and multiple integrals.

PR: (MATH 3315 or MATH 2502) or (MATH 1186/1586 and MATH 1190/2501). Fall Semester Only.

**MATH 3504 (4401) Differential Equations (3 hrs.)**

A study of first-order and simple higher-order ordinary differential equations and their applications, linear differential equations with constant coefficients and their application, simultaneous differential equations and their applications, the numerical solution of differential equations and solution of differential equations by use of series.

PR: MATH 3315 or MATH 2502. Spring Semester Odd Years Only.

**MATH 3520 (3362) Linear Algebra (3 hrs.)**

This course covers vector spaces abstractly defined, linear dependence and independence, bases and subspaces, dimension of linear space, linear mappings, kernel and image of maps, rank of maps, linear maps as vector spaces, composition of mappings and multiplication of matrices, the relation between linear mappings and systems of linear equations, row reduced echelon matrix, invertible matrices, calculation of inverse, linear inequalities and half spaces. PR/CR: MATH 3315 or MATH 2502. Fall Semester Only.

**MATH 3540 (3342) Numerical Analysis (3 hrs.)**

In this course, students will investigate solutions of equations, functional iteration of equations, analysis of special methods such as the methods of false position and of Newton, iteration for systems of equations, reduction to first order systems, Gaussian elimination and some iterative methods for inversion.

PR: COMP 1102 and (MATH 3315 or MATH 2502). Fall Semester Odd Years Only.

**MATH 3550 (3335) Probability and Statistics (3 hrs.)**

Course topics include sample spaces, events as subsets, probability axioms, finite sample spaces and equiprobable measure as special case, binomial coefficients and counting techniques applied to probability problems, conditional probability, independent events, Bayes' formula, random variable, probability functions, density and distribution functions, special distributions, independent random variables, Poisson and normal approximation to the binomial and some statistical real-world applications. Students will also learn estimation and sampling, point and interval estimates, hypothesis-testing, power of a test and regression.

PR: MATH 3315 or MATH 2502. Spring Semester Only.

**MATH 3570 (3372) Modern Geometry (3 hrs.)**

A brief review of informal Euclidean geometry, including areas and volumes. The course will also include a formal development of Euclidean geometry using a transformation approach; concepts such as incidence, non-Euclidean geometry and finite geometries are briefly introduced.

PR: MATH 1125 or MATH 1561 and (MATH 1190 or MATH 2501). Fall Semester Even Years Only.

**MATH 4400 Seminar (1-3 hrs.)**

PR: Instructor approval required.

**MATH 4520 (3361) Abstract Algebra (3 hrs. - *Writing Intensive*)**

Topics include sets, relations, functions, operations, algebraic systems such as integers, rationals, and matrices, isomorphism and examples. Students will examine equivalence classes, groups, subgroups, cyclic groups, basic theorems, Lagrange's Theorem, homomorphism, normal subgroups, quotient group, the isomorphism theorems, rings, integers, matrices, polynomials, integral domains, and fields. The course will also cover various topics of rings.

PR: ENGL 1102, (MATH 1190 or MATH 2501) and (MATH 2212 or MATH 2563). Spring Only.

**MATH 4531 (4431) Methods and Materials in Teaching Mathematics (3 hrs.)**

This course is designed for senior education majors with a math teaching specialization in either grades 5-Adult or 5-9. Mathematics curricula and methods at the middle and high school levels includes topics in number, algebra, geometry, trigonometry, statistics, probability, calculus, discrete mathematics, as well as the historical development of these topics. Numerous laboratory experiences such as microteaching and math tutoring are required. 5-9 and 5-Adult must complete this course prior to enrolling in Secondary Student Teaching/Clinical III.

PR: Must be admitted to Teacher Education to take this course. Fall semester only.



**MATH 4580 (3375) Topology (3 hrs.)**

This course consists of the study of topological spaces and notions, including continuity, convergence, separation, compactness and connectedness.

PR: (MATH 2212 or MATH 2563) and (MATH 3316 or MATH 3503). Spring Semester Odd Years Only.

**MATH 4590 (3391) Real Analysis (3 hrs.)**

Covers real numbers, topology of the reals, infinite series, continuous functions, sequences and series of functions, differentiation, integration and power series.

PR: (MATH 2212 or MATH 2563) and (MATH 3316 or MATH 3503). Spring Semester Even Years Only.

**MATH 4998 Undergraduate Research (0-6 hrs.)**

Undergraduate research is an experiential learning activity that provides an opportunity for a student to engage in the scholarly activities of their major discipline under the guidance of a faculty mentor who will work in close partnership with each student in his or her formulation of a project, the development of a research strategy, and the assessment of a student's progress. The primary goal is for each student scholar to conduct an inquiry or investigation that makes an original, intellectual or creative contribution to their discipline and which is shared in an appropriate venue. Sophomore-Senior Level, Repeatable. Instructor approval required.

**\*\*The following course, MATH 1125, is no longer offered. It has been replaced by a new, similar course developed in tandem with the computer science program to facilitate both Mathematics and Computer Science Majors using a single entry-level mathematics course. Previously, two different courses were used: MATH 1170 for Computer Science students and MATH 1125 for Mathematics students.**

**\*\*MATH 1125 Math Reasoning: Reading and Writing (3 hrs.)****[Discontinued]**

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.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Enrollment -- Service courses

Five year course enrollment and success rate for all Mathematics program courses is provided below. A list of course titles and descriptions follow the next table. The success rate is based on the number of students passing the course with a letter grade of D or better. Course descriptions follow the next table on page 16 of this report.

**The success rate for all courses is greater than or equal to 70%.**

MATH Course Number	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Total Enrollment (2013-2018)	Five-year Success Rate
1001	Did not exist	39	41	49	Discontinued	129	71%
1007	Did not exist	127	264	255	Discontinued	646	82%
1012	Did not exist	47	139	196	Discontinued	382	84%
1400(1011)	Did not exist	62	207	253	265	787	74%
1407	Did not exist	Did not exist	Did not exist	Did not exist	308	308	70%
1430	Did not exist	Did not exist	Did not exist	Did not exist	222	239	72%
1507(1107)	417	456	539	431	148	1991	80%
1510(1101)	144	122	123	115	68	572	71%
1520(1102)	71	73	73	56	44	317	84%
1530(1112)	418	409	440	393	167	1827	75%
1540(1115)	111	128	155	158	143	695	71%
1170	Not offered	Not offered	18	24	Discontinued	42	79%
1585(1185)	60	46	48	53	37	244	83%
1586(1186)	18	11	10	17	10	66	82%
2551(2251)	35	21	34	32	27	149	92%
2552(2252)	42	21	24	31	34	152	92%
3553(3353)	38	32	11	28	26	135	99%
1199 Praxis	Not offered	Not offered	23	16	20	59	88%
<b>Total</b>	1710	1928	2432	2474	1867	<b>10,411</b>	78%

**\*Note:** Many of the program courses listed in the previous section are also service courses for other majors as indicated below.

MATH 1561, 2501, 2562, and 2502 are required by Computer Science.

MATH 2510, 3503, 3504, 3520, 3540, and 3550 are electives for Computer Science.

MATH 1550, 2501, and 2502 are used by multiple majors in the College of Science and Technology.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Enrollment -- Success rates for Service Courses

Each column depicts the number of students that passed and failed the service course per academic year. The last column provides the % success rate for each service course. The success rate is based on the number of students passing the course with a letter grade of D or better.

MATH Course Number	Number of Students Passed or Failed/Withdrew Per Academic Year										Five-year Success Rate
	2013 – 2014		2014-2015		2015-2016		2016-2017		2017-2018		
	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	
1001	Did not exist		26	13	29	12	37	12	Discontinued		71%
1007	Did not exist		104	23	218	46	209	46	Discontinued		82%
1012	Did not exist		42	5	116	23	164	32	Discontinued		84%
1400(1011)	Did not exist		39	23	156	51	177	76	207	58	74%
1407	Did not exist		Did not exist		Did not exist		Did not exist		216	91	70%
1430	Did not exist		Did not exist		Did not exist		Did not exist		156	66	72%
1507(1107)	348	69	359	97	430	109	335	96	122	26	80%
1510(1101)	111	33	82	40	86	37	76	39	49	19	71%
1520(1102)	53	18	66	7	64	9	46	10	38	6	84%
1530(1112)	320	98	293	116*	331	108	301	92	130	37	75%
1540(1115)	63	48	84	44	114	41	127	31	102	41	71%
1170	Not offered		Not offered		13	5	20	4	Discontinued		79%
1585(1185)	56	4	38	8	36	12	40	13	32	5	83%
1586(1186)	14	4	9	2	9	1	14	3	8	2	82%
2551(2251)	31	4	21	0	29	45	29	3	27	0	92%
2552(2252)	38	4	19	2	24	0	28	3	31	3	92%
3553(3353)	37	1	32	0	10	1	28	0	26	0	99%
1199 Praxis	Did not exist		Did not exist		22	1	13	3	17	3	88%
<b>Total</b>	1070	283	1230	381	1687	462	1644	463	1161	358	<b>78%</b>

\*In Fall 2014, due to a technical difficulty, one section of MATH 1530(1112) with 21 students did not get a grade recorded in the system. They were later corrected by hand, but they are still counted in the “Failed/Withdrew or Other” column.

## Course Titles & Descriptions of Service Courses

### **MATH 1400 (1011) Foundations of Algebra (4 hrs.)**

This course is designed to provide a solid algebraic framework for students. This course covers Pre-Algebra, Elementary Algebra, & Intermediate Algebra. This course is designed for students who need MATH 1430: College Algebra with Support or MATH 1510: Applied Technical Math I, but do not have the minimum required MATH ACT score of 19 or equivalent. Students will complete Elementary Algebra concepts in the first portion of the term and then proceed into additional pre-requisite material for College Algebra in the remainder of the semester. Review of foundational concepts will occur to reinforce student learning as deemed appropriate by the instructor. Class work will include mini lectures, computer-assisted work, group activities, and use of math manipulatives to reinforce concepts and engage active student learning. This course meets for 5 hours each week. NOTE: This course does not provide general education credit; however, upon successful completion of this course, students are eligible for MATH 1430: College Algebra with Support or MATH 1510: Applied Technical Math I.

PR: Admission to FAIRMONT STATE UNIVERSITY. There are no minimum test score requirements for this course.

### **MATH 1407 Fundamental Concepts of Mathematics with Support (4 hrs.)**

This course fulfills the same requirements as MATH 1507: Fundamental Concepts of Mathematics and is intended for students who do not meet the pre-requisites for MATH 1507. The course will cover all content included in MATH 1507, as well as provide integrated academic support. This introductory survey course is specifically designed to fulfill General Studies requirements for quantitative literacy. It is designed to strengthen computational skills while focusing on real-world problems. Topics may include critical thinking skills, sequences, set theory, logic, probability, statistics, and consumer mathematics. The course will also review pre-requisite topics, such as order of operations, exponents, and linear equations, as deemed necessary. In addition to lectures and discussion, this course will utilize computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for five hours each week.

PR: Admission to FAIRMONT STATE UNIVERSITY. There are no minimum test score requirements for this course.

### **MATH 1430 College Algebra with Support (4 hrs.)**

This course fulfills the same requirements as MATH 1530: College Algebra and is intended for students who do not meet the pre-requisites for MATH 1507. The course will cover all content included in MATH 1530, as well as provide integrated academic support. This course includes the study of real numbers, complex numbers, algebraic expressions, equations and inequalities, functions and function operations, composition of functions, inverse functions, graphing and transformation of functions, exponents and radicals, quadratic, exponential, and logarithmic functions, and applications. It will also reinforce fundamental algebraic concepts and review pre-requisite topics, such as evaluating expressions, graphing and functions, linear equations, factoring, and geometric concepts, as deemed necessary. This course will utilize lectures, discussions, computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for five hours each week.

PR: MATH ACT 19-20 (or equivalent) or old MATH SAT 460, or new MATH SAT 500, or MATH 1011 with a "C" or better or MATH 1400 with a "C" or better.

**MATH 1510 (1101) Applied Technical Mathematics I (3 hrs.)**

This course is an introduction to fundamental mechanics and techniques for performing operations with algebraic expressions, and subsequently solving linear equations, systems of linear equations and quadratic equations. The course also introduces trigonometric functions and is designed to develop methods of solving right angles and oblique triangles using trigonometry. PR: MATH ACT score of 19 or MATH SAT of 460 or COMPASS score of 36 or MATH 0095 or MATH 0088 or MATH 1400. Used by Technology majors.

**MATH 1520 (1102) Applied Technical Mathematics II (3 hrs.)**

This course is a continuation of Math 1510. Topics include solving radical equations and polynomial equations, complex numbers, exponential and logarithmic functions, inequalities and trigonometry.

PR: MATH 1510 (1101) with a "C" or better. Used by Technology majors.

**MATH 1507 (1107) Fundamental Concepts of Mathematics (3 hrs.)**

This introductory math survey course is specifically developed to fulfill the General Studies requirements for quantitative literacy. It is designed to strengthen computational skills while focusing on real-world problems. Topics may include critical thinking skills, sequences, set theory, logic, probability, statistics, and consumer mathematics. This course does not serve as a prerequisite for any higher level mathematics course. No student may receive credit for both MATH 1407 and MATH 1507.

PR: Math ACT score of 19 or MATH SAT of 460 or COMPASS score of 36 or MATH 0095 or MATH 0086 or MATH 1007 with a "C" or better. Used by many majors for General Studies credit.

**MATH 1530 (1112) College Algebra (3 hrs.)**

This course includes a review of real numbers, complex numbers, algebraic expressions, equations and inequalities, functions and function operations, composition of functions, inverse functions, graphing and transformations of functions, exponents and radicals, quadratic, exponential, and logarithmic functions, and applications. No student shall receive credit for both MATH 1430 and MATH 1530.

PR: MATH ACT score of 21 or MATH SAT of 500 or COMPASS score of 49 or MATH 1100 or MATH 1400.

Used by Business majors, Elementary Education Majors, and STEM majors.

**MATH 1540 (1115) Trigonometry and Elementary Functions (3 hrs.)**

This course includes a study of circular and trigonometric functions and applications, trigonometric identities, equations and graphs of circular functions, functions and inverse functions, vectors, and other related topics.

PR: MATH ACT score of 23 or MATH SAT of 540 or COMPASS score of 63 or a "C" or better in MATH 1430 or "C" or better in MATH 1530 or "C" or better in MATH 1112. Used as a prerequisite to Math 2501, Calculus I.

**MATH 1585 (1185) Applied Calculus I (4 hrs.)**

This course is a study of calculus with an emphasis on its applications to science, business, technology and social science. Topics covered using the derivative consist of functions and their graphs, max/min problems, related rates, approximation of change and curvilinear motion.

Topics covered using the integral consist of area, volume and accumulation functions. Graphing calculators and mathematical software will be introduced and used throughout the course.  
PR: MATH ACT score of 24, or MATH SAT 560 or COMPASS score of 67 or MATH 1115 or MATH 1102 with “B” or better. Used by Tech, Biology and Chemistry majors.

**MATH 1586 (1186) Applied Calculus II (4 hrs.)**

A continuation of the study of calculus as applied to science, business, technology and social science. The integral will be further studied, including applications of area, volume, accumulation functions, curvilinear motion, solutions to some simple differential equations, and other applications chosen from a variety of disciplines. Students will examine sequences and series involving convergence and divergence, power series and Taylor polynomials and series. The calculus of vectors and multivariable functions will be introduced. Partial derivatives and multiple integrals will be used to study applied problems from a variety of disciplines. Graphing calculators and mathematical software will be used throughout this course.

PR: MATH 1585 or MATH 1185. Spring semester only. Used by Tech, Biology and Chemistry majors.

**MATH 2551 (2251) Structure of the Real Numbers (3 hrs.)**

This course starts with basic concepts of sets and continues with properties of operations and a logical development of the set of real numbers. Beginning number theory concepts and an introduction to probability are also included. This course connects structure to prior math knowledge and real-world applications.

PR: MATH 1112 or MATH 1430 or MATH 1530 or Math ACT of 23 or Math SAT of 540 or Compass score of 63, and admission to Teacher Education. Used by Elementary Education majors.

**MATH 2552 (2252) Data Analysis and Geometry (3 hrs.)**

This course offers an introduction to data analysis and statistics and the study of geometry. Included is descriptive statistics, standard and non-standard measurement, a formal and informal approach to geometry, van Hiele levels, and the use of dynamic geometry software.

PR: MATH 1112 or MATH 1430 or MATH 1530 or Math ACT of 23 or Math SAT of 540 or Compass score of 63, and admission to Teacher Education. Used by Elementary Education majors.

**MATH 3553 (3353) Math Methods for Elementary Teachers (3 hrs.)**

This course is designed to prepare pre-service elementary school teachers to teach mathematics. Students will study tools for teaching mathematics, math teaching strategies, current topics in math education, problem solving and reasoning, and assessment.

Numerous laboratory experiences are required such as tutoring, micro-teaching, and construction of a NCTM Standards-based unit. Used by Elementary Education majors.

**\*\*The following courses are either no longer offered or have been renumbered. The courses numbered with the pattern 10XX were initial pilot courses for the co-requisite math model. They have been replaced with courses numbered using the pattern 14XX listed above.**

**\*\*MATH 1001 Applied Technical Mathematics I Support (1 hr.) [Discontinued]**

This course is a supplement to MATH 1101: Applied Technical Mathematics I and designated as a support to students requiring MATH 1101 and who do not meet the pre-requisites for that

course. The course content will reinforce fundamental concepts essential to completing MATH 1101, as well as review pre-requisite topics, such as fractions, order of operations, functions and graphing, and geometric and trigonometric concepts, as deemed necessary. This course will utilize mini-lectures, computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for two hours each week. Students are required to enroll in a MATH 1101 concurrently with this course.

PR: MATH ACT 15-18 or MATH SAT 350-450 or COMPASS 20-35 or MATH 1107 with a “C” or better.

CR: MATH 1011PR: MATH 1101 with a “C” or better.

**\*\*MATH 1007 Fundamental Concepts of Mathematics Support (1 hr.) [Discontinued]**

This course is a supplement to MATH 1107: Fundamental Concepts of Mathematics and designated as a support to students requiring MATH 1107 and who do not meet the pre-requisites for that course. The course content will reinforce fundamental concepts essential to completing MATH 1107, as well as review pre-requisite topics, such as order of operations, exponents, and linear equations, as deemed necessary. This course will utilize mini-lectures, computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for two hours each week. Students are required to enroll in a MATH 1107 concurrently with this course.

PR: Admission to Fairmont State. CR: MATH 1107.

**\*\*MATH 1011 Pre-College Algebra (4 hrs.) [Renumbered]**

This course covers Pre-Algebra, Elementary Algebra, & Intermediate Algebra. This course is designed for students who need MATH 1112: College Algebra, but do not have the appropriate prerequisites to enter either College Algebra or College Algebra Support. Students will complete Elementary Algebra concepts in the first portion of the term and then proceed into additional pre-requisite material for College Algebra in the remainder of the semester. Review of foundational concepts will occur to reinforce student learning in lectures, computer-assisted work. MyLabsPlus, group activities, and math manipulatives to reinforce concepts and engage active student learning. This course meets for 5 hours each week. NOTE: Upon successful completion of this course, students are eligible for MATH 1012: College Algebra Support.

PR: MATH ACT score of 15-18 or MATH SAT of 350-450 or COMPASS score of 20-35 or MATH 1107 with a “C” or better.

**\*\*MATH 1012 College Algebra Support (1 hr.) [Discontinued]**

This course is a supplement to MATH 1112: College Algebra and designated as a support to students requiring MATH 1112 and who do not meet the pre-requisites for that course. The course content will reinforce fundamental concepts essential to completing MATH 1112, as well as review pre-requisite topics, such as evaluating expressions, graphing and functions, linear equations, factoring, and geometric concepts, as deemed necessary. This course will utilize mini-lectures, computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for two hours each week. Students are required to enroll in a MATH 1112 concurrently with this course.

PR: MATH ACT score of 19-20 or MATH SAT of 460-490 or COMPASS score of 36-48 or MATH 0095 or MATH 0086 or MATH 1011 with a “C” or better.

CR: MATH 1112.



**\*\*MATH 1170 Introduction to Mathematical Analysis (4 hrs.) [Discontinued]**

This course is designed to help those students pursuing a degree in mathematics (who have not had five years of high school mathematics) gain the experience required for courses at the calculus level and beyond. Topics include an introduction to formal logic and set theory, the principle of mathematical induction, properties of real and complex numbers with proofs, general functions and related notions, sequences and series.

PR: MATH ACT score of 23, or MATH SAT 540 or Compass score of 63 or MATH 1115

No longer taught. Originally used by Computer Science. Replaced with MATH 1561 which is listed in the major course descriptions section.

### VIABILITY (§ 4.1.3.1)

#### Off-campus courses

In 2013-14, off-campus class offerings and enrollment number requirements were determined by Pierpont Community and Technical College. Fairmont State approved faculty and coordinated all content. These students were included in the previous service course table data, but are reported in the table below to show program outreach.

Enrollment: Byrd Aviation Center (20), Caperton Center- Clarksburg (410), High School Dual Enrollment (93), Lewis County (29), Monongalia County (21), and Virtual On-line (315).

MATH Course Number	Number of Students Passed or Failed/Withdrew Per Academic Year For Off-Campus Enrollments										Five-year Success Rate
	2013 – 2014		2014-2015		2015-2016		2016-2017		2017-2018		
	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	Passed	Failed / Withdrew or Other	
<b>1400(1011)</b>	Did not exist		Not Offered		Not Offered		14	10	8	4	<b>61%</b>
<b>1407</b>	Did not exist		Did not exist		Did not exist		Did not exist		15	3	<b>83%</b>
<b>1430</b>	Did not exist		Did not exist		Did not exist		Did not exist		16	7	<b>70%</b>
<b>1507(1107)</b>	88	8	69	22	55	13	45	14	36	7	<b>82%</b>
<b>1510(1101)</b>	19	3	15	3	18	2	6	2	6	3	<b>83%</b>
<b>1520(1102)</b>	Not Offered		7	1	10	3	Not Offered		Not Offered		<b>81%</b>
<b>1530(1112)</b>	75	23	31	11	51	20	24	8	14	2	<b>75%</b>
<b>1540(1115)</b>	0	9*	11	0	7	0	6	0	Not Offered		<b>73%</b>
<b>1550(1113)</b>	Not Offered		Not Offered		18	5	30	11	Not Offered		<b>75%</b>
<b>Total</b>	182	43	133	37	159	43	125	45	95	26	<b>78%</b>

\*In Spring 2014, MATH 1540(1115), all grades were marked as "Other" due to a technical difficulty.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Cost/student credit hour –

The cost per credit hour for the 2017-18 year was calculated by determining the direct cost of personnel (full-time and adjuncts, as well as overloads) and benefits, plus operating expenses of the math program. This value was divided by the total number of student credit hours taught in 2017-2018.

For the past several years, the number of courses, credit hours, faculty, and operational costs have not changed appreciably, so it is assumed that the student cost per credit hour has remained fairly constant. Hence, the 2017-18 amount is representative of the student cost per credit hour for the Mathematics Program.

### College of Science and Technology

Academic Year	Total Cost Per Student (FTE) Equivalent	Total Cost per Student Credit Hour	Fairmont State Undergraduate Tuition and Fees for In-State Students <small>2018 HEPC Report Card page 18</small>
2013-14	*	*	\$5824
2014-15	*	*	\$6306
2015-16	*	*	\$6620
2016-17	*	*	\$6950
2017-18	\$1428	\$119	\$7296

\*Data Unavailable

## VIABILITY (§ 4.1.3.1) CONTINUED

### General Studies Requirements Met

#### WV HEPC Core Course Transfer Agreement – General Studies & Course Equivalency Courses

Fairmont State Mathematics Program has six mathematics courses in the Core Course Transfer Agreement (CCTA). In the 18-19 agreement, courses in bold face type with the carat (^) are those which have been approved by the HEPC State Mathematics Taskforce comprised of mathematics faculty from various WV higher education institutions.

In 2016-2018, the Fairmont State Mathematics Program prepared six course applications for approval. After a thorough vetting process, the six courses were determined to cover all essential topics. Hence, the courses will count not only as general studies transfer credit, but also as pre-requisite transfer credit. MATH 1507/1407 are not yet vetted because essential topics for quantitative reasoning courses were recently approved in February 2019. These two courses will undergo minor modifications so that the course correlates with the essential topics. Vetting for these two courses will likely occur during the 2019-20 academic year.

#### Excerpt Core Course Transfer Agreement

##### Fairmont State University Listing for 18-19

##### Culmination of work completed during the 2013-2018 program review cycle.

There are two distinct categories within the Core Coursework Transfer Agreement. The first is the general studies transfer agreement. This is an articulation agreement allowing students to transfer up to 35 hours of general studies coursework from one West Virginia institution of higher education to another West Virginia institution of higher education. These are not course equivalencies. Rather, the student is given credit for fulfillment of a general studies requirement within the guidelines listed below. Institutions are to brand their specific approved courses on the general studies list with a tilde (~) that is to be used as the first character on the course title. The tilde travels on the transcript so advisors can identify courses approved for the core coursework agreement.

The second category is a course equivalency. These courses are listed in with a carat (^) and are in bold on the approved course list. A statewide faculty committee has vetted these courses for 70% alignment and faculty at every public institution have approved the learning outcomes. They are course equivalencies and must be approved as pre-requisites for entry into specific courses for the major or program. Institutions are to brand their specific approved courses with the carat (^) to travel on the transcript for identification as a course equivalency.

##### Mathematics 3-4 hours

MATH 1507/1407	Fundamental Concepts of Mathematics	3/4
<b>^MATH 1530/1430</b>	<b>College Algebra</b>	<b>3/4</b>
<b>^MATH 1540</b>	<b>Trigonometry and Elementary Functions</b>	<b>3</b>
<b>^MATH 2501</b>	<b>Calculus I</b>	<b>4</b>

## VIABILITY (§ 4.1.3.1) CONTINUED

### General Studies Requirements Met

All four-year degree programs at Fairmont State are required to complete the institutional general studies requirements. The Mathematics Program requires students to complete these general studies requirements based on the criteria listed below.

#### General Studies Program

The general studies curriculum ensures that students possess a wide range of skills and knowledge to enhance their lives after graduation. The knowledge, skills, and abilities obtained through general studies transcend specific disciplines and are valued by employers at all levels and by society in general. Fairmont State University supports a general studies curriculum so that our students appreciate the diversity of disciplines as they discover possibilities in their interdependence.

The skills and knowledge obtained by completing general studies courses provide students with the necessary tools to be productive employees, leaders, and citizens. The categories were designed to incorporate the foundational knowledge and skills that have enduring societal value and to prepare students to survive and thrive in a complex, diverse, and dramatically changing world. A large portion of the skills and knowledge Fairmont State University expects its students to have when they graduate comes from general studies courses.

Students must complete at least one course in each of the following general studies categories:

1. Critical Analysis
2. Quantitative Literacy
3. Written Communication
4. Teamwork
5. Information Literacy
6. Technology Literacy
7. Oral Communication
8. Citizenship
9. Ethics
10. Health and Well-being
11. Interdisciplinary and Lifelong Learning
12. Fine Arts
13. Humanities
14. Social Sciences
15. Natural Sciences
16. Cultural Awareness and Human Dignity

\* Students must complete at least 30 hours of coursework outside of their major as determined by the course prefix. See the worksheet on page 24 of this review.

## VIABILITY (§ 4.1.3.1) CONTINUED

<b>General Studies Worksheet Mathematics Program (2017-18)</b>			
GS Attribute	General Studies Attribute	Specific Class(es) fulfilling attribute	Course counts in general studies curriculum
1	Critical Analysis	MATH 2563	<b>Mathematics Major Course</b>
2	Quantitative Literacy	MATH 2501 (Math 1407 or higher in 2 satisfy, but courses below Math 2501 will increase graduation hours)	<b>Mathematics Major Course</b>
3	Written Communication	ENGL 1101*	3
4	Teamwork	COMM 2200	3
5	Information Literacy	ENGL 1102*	3
6	Technology Literacy	Choice in category 6	3
7	Oral Communication	COMM 2200 - Met in 4	X
8	Citizenship	POLI 1103 or choice in 8	3
9	Ethics	ENGL 2220 or choice in 9	3
10	Health & Well Being	PHED 1100 or choice in 10	2
11	Interdisciplinary & Lifelong Learning	POLI 1103 - Met in 8 or choice in 11	X
12	Fine Arts	Choice in 12	3
13	Humanities	ENGL 2220 -- MET IN 9 or choice in 13	X
14	Social Science	GEOG 2210 or choice in 14	3
15	Natural Science	Required choices: PHYS 1101/PHYS 1105/CHEM 1101/CHEM 1105/BIOL 1105/BIOL1106/GEOL 1101	4 or 5
16	Cultural Awareness & Human Dignity	GEOG 2210 -Met in 14 or choice in 16	X
Writing Intensive Course	MATH 4520	Abstract Algebra	<b>Mathematics Major Course</b>
<b>Total Hours</b>			30 or 31

A single course can count toward only two attributes, but the hours count only once. Mathematics majors need to earn 30 unique hours in General Studies outside of the MATH prefix. Students who select courses different than the recommendations should choose carefully so the total is at least 30 hours.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Assessment Requirements

The Mathematics program utilizes a departmental continuous improvement plan to meet institutional assessment needs. The continuous improvement plan consists of course assessment, programmatic assessment, and program modifications that are determined necessary by outcome assessments. The purpose of the Continuous Improvement Plan (CIP) is to identify, track, and remediate programmatic weaknesses. The evaluation of competencies and program components leads to modifications of content, delivery, and other factors deemed instrumental in the pursuit of programmatic improvement.

The CIP occurs at three levels. These levels include:

- Assessment of Course Outcomes
- Assessment of Program Outcomes
- Program Modifications as determined necessary by the assessment practices.

Course Outcomes are linked to appropriate Program Outcomes (see example in Appendix A). The Course Outcomes are assessed using various tools such as course exams, assignments, quizzes, projects, labs, etc. The program has established a benchmark for each program outcome to demonstrate competency in each outcome. If the students cannot demonstrate success, a plan of improvement is established for the assessment point. These continuous improvement plans are approved by a collaborative agreement of the program faculty. An assessment matrix is established to clearly define what assessment points are evaluated in each program course. The Mathematics program has an assessment cycle of between two and four years. Each assessment point on the matrix will be assessed at least once during the assessment cycles. Additional assessments shall be conducted if warranted.

In addition, the B.A. in Mathematics Education is reviewed and accredited by CAEP (Council for the Accreditation of Educator Preparation) every 5-7 years. This includes the education component of the degree, as well as the mathematics component of the Mathematics Education program. Since the mathematics component is identical to the requirements for the B.S. in Mathematics, the program outcomes are also linked to the CAEP requirements in Mathematics Education.

All program modifications such as curriculum changes are established as a result the course and program outcome assessments and recommendations from CAEP. Any significant changes must be approved by program faculty.

See Appendix A on page 46.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Adjunct Use

The Mathematics Program has employed 31 adjunct faculty members/graduate teaching assistants during the last five years to assist in the offering of Mathematics courses and Mathematics co-requisite support courses. The HEPC mandated the development of co-requisite courses, which increased the number of mathematics courses being offered.

Adjuncts have taught the following new support courses for the Mathematics Program:

- MATH 1001—Applied Technical Mathematics I with Support (discontinued)
- MATH 1007 – Fundamental Concepts of Mathematics Support Lab (discontinued)
- MATH 1012 – College Algebra Support Lab (discontinued)
- MATH 1400(1011)—Foundations of Algebra
- MATH 1407—Fundamental Concepts of Mathematics with Support
- MATH 1430—College Algebra with Support

Adjuncts have also taught the following courses:

- MATH 1507(1107)—Fundamental Concepts of Mathematics
- MATH 1510(1101) and 1520(1102)—Tech Mathematics I and II
- MATH 1530(1112)—College Algebra

MATH 1400(1011), 1407, 1430, 1510(1101), 1520(1102), 1507(1107), 1530(1112), 1540(1115) are coordinated by full-time mathematics faculty. The coordinator for each course supplies the syllabus, course schedule, books, and a handbook describing the philosophy and instructor expectation for the course. (Excerpts from the College Algebra handbook is found in Appendix B on page 51.) The coordinator also designs assessments, tabulates results, and enters data into Taskstream.

Below is a table which compiles the adjunct/teaching graduate assistant usage. A faculty data profile form has been completed for each adjunct/teaching graduate assistant and is included in Appendix E on page 85.

**Together, on average, adjuncts teach the equivalent number of hours as would be covered by 4.1 to 6.4 full-time faculty.**

	Student Credit Hours	Student Contact Hours
2013-2018 Total Adjunct Hours	490 hours	569 hours
Average Yearly Adjunct Hours Taught (over 5 years)	98 hours	113.4 hours
Number of Fulltime Equivalent @24 credit hours per year	4.1 FTE	4.7 FTE
2015-2018 Total Adjunct Hours	331 hours	464 hours
Average Yearly Adjunct Hours Taught (over 3 years)	110.3 hours	154.7 hours
Number of Fulltime Equivalent @24 credit hours per year	4.6 FTE	6.4 FTE



**VIABILITY (§ 4.1.3.1) CONTINUED**

**Adjunct Faculty with Courses Taught 2013-18**

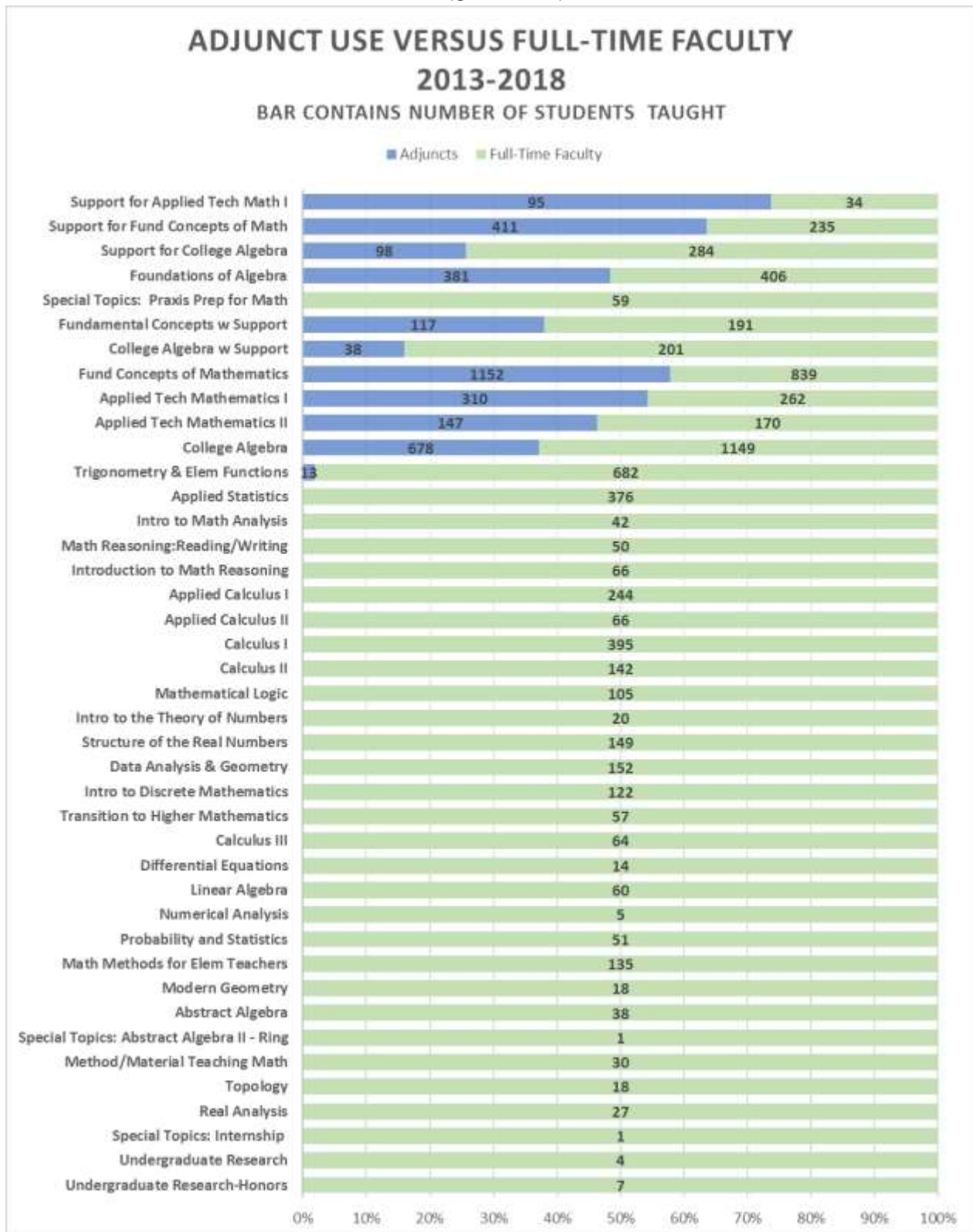
<b>Name</b>	<b>Year Taught</b>	<b>Courses taught</b>	<b>Total Credit Hours</b>	<b>Total Contact Hours with Students</b>
Bush, Pat	13-14 14-15	1107,1107 1107	9	9
Clonch, Bob	13-14 14-15 15-16 16-17 17-18	1107, 1107 1107, 1107, 1112,1112 1107, 1107, 1107, 1112, 1112 1107, 1107, 1107, 1112, 1112 1507, 1507, 1530, 1530	60	60
Cuchta, Brittany	16-17 17-18	1012, 1011, 1107, 1112, 1112, 1112 1400, 1430, 1430, 1430	33	39
Daniel, Victor	13-14 14-15	1107, 1112 1107	9	9
Goodwin, Susan	16-17 17-18	1112, 1115 1530	9	9
Harris, Emily	14-15	1001, 1101	4	5
Hawranick, Olena	14-15 15-16 16-17 17-18	1007, 1007, 1107, 1107 1007, 1007, 1007, 1012, 1107, 1107 1007, 1007, 1007, 1012, 1107, 1107 1407, 1407, 1407	40	53
Leffard, Karen	15-16	1007, 1007, 1007, 1007, 1107, 1107	10	14
Ludwick, Hannah	15-16	1012	1	2
Luttecke, Francisco	13-14	1107, 1107	6	6
Mason, Larry	13-14 14-15 15-16	1101, 1101, 1102, 1107 1102, 1107, 1112 1107, 1107	27	27
Michael, Megan	17-18	1400	4	5
Morris, Hannah	16-17 17-18	1011, 1011, 1011, 1011 1400, 1400, 1400	28	35
Munza, Diana	13-14	1107, 1107	6	6
Noel, Jeff	13-14 15-16	1107, 1112 1007	7	8
Oliveto, Julia	15-16	1012, 1012	2	4
Raol, Marcie	15-16	1012	1	2
Rinehart, Jakob	16-17	1007, 1007, 1107	5	7
Savage, Sherea	13-14 15-16	1107 1112	6	6
Schiffbauer, Jarrod	15-16	1007, 1007, 1011	6	9

**VIABILITY (§ 4.1.3.1) CONTINUED**

**Adjunct Faculty with Courses Taught 2013-18**

<b>Name</b>	<b>Year Taught</b>	<b>Courses taught</b>	<b>Total Credit Hours</b>	<b>Total Contact Hours with Students</b>
Smith Amanda	14-15	1001, 1012, 1012, 1007, 1007, 1007, 1107, 1112, 1112, 1112	69	93
	15-16	1007, 1007, 1007, 1007, 1011, 1107, 1107		
	16-17	1007, 1007, 1007, 1011, 1012, 1107, 1107, 1112		
	17-18	1400, 1400, 1400, 1400, 1400		
Snodgrass, Heather	16-17	1007, 1007, 1007, 1107, 1107	17	22
	17-18	1407, 1407		
Spencer, Grant	13-14	1101, 1107, 1112, 1112, 1112	48	48
	14-15	1101, 1102, 1112, 1112		
	15-16	1102, 1112, 1112, 1112		
	16-17	1112, 1112		
	17-18	1530		
Stewart, Carol	14-15	1001, 1101	38	43
	15-16	1001, 1001, 1101, 1101, 1102		
	16-17	1001, 1001, 1101, 1101, 1102		
	17-18	1510, 1510, 1520, 1520		
Thomas, Merle	13-14	1101	6	6
	14-15	1101		
Thompson, Eli	14-15	1007	1	2
Thompson, Jesse	14-15	1107	3	3
Vilone, Paula	13-14	1112, 1112	6	6
Vincent, Brittany	14-15	1107, 1107	15	15
	15-16	1107		
	17-18	1507, 1530		
Walck, Lindsey	15-16	1011, 1011	8	10
Wright, Hope	13-14	1107, 1107	6	6

## VIABILITY (§ 4.1.3.1) CONTINUED



**NOTE:** The large percentage of adjunct faculty is due to the development of co-requisite courses, which were required to be offered by the WVHEPC and instituted at Fairmont State University without the hiring of additional full-time faculty. Although 3 FEAP positions were created in the College of Science and Technology, many adjuncts were still needed to teach lower level courses. Full-time faculty taught 67% of all math students compared to 33% for adjuncts.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Graduation/Retention Rates

During the past five years the Mathematics program has graduated a total of 54 students, averaging 10.8 graduates per year. This number includes students that have graduated with a Mathematics B.S., an Education with a 5-Adult Mathematics Teaching Field BA, an Education Degree with a 5-9 Mathematics Specialization BA, or a Master of Arts in Teaching Mathematics.

The Fairmont State Mathematics Program has averaged per year 7.4 B.S. degrees in Mathematics, 3 B.A.E. degrees in Mathematics Education, and 3 certifications for teaching mathematics in grades 5-9. In addition, students use math a minor, but the institution does not track minors.

Below is a table summarizing the graduation data for each academic year. Sources for data in the table are the WVHEPC Certificate & Degrees Conferred spreadsheet and research of student transcripts. A review of both institutional data and student transcripts revealed a larger number of Mathematics B.S. completers than the number of graduates reported by the HEPC.

Academic Year	Number of Graduates Obtaining a B.S. in Math <i>Source: wvhepc.edu</i>	Number of Completers obtaining B.S. in Math <i>Source: Transcripts</i>	Number of Completers obtaining BA With Mathematics Teaching Specialization (5-Adult) (Also received B.S.)	Number of Completers Obtaining a 5-9 Mathematics Teaching Certification	Number of Completers Obtaining a Master of Arts in Teaching Mathematics	Total Completers taught by Mathematics Program
2013-2014	3	3	1	4	1	8
2014-2015	8	10	3	7		17
2015-2016	6	8	4	1		9
2016-2017	7	10	3	1	1	12
2017-2018	6	6	4	2		8
<b>Total</b>	<b>30</b>	<b>37</b>	<b>15</b>	<b>15</b>	<b>2</b>	<b>54</b>

The data shown below is from the common data base and uses the following definition of retention. A student has been retained means that a student who was a first time freshman with a declared major in mathematics in the fall of a given academic year remained a mathematics major in the fall of the subsequent year. This definition does not take into account students who declare a mathematics major after the fall semester.

- For Fall 2013 to Fall 2014: Two math majors started and both were retained. (100%)
- For Fall 2014 to Fall 2015: Two math majors started on one was retained. (50%)
- For Fall 2015) to Fall 2016: Two math majors started and one was retained. (50%)
- For Fall 2016 to Fall 2017: No math majors started in 201710
- For Fall 2017 to Fall 2018: One math major, outside the period of the review.

## VIABILITY (§ 4.1.3.1) CONTINUED

### Previous Program Review Results

#### 2008-2013 Rational for Recommendation - Continuation of program

**Rationale for Recommendation:**

The faculty associated with the B.S. Mathematics degree (including the B.A. in Mathematics Education) has been making curriculum improvements and has been documenting student success via course and program outcomes. Course outcomes are linked to appropriate program outcomes, and student assessment is well established within the programs of study. The faculty within the Mathematics Department utilizes a continuous improvement plan to meet institutional assessment needs.

Nationwide, degrees in mathematics account for less than 1 percent of the total number of bachelor degrees awarded. Over the last five years the Mathematics Department at Fairmont State University has been above this national standard (i.e., 1.2 percent for Math degrees, and 1.8 percent for Math Education Degrees). While the Mathematics Department does not have a large number of majors, the degrees offered by the program are deemed essential to both the state and region. The faculty is actively engaged in the improvement of mathematics education at the K-12 level, and is taking an active role in the redesign of developmental education at Fairmont State University. The faculty is commended for the high quality report provided, and for the leadership roles they are taking to transform math education in the state of West Virginia.

## ADEQUACY (§ 4.2.4.2)

### Curriculum

Program requirements include a foundation of twelve hours of calculus and six hours of logic and concepts related to sets, relations, and functions which underlie nearly all of mathematics. The Abstract Algebra and Linear Algebra courses provide exposure to basic algebraic structures and more techniques for problem solving. The Applied Statistics and Probability courses add breadth to the student's core of knowledge in an increasingly important and useful area of applied mathematics.

Electives broaden the students' exposure to various areas of mathematics and allow students to tailor their degrees to their own interests and intended post-college pursuits. Every student is required to take one of two capstone courses: Real Analysis or Topology. Graduates with a mathematics degree find employment in a variety of fields. Because of this fact, all majors are required to complete a minor to be better prepared for their post-college career.

Computer Science majors are required to take Calculus I and II, Introduction to Mathematical Reasoning, and Discrete. With the addition of Calculus III and only two more mathematics courses, these students can complete a minor in mathematics.

During the past five years, the Mathematics Program has revised parts of the curriculum and is in alignment with recommendations for undergraduate mathematics programs published by the Mathematical Association of America. Every five years, the Committee on Undergraduate Programs in Mathematics (CUPM) publishes a math program and curriculum guide. The most recent version is from 2015 with an update in 2017. The Mathematics Program used this resource to guide program improvements.

More information can be found at

<https://www.maa.org/programs-and-communities/curriculum%20resources/committee-on-the-undergraduate-program-in-mathematics>

Since 2006, all Mathematics Education majors are required to complete a major in their field. Thus, all Mathematics Education majors complete the requirements for a B.S. in mathematics in addition to a B.A. in Education. The completion of these two degrees leads to a teaching certification in 5-Adult Mathematics. The Mathematics Education majors are required to take Discrete Mathematics and Modern Geometry, which satisfy their mathematics elective requirement. In addition, they take a course on methods for teaching mathematics taught by the Mathematics Department. The students who major in Mathematics Education use Education as their minor for the Mathematics Degree. The Mathematics and Mathematics Education degrees are both completed in four years.

Another option for Education students is a 5-9 teaching specialization in Mathematics which is added to another certification such as Elementary Education or any other teaching license.

The B.A. in Mathematics Education Program design is supported by guidelines found in MET II (Mathematics Education of Teachers, Part II) which was published in 2012 by the Conference Board of Mathematical Sciences in conjunction with the American Mathematical Society and the Mathematical Association of America. The MET II report cites recommended courses to prepare preservice teachers to teach secondary school mathematics.

The next table shows the alignment of the required math courses for preservice secondary math teachers with recommendations found in the MET II on page 69. The full report can be found at <https://www.cbmsweb.org/the-mathematical-education-of-teachers/>.

**Mathematics Education of Teachers II Chapter 6, page 69**  
**Appendix: Sample Undergraduate Mathematics Sequences**  
*Long sequence (42 semester-hours).*

<b><u>I. Courses taken by undergraduates in a variety of majors (21 semester hours)</u></b>	
Single- and Multi-variable Calculus (9+ semester-hours)	2501, 2502, 3503
Introduction to Linear Algebra (3 semester-hours)	3520 (3362)
Introduction to Computer Programming (3 semester-hours)	COMP 1102
Introduction to Statistics I, II (6 semester-hours)	1550 & 3550* (1113 & 3335)
<b><u>II. Courses intended for all mathematics majors (12 semester-hours)</u></b>	
Introduction to Proofs (3 semester-hours)	2563 (2212)
Advanced Calculus (3 semester-hours)	4580 or 4590 (3375 or 3391)
Abstract Algebra (3 semester-hours)	4520 (3361)
Geometry or Mathematical Modeling (3 semester-hours)	2562 (2216)
<b><u>III. Courses designed primarily for prospective teachers (9 semester-hours)</u></b>	
Introduction to Math Reasoning	1561
Mathematical Logic	2510 (2200)
Modern Geometry**	3570 (3372)
*MATH 3550 Probability is used instead of a second year of statistics.	
**Modern Geometry is the only course designed primarily for preservice secondary teachers.	
All other course are used by multiple majors, but are important skills for secondary teachers.	

Citation: Conference Board of the Mathematical Sciences (2012). The Mathematical Education of Teachers II. Providence RI and Washington DC: American Mathematical Society and Mathematical Association of America. The full text of the book is also available online at <https://www.cbmsweb.org/the-mathematical-education-of-teachers/>



**ADEQUACY (§ 4.2.4.2) CONTINUED**

**Program Requirements:**

<b>Bachelor of Science in Mathematics</b> 2017-2018 Fairmont State University Catalog (pp. 80-81)				
<b>Category</b>	<b>Program Hours</b>	<b>Math Program Requirements</b> <i>Choosing higher credit- hour alternatives reduces the minimum number of free elective credit hours required to reach 120 semester hours.</i>		
<b>General Studies</b>	<b>30-32</b>	See page 24 in this program review for advising sheet designed for a mathematics major.		
<b>Major</b>	<b>45</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <b>Required Courses</b>                              COMP 1120 (3 hrs.)                              MATH 1550 (3 hrs.)                              MATH 1561 (3 hrs.)                              MATH 2501 (4 hrs.)                              MATH 2502 (4 hrs.)                              MATH 2510 (3 hrs.)                              MATH 2563 (3 hrs.)                              MATH 3503 (4 hrs.)                              MATH 3520 (3 hrs.)                              MATH 3550 (3 hrs.)                              MATH 4520 (3 hrs.)    <b>Any One Science Course</b>                              CHEM 1101 (4 hrs.)                              CHEM 1105 (5 hrs.)                              PHYS 1101 (4 hrs.)                              PHYS 1105 (5 hrs.)                         </td> <td style="width: 50%; vertical-align: top;"> <b>Math Electives (9 hrs.)</b>  <i>Choose three courses from Group A and B. At least one course must be chosen from Group A.</i>   <b>Group A:</b>                              MATH 4580 (3 hrs.)                              MATH 4590 (3 hrs.)    <b>Group B:</b>                              MATH 2520 (3 hrs.)                              MATH 2562 (3 hrs.)                              MATH 3504 (3 hrs.)                              MATH 3540 (3 hrs.)                              MATH 3570 (3 hrs.)                         </td> </tr> </table>	<b>Required Courses</b> COMP 1120 (3 hrs.) MATH 1550 (3 hrs.) MATH 1561 (3 hrs.) MATH 2501 (4 hrs.) MATH 2502 (4 hrs.) MATH 2510 (3 hrs.) MATH 2563 (3 hrs.) MATH 3503 (4 hrs.) MATH 3520 (3 hrs.) MATH 3550 (3 hrs.) MATH 4520 (3 hrs.)  <b>Any One Science Course</b> CHEM 1101 (4 hrs.) CHEM 1105 (5 hrs.) PHYS 1101 (4 hrs.) PHYS 1105 (5 hrs.)	<b>Math Electives (9 hrs.)</b> <i>Choose three courses from Group A and B. At least one course must be chosen from Group A.</i>  <b>Group A:</b> MATH 4580 (3 hrs.) MATH 4590 (3 hrs.)  <b>Group B:</b> MATH 2520 (3 hrs.) MATH 2562 (3 hrs.) MATH 3504 (3 hrs.) MATH 3540 (3 hrs.) MATH 3570 (3 hrs.)
<b>Required Courses</b> COMP 1120 (3 hrs.) MATH 1550 (3 hrs.) MATH 1561 (3 hrs.) MATH 2501 (4 hrs.) MATH 2502 (4 hrs.) MATH 2510 (3 hrs.) MATH 2563 (3 hrs.) MATH 3503 (4 hrs.) MATH 3520 (3 hrs.) MATH 3550 (3 hrs.) MATH 4520 (3 hrs.)  <b>Any One Science Course</b> CHEM 1101 (4 hrs.) CHEM 1105 (5 hrs.) PHYS 1101 (4 hrs.) PHYS 1105 (5 hrs.)	<b>Math Electives (9 hrs.)</b> <i>Choose three courses from Group A and B. At least one course must be chosen from Group A.</i>  <b>Group A:</b> MATH 4580 (3 hrs.) MATH 4590 (3 hrs.)  <b>Group B:</b> MATH 2520 (3 hrs.) MATH 2562 (3 hrs.) MATH 3504 (3 hrs.) MATH 3540 (3 hrs.) MATH 3570 (3 hrs.)			
<b>Minor</b>	<b>18-24</b>	A minor is required for a Mathematics degree.		
<b>Electives</b>	<b>19-27</b>			
<b>TOTAL</b>	<b>120</b>	Required credit hours required for graduation.		

## ADEQUACY (§ 4.2.4.2) CONTINUED

### B.S. Mathematics Program Model Schedule 2013-2016

\*Beginning in Fall 2013, degree programs changed to 120 hours and the Mathematics Program aligned with the change. \*\*Note: A minor is required for a mathematics degree.

<b>B.S. Mathematics Program 2013</b>						
	Course		Credits	Program	General Studies	Other
<b>1<sup>st</sup> Year First Semester</b>	MATH 2501(1190)	Calculus I	4	X	X	
	MATH 1561(1125)	Math Reasoning	3	X		
	ENGL 1101	Written English I	3		X	
	COMP 1102	Princ of Program. I	3	X		
	Minor/Elective	_____	3			X
<b>1<sup>st</sup> Year Second Semester</b>	MATH 2502(3315)	Calculus II	4	X		
	MATH 1550(1113)	Applied Statistics	3	X		
	ENGL 1102	Written English II	3		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
<b>2<sup>nd</sup> Year First Semester</b>	MATH 3503(3316)	Calculus III	4	X		
	MATH 2563(2212)	Trans. To Higher Math	3	X		
	COMM 2200	Intro Human Comm	3		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
<b>2<sup>nd</sup> Year Second Semester</b>	MATH 3550(3335)	Probability & Stats	3	X		
	MATH 2510(2200)	Math Logic	3	X		
	GEOG 2210	Intro to Geography	3		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
<b>3<sup>rd</sup> Year First Semester</b>	Group B Math Elec	_____	3	X		
	MATH 3520(3362)	Linear Algebra	3	X		
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
	Natural Science	Chem, Phys, Biol, or Geol	4	X	X	
<b>3<sup>rd</sup> Year Second Semester</b>	MATH 4520(3361)	Abstract Algebra	3	X		
	POLI 1103	American Government	3		X	
	ENGL 2200	World Lit I: to 1650	3		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
<b>4<sup>th</sup> Year First Semester</b>	Group B Math Elec	_____	3	X		
	Fine Arts	Any in 12	3		X	
	PHED 1100	Fitness and Wellness	2		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
<b>4<sup>th</sup> Year Second Semester</b>	MATH 4580/4590 (3375/3391)	Topology/Real Anal.	3	X		
	Tech Lit	Tech Lit	3		X	
	Minor/Elective	_____	3			X
	Minor/Elective	_____	3			X
			120			

**ADEQUACY (§ 4.2.4.2) CONTINUED**

<b>B.A. Mathematics Education (5-adult) Program 2017</b>						
	<b>Course</b>		<b>Credits</b>	<b>Program</b>	<b>General Studies</b>	<b>Other</b>
<b>1<sup>st</sup> Year First Semester</b>	MATH 2501	Calculus I	4	X	X	
	MATH 1561	Intro to Math Reasoning	3	X		
	ENGL 1101	Written English I	3-4		X	
	PHED 1100*	Fitness and Wellness	2			X
	EDUC 2200	Intro to Ed	3			X
<b>1<sup>st</sup> Year Second Semester</b>	MATH 2502	Calculus II	4	X		
	ENGL 1102	Written English II	3		X	
	COMP 1102	Princ of Program. I	3	X		
	EDUC 2201	Instruc Tech	3		X	
	MATH 2510	Math Logic	3	X		
<b>2<sup>nd</sup> Year First Semester</b>	MATH 3503	Calculus III	4	X		
	MATH 2563	Transition to Higher Math	3	X		
	EDUC 2203	Hmn Grwth & Dev	3		X	
	COMM 2200	Intro to Communication	3		X	
	Science	Chem or Physics	4-5	X	X	
<b>2<sup>nd</sup> Year Second Semester</b>	MATH 4520	Abstract Algebra	3	X	X	
	ENGL 2220*	World Lit I: to 1650	3		X	
	EDUC 2240	High Inc Disabilities	3			X
	POLI 1103*	Am. Government	3		X	
	MATH 1550	Applied Statistics	3	X		
<b>3<sup>rd</sup> Year First Semester</b>	MATH 2562	Discrete	3	X		
	MATH 3520/3570	Linear/Geometry	3	X		
	EDUC 2260	Instr Design I	3			X
	GEOG 2210*	Intro to Geography	3		X	
	EDUC 2265	Field Exp II	1			X
	Elective		3			X
<b>3<sup>rd</sup> Year Second Semester</b>	MATH 3550	Probability & Stats	3	X		
	MATH 4580/4590	Topology/Real Anal.	3	X		
	Fine Arts App.*		3		X	
	EDUC 3331	Reading in Cont Area	3			X
	Elective		3			X
<b>4<sup>th</sup> Year Second Semester</b>	MATH 4531	Math Methods	3	X		
	MATH 3520/3570	Linear/Geometry	3	X		
	EDUC 3340	Instr Design II	3			X
	EDUC 3351	Inclusive Pract	3			X
	EDUC 3365	Field Exp III	2			X
<b>4<sup>th</sup> Year Second Semester</b>	EDUC 4485	Action Research	1			X
	EDUC 4486	Portfolio	1			X
	EDUC 4496	Student Teaching	10			X
			<b>120</b>			

## ADEQUACY (§ 4.2.4.2) CONTINUED

Model Schedule – Elementary Education with Math 5-9 Specialization						
* shading indicates required math courses						
	Course		G. S.	Prerequisites	CR	Total
Freshman First Semester	ENGL 1101	Written English I	3		3	18
	HIST 1107	US History I	13		3	
	A/M/T 1120	Appreciation	12		3	
	EDUC 2200	Intro to Ed.			3	
	<b>MATH 1530</b>	<b>College Algebra</b>	<b>2</b>	<b>21 Math ACT</b>	<b>3</b>	
	GEOG 2210	Intro to Geography	11, 14		3	
Second Semester	<b>MATH 1540</b>	<b>Trig &amp; Functions</b>		<b>23 Math ACT/Math 1530</b>	<b>3</b>	16
	ENGL 1102	Written English II	1	ENGL 1101	3	
	EDUC 2201	Instruct. Technology	5, 6		3	
	BIOL 1104	Biosphere	15		4	
	<b>MATH 2551</b>	<b>Structure of Real Nos.</b>		<b>23 Math ACT/Math1530 &amp; TE</b>	<b>3</b>	
Summer	HIST 2211/2/3	World Civ. I/II/III	16		3	6
	HIST 1108	US History II	13		3	
Sophomore First Semester	<b>MATH 2552</b>	<b>Stats and Geometry</b>		<b>23 Math ACT/Math 1530/TE</b>	<b>3</b>	17
	<b>MATH 2501</b>	<b>Calculus I</b>		<b>25 Math ACT/Math 1540</b>	<b>4</b>	
	PHSC 2201	Exosphere		BIOL 1104	4	
	COMM 2200/2201	Communication	4, 7	ENGL 1102	3	
	EDUC 2203	Human Development	10	Adm. to TE	3	
Sophomore Second Semester	<b>MATH 1550</b>	<b>Applied Statistics</b>		<b>21 Math ACT/Math 1530</b>	<b>3</b>	16
	PHSC 2202	Geosphere		BIOL 1104	4	
	ENGL2220/21/30/31	Lit I	9	ENGL 1101	3	
	EDUC 2240	High Inc. Disabilities		Adm. to TE	3	
	HIST 3302	WV History		HIST 1107 & 1108	3	
Junior First Semester	MUSI 3330	Music in Elem Class.			3	19
	ENGL 3354	Children’s Literature		ENGL 1104	3	
	PHED 3326	Early Psychomot.Dev		EDUC 2200,2202,2202L	3	
	EDUC 2260 & 2265	Inst. Design I & FE II		Adm. to TE	4	
	EDUC 3330	Reading Process		ENGL 1108	3	
	POLI 1103	American Gov.	8		3	
Junior Second Semester	EDUC 3331	Reading in Ctnt Areas		EDUC 2200	3	18
	EDUC 3350	SS in Elem School		EDUC 2260 & TE	3	
	<b>MATH 1561</b>	<b>Intro. Math Reasoning</b>		<b>MATH 1540/2501</b>	<b>3</b>	
	<b>MATH 3553</b>	<b>Elem Math Methods</b>		<b>MATH 2551 &amp; 2552</b>	<b>3</b>	
	HLTA 4400	Elem Health Ed			3	
	ART 3350	Elem Art Ed			3	
Senior First Semester	<b>MATH 4531</b>	<b>Sec. Math Methods</b>		<b>TE</b>	<b>3</b>	17
	EDUC 3351	Inclusive Practices		ENGL 1102	3	
	EDUC 3340 & 3365	Inst. Design II & FE III		EDUC 2260, EDUC 3365	5	
	EDUC 3332	Pedagogy of Literacy		EDUC 3331	3	
	PHSC 4412	Elem Sci Methods		PHSC 2201 & 2202	3	
Senior Second Semester	EDUC 4485	Action Research			1	12
	EDUC 4486	Portfolio			1	
	EDUC 4491	Student Teaching			10	
Total Hours						139

**Faculty Data**

The Mathematics Program at Fairmont State University currently maintains six full-time faculty members and two Computer Science faculty with some teaching duties in Mathematics. We have also had the support of thirty-one adjunct faculty during the five years included in this program review. Two Mathematics faculty members retired and were replaced during the five-year period.

A faculty data sheet has been completed for each faculty member. See Appendix E page 85.

**Full-time Faculty:**

- Brian S. Blackwood, Ph.D.
- Tom Cuchta, Ph.D. (Arrived Fall 16)
- Stephanie M. Jones, M.S. (Arrived Fall 15 & Ph.D. awarded Fall 18)
- Alice Dennine LaRue, M.S.
- Steven T. Morrow, Ph.D. (Left Fall 14)
- Robert J. Niichel, Ph.D. (Arrived Fall 14)
- Joseph A. Riesen, Ph.D.

**Full-time Mathematics Support FEAP:**

- Nadira Ghattas, Ed.D. (Arrived Fall 15)
- L. Beth Thompson, M.S. (Arrived Fall 14)
- Lindsey Walck, M.S. (Arrived Fall 16)

**Full-time Faculty with Mathematics Teaching Duties:**

- Randall L. Baker, M.S. (a two-course assignment in Mathematics)
- Theodore K. LaRue, M.S.

**Retired Full-time Faculty:**

- James O. Dunlevy, M.S. (Spring 16)
- Susan L. Goodwin, Ed.D. (Spring 15)

**Adjunct Faculty / Teaching Assistants:**

Patricia J. Bush, M.A.	Hannah Ludwick, B.S., B.A. in Ed	Julia Oliveto, B.S.	Carol Stewart, M.A.
Robert Clonch, M.A.	Francisco J. Luttecke, Ph.D.	Marcie Raol, M.A.	Merle Thomas, Jr., M.S.
Brittany Cuchta, M.S.	Larry W. Mason, M.A.	Jakob Rinehart, M.S.	Eli Thompson, B.S.
Victor W. Daniel, Ph.D.	Megan Michael, B.S.	Sherea Savage, M.A.	Jesse Thompson
Susan Goodwin, Ed.D.	Hannah Morris, B.A.	Jarrod Schiffbauer, Ph.D.	Paula L. Vilone, M.A.
Emily Harris, M.S.	Diana Munza, M.A.	Amanda Smith, M.A.	Brittany L. Vincent, Ph.D.
Olena Hawranick, B.S.	Jeffrey Noel, M.S.	Heather Snodgrass, M.A.	Lindsey Walck, M.A.
Karen Leffard, M.Ed.		Grant D. Spencer, M.A.	Hope Wright, M.A.

## ADEQUACY (§ 4.2.4.2) CONTINUED

### Accreditation/national standards

The Mathematics Education Program obtained full accreditation from CAEP after a complete program review in 2017. In addition, the 5-9 program and the MAT in Mathematics (5-Adult) also obtained full accreditation. The Mathematics Program for both the 5-adult and 5-9 mathematics specializations, as well as the MAT in mathematics (5-Adult), are fully accredited by CAEP until at least 2023.

The following strength of all three programs was cited: *The program continues to consider feedback externally and internally to ensure that candidates have appropriate rich experiences.*

A complete copy of the CAEP Criteria and response is provided as Appendix D on page 78.

## NECESSITY (§ 4.1.3.3)

### Placement and Success of Graduates

Based on our graduate contacts and graduate surveys, approximately 96 percent of the students are either successfully employed in the field mathematics/mathematics education or are attending graduate school full time. In addition, approximately 75 percent of the surveyed graduates are employed or attending graduate school in West Virginia.

Below is a summary of graduates and placement.

Graduate Status of those surveyed (28 responses)	Number of Graduates	Percentage of Graduates
Full time permanent position in education, teaching mathematics	14	50 %
Graduate School*, full time	4	14 %
Seeking permanent position in mathematics education	0	0 %
Employed in mathematics related field (computer, insurance)	11	39 %
Employed outside the field of mathematics	1	3.5 %
Not looking	1	3.5%

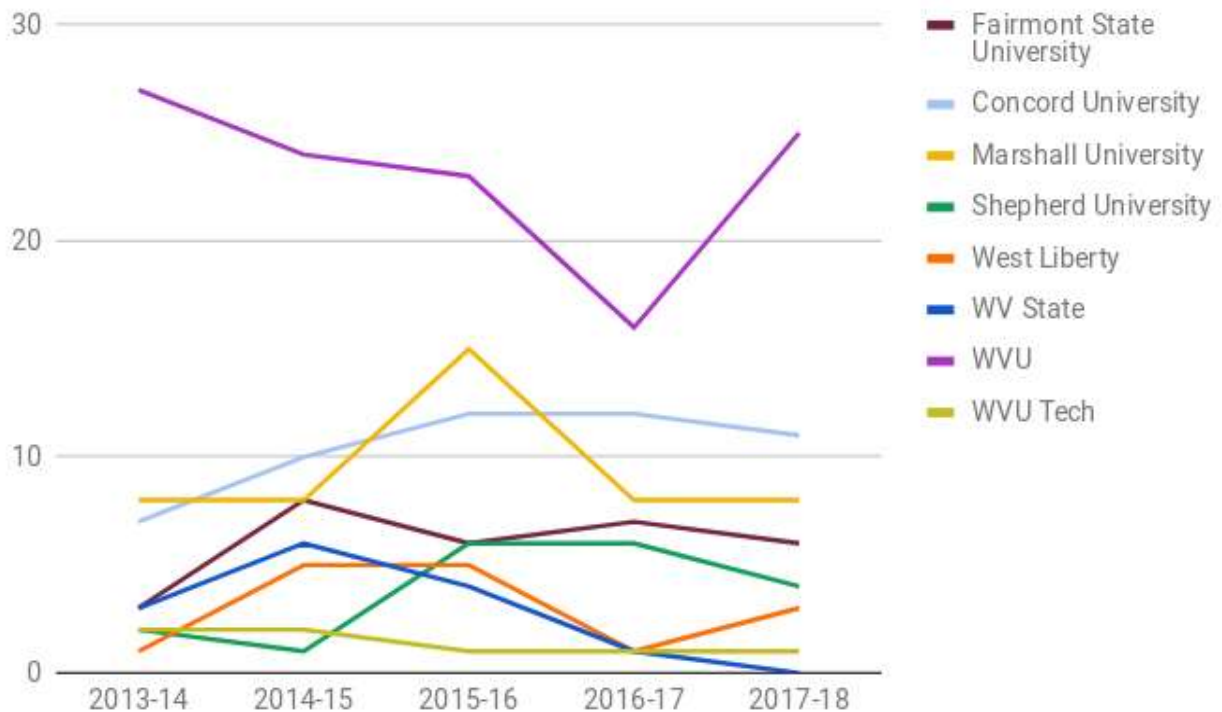
\* In the past five years, 7 of 28 graduates (25%) have already received their graduate degrees.

## NECESSITY (§ 4.1.3.3) CONTINUED

### Similar Programs in WV

Numbers provided by the HEPC<sup>1</sup> appear in the chart below. The nearest comparable public institution in size to Fairmont State that offers a degree in mathematics is West Liberty University. Although WVU is only a short drive north, Fairmont State's Mathematics program has still been able to remain competitive with the much larger Marshall University in number of bachelor's degrees in mathematics degrees conferred.

Math Degrees by public institutions in WV



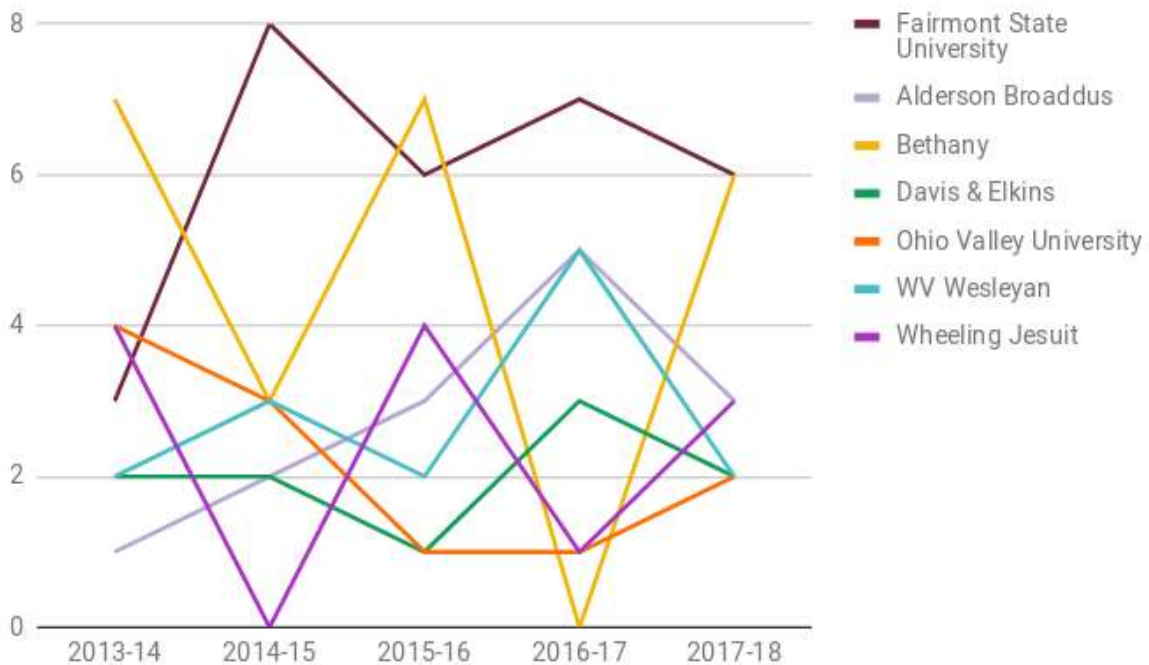
The HEPC numbers also lists mathematics degrees conferred by private institutions. Pictured on the next page are the degrees conferred by Fairmont State University along with the private institutions in West Virginia. Fairmont State University is more productive than the private institutions in this area, likely because of low tuition cost. Alderson Broaddus is somewhat comparable to Fairmont State University, but recent financial issues<sup>2</sup> could jeopardize programs there.

<sup>1</sup>Certificates and Degrees Conferred (5-year trend). HEPC. [http://www.wvhepc.edu/wp-content/uploads/2018/08/cnft\\_5yr\\_2013-2017.xlsx](http://www.wvhepc.edu/wp-content/uploads/2018/08/cnft_5yr_2013-2017.xlsx)

<sup>2</sup>Alderson Broaddus' financial decline causes accreditation woes. Charleston Gazette-Mail. 27 July 2017. [https://www.wvgazettemail.com/news/education/alderson-broaddus-financial-decline-causes-accreditation-woes/article\\_4c94d463-dd23-5c6e-b3d7-f57da4770da2.html](https://www.wvgazettemail.com/news/education/alderson-broaddus-financial-decline-causes-accreditation-woes/article_4c94d463-dd23-5c6e-b3d7-f57da4770da2.html)



## Fairmont math degree compared to private institutions in WV



West Virginia is suffering a crisis of needing mathematics teachers for public schools<sup>3</sup>. The recent loss the mathematics education program at the comparable institution Concord University<sup>4</sup> reinforces the need for a strong Mathematics Education institution like Fairmont State. It also appears that Wheeling Jesuit<sup>5</sup> and Concord<sup>6</sup> are dropping their B.S. in pure mathematics.

The governor has recently considered a second pay raise for public employees<sup>7</sup> and the state legislature has considered raises for public school mathematics teachers in particular<sup>8</sup>, which could increase the desire to teach public school mathematics and hence also increase enrollment in Mathematics Education.

<sup>3</sup> West Virginia looks for solution to shortage of math teachers. Herald Dispatch. 20 January 2019. [https://www.herald-dispatch.com/news/west-virginia-looks-for-solution-to-shortage-of-math-teachers/article\\_798b23a7-e821-5d08-8e2c-476de4beba91.html](https://www.herald-dispatch.com/news/west-virginia-looks-for-solution-to-shortage-of-math-teachers/article_798b23a7-e821-5d08-8e2c-476de4beba91.html)

<sup>4</sup> Concord eliminating educational programs. The Register Herald. 7 October 2018. [https://www.register-herald.com/news/concord-eliminating-educational-programs/article\\_a291bdf5-35f7-581f-886d-ab6824c6b2f0.html](https://www.register-herald.com/news/concord-eliminating-educational-programs/article_a291bdf5-35f7-581f-886d-ab6824c6b2f0.html)

<sup>5</sup> Catalog for Undergraduate Studies 2018-2019. Wheeling Jesuit University. [http://www.wju.edu/academics/catalogs/pdf/under\\_18-19.pdf](http://www.wju.edu/academics/catalogs/pdf/under_18-19.pdf)

<sup>6</sup> Mathematics (B.S.) program of study. Concord University. [http://catalog.concord.edu/preview\\_program.php?catoid=10&poid=1205&returnto=584](http://catalog.concord.edu/preview_program.php?catoid=10&poid=1205&returnto=584)

<sup>7</sup> Gov. Justice announces 5% pay raise for teachers and state employees and commitment of \$100m from surplus to assist in long term solution to PEIA. Office of the Governor. 2 October 2018 [https://governor.wv.gov/News/press-releases/2018/Pages/Gov.-Justice-announces-pay-raise-for-teachers-and-state-employees-and-commitment-of-\\$100m-from-surplus-to-assist-in-long.aspx](https://governor.wv.gov/News/press-releases/2018/Pages/Gov.-Justice-announces-pay-raise-for-teachers-and-state-employees-and-commitment-of-$100m-from-surplus-to-assist-in-long.aspx)

<sup>8</sup> WV Legislature to mull charters, free community college, higher math teacher pay. Charleston Gazette Mail. 8 January 2019 [https://www.wvgazettemail.com/news/legislative\\_session/wv-legislature-to-mull-charters-free-community-college-higher-math/article\\_a70670a0-5b32-542e-9247-0f122f202068.html](https://www.wvgazettemail.com/news/legislative_session/wv-legislature-to-mull-charters-free-community-college-higher-math/article_a70670a0-5b32-542e-9247-0f122f202068.html)

The mathematics education program at Fairmont State is designed to make simultaneously majoring in pure mathematics and another field as easy as possible. Students who receive a B.A.E. in Mathematics Education also receive a B.S. in Mathematics. Many students who received the dual degrees were able to proceed to graduate school in a STEM area either directly after undergraduate or after working in as a public school teacher.

Recent grants awarded to faculty in the Fairmont State mathematics program are evidence of an emerging niche in the mathematics program: connecting mathematics majors to industrial and government jobs through projects. Faculty received a grant from TMC<sup>9</sup> Industries<sup>9</sup> which brought a stipend and research experience with contractor of NASA IV&V to four undergraduate mathematics majors. Another grant in conjunction with the cybersecurity concentration in the computer science program has brought NASA SARP<sup>10</sup> money to two mathematics students and two cybersecurity students who are working on a practical data-driven project. Finally, a grant through the Mathematical Association of America's "Preparation for Industrial Careers in Mathematics"<sup>11</sup> program has given four mathematics students an opportunity to work on problems defined by local industries (a local bank and Habitat for Humanity). Faculty will continue building connections with industry and government to pursue this niche as a way to attract future majors for the program.

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<sup>9</sup> Math Faculty Receive TMC and NASA IV&V Grant. Fairmont State University. 8 February 2018. <https://www.fairmontstate.edu/fsunow/math-faculty-receive-tmc-and-nasa-ivv-grant>

<sup>10</sup> NASA grant funds cybersecurity research. Fairmont State University. 12 February 2019. <https://www.fairmontstate.edu/fsunow/fsu-front-page/nasa-grant-funds-cybersecurity-research>

<sup>11</sup>PIC Math - Preparation for Industrial Careers in Mathematical Sciences. Mathematical Association of America. <https://www.maa.org/programs-and-communities/professional-development/pic-math>

## CONSISTENCY WITH MISSION (§ 4.1.3.4)

FAIRMONT STATE UNIVERSITY has established the following mission statements:

**MISSION STATEMENT: (13-15)** The mission of Fairmont State University is to provide opportunities for individuals to achieve their professional and personal goals and discover roles for responsible citizenship that promote the common good.

**MISSION STATEMENT: (2016-18)** *The Fairmont State University family educates, enriches, and engages students to achieve personal and professional success.*

**VISION STATEMENT: (2013-17)** Fairmont State University aspires to be nationally recognized as a model for accessible learner-centered institutions that promote student success by providing comprehensive education and excellent teaching, flexible learning environments, and superior services. Graduates will have the knowledge, skills, and habits of mind necessary for intellectual growth, full and participatory citizenship, employability, and entrepreneurship in a changing environment.

**VISION STATEMENT: (2017-18)** *Fairmont State University aspires to be nationally recognized as a model for accessible learner-centered institutions that promote student success by providing comprehensive education and excellent teaching, flexible learning environments, and superior services. Graduates will have the knowledge, skills, and habits of mind necessary for intellectual growth, full and participatory citizenship, employability, and entrepreneurship in a changing environment.*

### COLLEGE OF SCIENCE AND TECHNOLOGY

**MISSION:** Our mission is to promote effective student learning in science, math, and technology and to prepare top-quality graduates for their future endeavors, including graduate study, employment, or other personal goals.

### MATHEMATICS PROGRAM

#### **Mission: (Effective Fall 2007-Spring 2017)**

The mission of the mathematics degree program is to equip students with analytical and problem-solving skills for careers or graduate study. Classes develop a student's ability to apply mathematical methods and ideas to problems in both mathematics and other fields. Students learn to communicate ideas effectively, assimilate new information, and to be self-reliant learners. The department cooperates fully with the School of Education in meeting its mission for candidates for a B.A. degree in education with mathematics teaching specialization for either the 5-9 or the 5-Adult grade levels.

### MATHEMATICS PROGRAM

#### **Mission: (Effective Fall 2017)**

The mission of the mathematics degree program is to equip students with analytical and problem-solving skills for careers in education, academia, and industry. Coursework will develop a student's ability to apply mathematical methods and ideas to problems in both mathematics and other fields, as well as train students to become self-reliant learners, and communicate ideas effectively.

## CONSISTENCY WITH MISSION (§ 4.1.3.4) CONTINUED

The department cooperates fully with the School of Education in meeting its mission for candidates for a B.A. degree in education with mathematics teaching specialization for either the 5-9 or the 5-Adult grade levels.

### Outcomes:

The Program Outcomes are intended to dynamically promote professional competencies and continued professional growth. Below are the Program Outcomes for the Mathematics program at Fairmont State University.

Students and graduates shall be able to:

1	Apply the underlying unifying structures of mathematics (i.e., sets, relations and functions, logical structure).
2	Demonstrate proficiency in writing proofs.
3	Communicate mathematical ideas orally.
4	Investigate and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods.
5	Investigate and solve unfamiliar math problems.

The Mathematics Program mission supports that of the University. The Mathematics Program objectives form the foundation to achieve the goal of producing graduates with the skills and attitudes to be independent, lifelong learners and to prepare them for further education and rewarding careers. For many years, the mathematics program at Fairmont State has been respected academically because of the quality of its faculty and its graduates. The Bachelor of Science in Mathematics is academically sound, is supported by a strong, well-credentialed faculty who are committed to academic excellence, and has produced graduates who are able to compete successfully in graduate school and in their chosen careers.

### Relationship with Other Programs and the Community

The Mathematics program has excellent relationships with other programs. The department worked in conjunction with the Technology department to design mathematically rigorous courses that support and coordinate with their programs. We also worked with Chemistry and Biology to re-design Calculus I in ways that support their programs. The Mathematics and Computer Science programs designed a common entry course for both majors (MATH 1561), which allows students to more easily double major in these fields.

The faculty makes an exceptional effort to ensure that students enroll in the mathematics class best suited for them and their major. Eight general studies courses are offered with various prerequisites and three mathematics pathways are available.

## CONSISTENCY WITH MISSION (§ 4.1.3.4) CONTINUED

The Mathematics Education Program fully cooperates with the School of Education. Mathematics methods courses at both the elementary and secondary levels require students to write a unit as a requirement for external program accreditation by CAEP. Elementary mathematics instructional units are scored using a rubric common to all elementary-level methods courses as an accreditation requirement for the elementary education program. We also worked with the School of Education to create an 8-week Praxis Core test preparation course in an effort to help students who were struggling to be admitted to the Education program. Mathematics education faculty attend the required EPPAC (Educational Personnel Preparation Advisory Committee) meeting annually. We are also represented on the Fresh Eyes Committee, a committee of faculty primarily from the School of Education whose aim is to identify and enact meaningful change to better serve Education majors.

During the past five years, faculty in the Mathematics Program became educated concerning students who enroll in remedial mathematics courses. Faculty attended workshops and almost every Complete College America conference sponsored by the HEPC. Co-requisite courses were first implemented in Fall 2014. A Director of Mathematics Support was hired as a FEAP within the College of Science and Technology. In 2015, an assistant director was hired as a FEAP, followed by a third FEAP who taught courses fulltime. In addition, many adjuncts were needed to teach students who previously would have taken remedial classes at Pierpont Community and Technical College.

The co-requisite model has helped retention of students to the university. From 2011-2013, Fairmont State students who were required to take remedial mathematics courses upon admission completed their credit-bearing mathematics courses within two years at a rate of only 24.1%-34.4% (as found in the 2017 WV HEPC Report Card, page 26). Now, most students who are required to take remedial mathematics courses do complete their credit-bearing math courses within two years. In March 2017, we were recognized as having the highest percentage (81.8%) in the state for the 2014 cohort. The 2015 cohort had a 90.5% completion rate within 2 years which was again the highest in the state.

For approximately 45 years, the Mathematics Program has offered students multiple pathways for a general studies math class that aligns with their major. Applied Technical Mathematics first appeared in the Fairmont State catalog in 1972 and Fundamental Concepts of Mathematics first appeared in 1974.

Students tutor on campus and in the community. Faculty serve in various capacities for academic competitions, such as the Science Bowl and Science Fairs. The Mathematics Program sponsored the WV State Math Field Day in 2014. Faculty wrote the tests for Grades 10-12 and coordinated the use of university facilities for approximately 600-700 visitors. Students in the mathematics program served as guides and assisted in Grades 4-9 classrooms.

### Signatures and Recommendations

The required sheet with signatures and recommendation is provided on page 1.

# **Appendix A**

## **Mathematics Program Program Outcomes and Assessment Practices**

## **B.S. Mathematics Program Outcomes**

During 2013-2018, not only has the Mathematics Program kept the Taskstream AMS program workspace up-to-date with assessment data, but each cycle was also loaded with the master syllabi for each mathematics course, faculty vitae, and other marks of excellence. In addition, reports to the Program Advisory Board were uploaded.

We have found this information to be invaluable when we are asked to provide information about the program to other programs for their accreditation or to students who have transferred to another institution and need a copy of a master syllabus to determine transfer credit. Another advantage to this workspace is that access can be granted to the workspace to outside accreditors when necessary.

Each time courses in the mapping are taught, the primary instructor will collect data corresponding to the outcome. Data has been entered annually for each outcome. In several courses, samples of student work are uploaded by students in the LAT side of Taskstream.

Mathematics faculty evaluated results annually to create an action plan for improvement. The Action Plan for 2017-18 is provided.

All mathematics courses have created a set of course outcomes which are also assessed on a pre-determined cycle with data uploaded into the individual course AMS workspace.

## **B.S. Mathematics Program Goals for 2013-2018 to support the University Mission.**

1. To support retention, the Mathematics Program will maintain enrollment.
2. To support recruitment, the Mathematics Program will maintain connections to the professional mathematics community by such methods as serving on state committees, presenting at conferences, cooperate with PDS, etc.
3. To support recruitment, the Mathematics Program will encourage mathematics in the community by participating in activities such as the Science Bowl, Engineering Challenge, maintenance of a tutoring database, state and regional math field day.
4. To help students achieve career goals, the Mathematics Program will participate in such activities as brokering internships, encouraging student undergraduate research, writing references, taking students to conferences, fostering submission of problems to competitions, and supervision of student teachers.



Mathematics Program Outcomes	Mapping to courses for assessment	Assessment Measure and Satisfactory Performance Standard
<b>1. Apply the underlying unifying structures of mathematics (i.e., sets, relations and functions, logical structure).</b>	MATH 1561 (1125) Introduction to Mathematical Reasoning Outcome 1	Students in MATH 1561 complete a Concept Map Activity on the first day of class to establish a baseline. They then complete it again on the final exam. <i>Class mean score of greater than 2.5 on the Arizona Math Rubric.</i>
	MATH 4580 (3375) Topology Outcome 1	In Math 4580 (Course outcome 1), the student will prove that some topological property is preserved by a continuous function. For example, the continuous image of a compact set is compact. <i>The class mean will be 9/15 or better on the proof rubric.</i>
	MATH 4590 (3391) Real Analysis Outcome 1	In Math 4590 (Course outcome 1), the student will prove a given function is uniformly continuous. <i>The class mean will be 9/15 or better on the proof rubric.</i>
<b>2. Demonstrate proficiency in writing proofs</b>	MATH 1561 (1125) Introduction to Mathematical Reasoning Outcome 2	In Math 1561 (Course outcome 2) Exam/quiz/homework proof(s) in which students will be asked to prove propositions. One proof is uploaded by student into LAT side of Taskstream into Math Program portfolio. This proof would correspond to an introductory level. Students are instructed to upload a sample of their best work. <i>The class mean will be 9/15 or better on the proof rubric.</i>
	MATH 2563 (2212) Transition to Higher Mathematics Outcome 2	In Math 2563(Course outcome 2 measure 1 - used to be 6) the student will provide a valid mathematical proof to justify a decision about the truth of a proposition. <i>The class mean will be 9/15 or better on the Proof Rubric.</i>
	MATH 4520 (3361) Abstract Algebra Outcome 2	In Math 4520 (Course outcome 2), the student will write a paper about a particular group, its subgroups, its normal subgroups and a quotient group. <i>70% of students will receive a score of 4 or better, out of 8, on the Writing Rubric.</i>
<b>3. Communicate mathematical ideas orally</b>	MATH 3520 Linear Algebra Outcome 3	In Math 3520 (Course outcome 3 used to be 6), student will provide a mathematical proof in a vector space setting. <i>The class mean will be 12 or better out of 20 on the presentation rubric.</i>
	MATH 4580 (3375) Topology Outcome 3	In Math 4580 (Course outcome 3), the student will do an in-class presentation of student work. Student will present their solution to a problem posed in their text. <i>The class mean will be 12 or better out of 20 on the presentation rubric.</i>

	MATH 4590 (3391) Real Analysis Outcome 3	In Math 4590 (Course outcome 3), the student will do an in-class presentation of student work. Student will present their solution to a problem posed in their text. <i>The class mean will be 12 or better out of 20 on the presentation rubric.</i>
<b>4. Investigate and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods</b>	MATH 1550 (1113) Applied Statistics Outcome 4	In Math 1550 (course outcome 4), the students will work in groups to solve complex problems pertaining to industry <i>The class mean will be 8.25 using the Kentucky Task Rubric.</i>
	MATH 2562 (2216) Intro to Discrete Mathematics Outcome 4	In Math 2562 (Course outcome 4), the student will solve a problem such as the one given below:  Suppose that there are four employees in the computer support group of the school of engineering of a large university. Each employee will be assigned to support one of four different areas: hardware, software, networking and wireless. Suppose that Ping is qualified to support hardware, networking and wireless; Quiggley is qualified to support software and networking; Ruiz is qualified to support networking and wireless, and Sitea is qualified to support hardware and software. Use a bipartite graph to model the four employees and their qualifications. If an assignment of employees to support areas so that each employee is assigned to one support area exists, find one.  <i>The class mean will be 2.5 on Arizona Math Grading Rubric.</i>
<b>5. Investigate and solve unfamiliar math problems</b>	MATH 2563 (2212) Transition to Higher Mathematics Outcome 5	In Math 2563 (Course outcome 5), the student will use examples and counterexamples to determine if a proposition is true. <i>The class mean will be 2 or better on the Arizona Rubric.</i>
	MATH 3550 (3335) (Probability and Statistics Outcome 5	In Math 3550 students will work on numerous problems involving discrete random variables pertaining to real-world situations. <i>The class mean will be 2.75 or better out of 4 using the Arizona Math Rubric</i>
	MATH 4520 (3361) Abstract Algebra Outcome 5	In Math 4520 (Course outcome 5), in the student's paper on groups, the student will find an example of a normal subgroup and a quotient group for their particular group, and prove the results. Each student will be given a unique group with which to work. <i>The class mean will be 2.5 or better, out of 4 on the Arizona Math Rubric.</i>

## ACTION PLAN 2017-18 (to be completed during 18-19)

Outcome: B.S. Math Program Outcome 1				
Apply the underlying unifying structures of mathematics (i.e., sets, relations and functions, logical structure).				
Action: Outcome 1 - 16/17 and 17/18				
Action details (take from Assessment Findings: Recommendations):	Discuss the differences between Outcomes 1 and 2, and whether they are redundant.	<b>X</b>	Key/Responsible Personnel:	All Math Faculty
Outcome: B.S. Math Program Outcome 2				
Demonstrate proficiency in writing proofs				
Action: Outcome 2 - 16/17 and 17/18				
Action details (take from Assessment Findings: Recommendations):	Implementing the same grading rubric for each measure has been more difficult than expected. More work is required.	<b>X</b>	Key/Responsible Personnel:	Instructors teaching MATH 1561, 2563 and 4520. i.e., Randy Baker, Dennine LaRue, Joe Riesen, Brian Blackwood.
	The course and program measures for this outcome need to be more clearly aligned.		To do	
	Develop curriculum map.	<b>X</b>		
	Alignment of course and program measures along with the development of assessments need to occur prior to the beginning of term.		To do	
<i>No Action Necessary</i> -- Outcome: B.S. Math Program Outcome 3				
Communicate mathematical ideas orally				
Action: Outcome 3 17/18 No action necessary.				
Action details (take from Assessment Findings: Recommendations):	Average score of students in MATH 3520 Linear Algebra was 18.1 and the corresponding score in MATH 4590 Real Analysis was 14.5. <b>No action necessary.</b>	<b>X</b>	Key/Responsible Personnel:	Instructors teaching MATH 1561, 2563 and 4520. i.e., Randy Baker, Dennine LaRue, Joe Riesen, Brian Blackwood.
Outcome: B.S. Math Program Outcome 4				
Investigate and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods				
Action: Outcome 4 16/17 and 17/18				
Action details (take from Assessment Findings: Recommendations):	We need to find a rubric this year that can work for both classes' assessments. MATH 1550 used Kentucky Task Rubric and MATH 2562 used Arizona Math Rubric.	<b>X</b>	Key/Responsible Personnel:	Faculty teaching MATH 1550 and 2562 -- i.e. Bob Niichel, Tom Cuchta, Brian Blackwood
Outcome: B.S. Math Program Outcome 5				
Investigate and solve unfamiliar math problems				
Action: Outcome 5 16/17 and 17/18				
Action details (take from Assessment Findings: Recommendations):	Beginning in Fall 2017 -- Now that we have the same rubric for all measures, we need to determine how to interpret the results.	<b>X</b>	Key/Responsible Personnel:	Instructors in MATH 2563, 3550, 4520 - i.e., Joe Riesen, Bob Niichel, Brian Blackwood
	Beginning Fall 2018 -- Now we have discovered that the satisfactory performance standards are not the same for all three classes.	<b>X</b>		

## **Appendix B**

### **Excerpts from Handbook of a Coordinated Course**

#### **Example: College Algebra**

**The following coordinated courses have handbooks  
and are available upon request.**

**1400, 1407, 1430, 1507, 1510, 1520, 1530, 1540**



# Math 1430/1530

## College Algebra Handbook

### Fall 2017 – Summer 2018

August 8, 2017

(Updated September 18, 2017 with MATH 1430)

**FSU Math 1530-1430 Coordinators:**

Dennine LaRue  
(304-367-4621) 417 Engineering Technology Building  
[alarue@fairmontstate.edu](mailto:alarue@fairmontstate.edu)

Beth Thompson, *Math Support Coordinator*  
(304-367- 4722) 319 Hunt Haught Hall  
[lthompson2@fairmontstate.edu](mailto:lthompson2@fairmontstate.edu)

# Table of Contents

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- I. Philosophy - Page 3
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- III. Assessment data & Arizona Math Rubric - Page 5-6  
Required Math Department assessments will be emailed to all course instructors
- IV. Textbook Information - Page 7
- V. Math 1430/1530 Instructor Information– Page 8-9  
Prerequisite Checks, Grading Policies, Assessment, Resources, Technology
- VI. MyLabsPlus Information/Policies– Page 10-11
- VII. IDEA Faculty Evaluation Common Information – Page 12
- VIII. MATH 1430 Specific Information – Page 13
- IX. Coordinated Course Calendar by week – Page 14-19
- X. Detailed Course Outline – Pages 20-22  
Use for depth of coverage.
- XI. WVHEPC College Algebra Topics - Page 23  
These topics must be covered for course to transfer as pre-requisite credit.
- XII. College Algebra Guidelines from MAA (1/31/2007) - Page 24
- XIII. Table for Checking MATH 1430 Student Prerequisites - Page 25  
For EXCEL version see Office 365 College Algebra group. Look under Notebook.
- XIV. Table for Checking MATH 1530 Student Prerequisites - Page 26  
For EXCEL version see Office 365 College Algebra group. Look under Notebook.
- XV. Math 1430 Alternative Schedule – Page 27

## **College Algebra - Math 1430/1530 - Philosophy** (7/23/2017)

At Fairmont State University, College Algebra serves two different purposes. Due to the limited number of math faculty at FSU, a single course must address both the goals for a pre-requisite math course and a general education credit. It also serves as a gateway course to other math classes for students who do not enter with the required test scores to be admitted directly into higher-level math classes.

- Math 1430/1530 is a pre-requisite for Applied Statistics (Math 1550), Trigonometry and Elementary Functions (Math 1540), Structure of Real Numbers for Elementary Education majors (Math 2251/2551), and Data Analysis and Geometry for Elementary Education majors (Math 2252/2552). It may serve as a pre-requisite for courses in other programs. Math 1430/1530 is a core requirement for Business.
- Math 1430/1530 is a general studies class. For some students, it is the first as well as terminal college credit math course. If a student is taking their final math class, then Math 1430/1530 should be a culminating course for 12 years of pre-college level math classes.

### **Math 1430/1530 goals meeting either purpose:**

- Instruct students on how to read pertinent, precise information from a graph. Knowledge of mathematical terms and graph analysis can be transferred to other situations such as business indices, learning curves, statistical analysis, and higher levels courses such as Trigonometry and Calculus.
- Recognize graphs of basic functions with emphasis on non-linear functions with both discrete and continuous domains.
- Make connections between algebra skills, function formulas, and the graphs of functions. Students should be able to analyze relationships between what occurs algebraically and the transformation of the function's graph. Students should be able to state what algebraic change must occur to transform the graph of a function.
- Introduce students to applications of algebra in science, technology, and business.
- Extend characteristics of linear functions to quadratics, the exponential function and its inverse (logarithm), absolute value, polynomial, rational, radical, and piecewise defined functions.
- Apply graph analysis skills to solve equations and inequalities which involve complex functions, both linear and non-linear. Note the relationship between the algebraic skill needed to solve the equation/inequality and x intercepts of the graph.
- Introduce students to various graphing utilities and technologies which can be used to analyze functions in an efficient manner. (i.e. desmos.com, fooplot.com, Excel, graphing calculators, etc.)
- Discover that algebra is a way of thinking as well as a set of concepts and skills needed to generalize, model, and analyze mathematical situations (*From NCTM position statement 2008*)

### **Textbook selection**

Textbook: College Algebra 5<sup>th</sup> edition by Beecher, Penna, & Bittinger. New edition 2016.  
Chapters covered include 1, 2, 3, part of 4, 5, simultaneous equations in 6, circles in 7.

The approach of the textbook incorporates an algebraic, graphic, numeric, and modeling approach to the study of polynomials, equations, inequalities, and functions, with or without technology, and using appropriate symbolic manipulation skills. It includes the use of appropriate mathematical language, including symbolism, to define, evaluate, and analyze the characteristics of functions.



## **Math 1530 – College Algebra – 3 hours**

### **FSU Course Catalog Description:**

This course includes the study of real numbers, complex numbers, algebraic expressions, equations and inequalities, functions and function operations, composition of functions, inverse functions, graphing and transformations of functions, exponents and radicals, quadratic, exponential, and logarithmic functions, and applications. No student shall receive credit for both MATH 1430 and MATH 1530. PR: MATH ACT 21 or MATH SAT 500 or MATH COMPASS 49 or Pierpont MATH 1100 or MATH 1012 with a "C" or better. ~~or MATH 1400 with a "C" or better.~~

*All possible Math 1530 Prerequisites:* Math ACT  $\geq 21$ , Math SAT  $\geq 500$ , **NEW** Math SAT  $\geq 530$  (effective 3/2016), Math COMPASS  $\geq 49$ , Math ACCUPLACER Elementary Algebra  $\geq 80$ , or Math ACCUPLACER College Level Math  $\geq 50$ , Pierpont MATH 1100 or MTH 1200, or MATH 1012 with C or better.

## **Math 1430 – College Algebra with Support – 4 hours**

### **FSU Course Catalog Description:**

This course fulfills the same requirements as MATH 1530: College Algebra and is intended for students who do not meet the prerequisites for MATH 1530. The course will cover all content included in MATH 1530, as well as provide integrated academic support. This course includes the study of real numbers, complex numbers, algebraic expressions, equations and inequalities, functions and function operations, composition of functions, inverse functions, graphing and transformation of functions, exponents and radicals, quadratic, exponential, and logarithmic functions, and applications. It will also reinforce fundamental algebraic concepts and review pre-requisite topics, such as evaluating expressions, graphing and functions, linear equations, factoring, and geometric concepts, as deemed necessary. This course will utilize lectures, discussions, computer-assisted work, group activities, and math manipulatives to reinforce concepts and engage students. This course meets for five hours each week. PR: MATH ACT 19-20 (or equivalent) or MATH 1011 with a "C" or better or MATH 1400 with a "C" or better.

*All possible Math 1430 Prerequisites:* Math ACT 19-20, Math SAT 460-490, **NEW** Math SAT 500-520 (effective 3/2016), Math COMPASS 36-48, Math ACCUPLACER Elementary Algebra 76-79, or Math ACCUPLACER College Level Math 40-49, WV General Summative Assessment  $\geq 3$ , or Pierpont MATH 0086, Pierpont MATH 0095, FSU MATH 1011 or 1400 with C or better, MATH 1199 Stretch 1 (Only F15) with C or better.

### **Course Outcomes:** (Effective Fall 2013) Revision 7/24/2016

1. Model and solve real world problems involving both linear and non-linear functions.
2. Demonstrate appropriate symbolic manipulation skills to solve both linear and non-linear equations/inequalities.
3. Use the language of math to define, evaluate, and analyze characteristics of functions.
4. Interpret mathematical knowledge to graph and analyze both linear and non-linear functions/relations.

Assessment scores for the outcomes are based on the Arizona Math Rubric.

### **Holistic Scale** Source: Arizona Department of Education

- 4 – A 4 response represents an effective solution. It shows complete understanding of the problem, thoroughly addresses all points relevant to the solution, shows logical reasoning and valid conclusions, communicates effectively and clearly through writing and/or diagrams, and includes adequate and correct computations and/or set up. It may contain insignificant errors that do not interfere with the completeness or reasonableness of the student's response.
- 3 – A 3 response contains minor flaws. Although it shows an understanding of the problem, communicates adequately through writing and/or diagrams, and generally reaches reasonable conclusions, it shows minor flaws in reasoning and/or computation or neglects to address some aspect of the problem.
- 2 – A 2 response shows gaps in understanding and/or execution. It shows one or some combination of the following flaws: an incomplete understanding of the problem, failure to address some aspects of the problem, faulty reasoning, weak conclusions, unclear communication in writing and/or diagrams, or a poor understanding of relevant mathematical procedures or concepts.
- 1 – A 1 response shows some effort beyond restating the problem or copying given data. It shows some combination of the following flaws: little understanding of the problem, failure to address most aspects of the problem, major flaws in reasoning that lead to invalid conclusions, or a lack of understanding of relevant mathematical procedures or concepts.
- 0 – Response shows no mathematical understanding of the problem or the student has failed to respond to the item.

**Fairmont State University Course: Math 1430/1530 – College Algebra**

Fall 2017 – Summer 2018

1/15/18

Coordinators: Beth Thompson [lhompson2@fairmontstate.edu](mailto:lhompson2@fairmontstate.edu), Dennine LaRue [alarue@fairmontstate.edu](mailto:alarue@fairmontstate.edu)

Fall 2017 Instructors: 1430: Brittany Cuchta, Travis Miller, Beth Thompson, Lindsey Walck

1530: Bob Clonch, Dennine LaRue, Ted LaRue, Grant Spencer

Spring 2018 Instructors: 1430: Brittany Cuchta, Travis Miller, Beth Thompson, Lindsey Walck

1530: Brain Blackwood, Ted LaRue, Brittany Vincent

Summer 2018:

Course Outcomes 1430/1530 Common outcomes	Direct assessment measures	Satisfactory performance standards	Semester Evaluated	Number of Students	Class Mean
Upon successful completion of this course, students will be able to	Student performance with respect to this outcome will be measured by	Satisfactory student performance on the direct assessment measure will consist of			
1. (Used to be #2) Model and solve real world problems involving both linear and non-linear functions.	Exam question and/or activity assessed using the attached Arizona Math Rubric.	The average of all students will be greater than 2 on the Arizona Math Rubric.	F17- 1430 F17- 1530	85	2.46
2. (Used to be #1) Demonstrate appropriate symbolic manipulation skills to solve both linear and non-linear equations/inequalities.	Exam question and/or worksheet assessed using the attached Arizona Math Rubric.	The average of all students will be greater than 2 on the Arizona Math Rubric.	Sp18 – 1430 Sp18 – 1530	20	2.55
3. Use the language of math to define, evaluate, and analyze characteristics of functions.	Exam question and/or worksheet assessed using the attached Arizona Math Rubric.	The average of all students will be greater than 2 on the Arizona Math Rubric.	F18 – 1430 F18 - 1530		
4. Interpret mathematical knowledge to graph and analyze both linear and non-linear functions / relations.	Exam question and/or worksheet assessed using the attached Arizona Math Rubric.	The average of all students will be greater than 2 on the Arizona Math Rubric.	Sp19-1430 Sp19-1530		

### Additional outcomes for Math 1430

Course Outcomes	Direct assessment measures	Satisfactory performance standards			
Upon successful completion of this course, students will be able to...	Student performance with respect to this outcome will be measured by	Satisfactory student performance on the direct assessment measure will consist of	Semester Evaluated	Number of Students	Class Mean
Utilize technology to demonstrate problem solving and mathematical modeling skills.	Compiled average score for computer-based assignments in course.	The average of all students will be greater than 70%.	All semesters F17 Sp18 F18 Sp19		
Prepare a notebook that incorporates class notes and assignments and demonstrates progress throughout the term.	Mean score for all notebook grades in course. (Minimum of two notebook grades is required.)	The average of all students will be greater than 70%.	All semesters F17 Sp18 F18 Sp19		

### Notebook Rubric for Math 1430

Mathematics Notebook Rubric For \_\_\_\_\_

Class \_\_\_\_\_

		Evaluation/Notes/Score
<b>Notebook</b>	<ul style="list-style-type: none"> <li>The notebook is in very good to excellent condition</li> <li>The cover is intact and the rings operate properly</li> <li>The notebook is divided into at least two sections</li> <li>Each section has a divider that is clearly labeled (i.e. Notes and HWK)</li> <li>The notebook is free of irrelevant material</li> </ul>	Total Pts. _____ / 20
<b>Class Notes Section</b>	<ul style="list-style-type: none"> <li>Notes are filed in the appropriate section</li> <li>Notes are filed chronologically</li> <li>All notes are dated and labeled with headings</li> <li>Any note handouts are filed appropriately within the notes section</li> <li>Notes are complete and accurate</li> <li>All examples are properly labeled</li> <li>An attempt at <i>personalization</i> (enhancing notes for better personal understanding) has been made</li> <li>Notes are neat and legible</li> </ul>	Total Pts. _____ / 40
<b>Work Section</b>	<ul style="list-style-type: none"> <li>Work is filed in the appropriate section</li> <li>Work is filed chronologically</li> <li>All assignments have the requested heading which contains the date, assignment, student's name, and student's mathematics period.</li> <li>Any work handouts are filed appropriately within the homework section</li> <li>Work is complete and corrected</li> <li>Work is neat and legible</li> </ul>	Total Pts. _____ / 40

**Grading** Total Score \_\_\_\_\_ / 100

<b>A</b>	The student consistently meets all the expectations as outlined.
<b>B</b>	The student consistently meets most of the expectations as outlined.
<b>C</b>	The student does not consistently meet the expectations as outlined.
<b>D</b>	The student has met very few expectations as outlined.
<b>F</b>	The notebook is missing or has met none of the expectations outlined.

Notebook Grade \_\_\_\_\_

Date \_\_\_\_\_



## Math 1430/1530 Textbook Information (Accurate for Fall 2017)

FSU College Algebra is an early functions approach emphasizing that the relationship between the solution to an equation/inequality and the graph of the corresponding function. It based on *College Algebra 5<sup>th</sup> edition by Beecher, Penna, Bittinger*. All sections, except honors section, use the same materials.

**NOTE:** This is a vastly different approach than previous textbooks used at FSU. It is advisable for instructors to read authors' explanation in each section prior to preparing a lecture. Content builds to the study of more complex functions and the solving of more complex equations/inequalities. The graph analysis skills needed throughout the term are introduced early using linear equations in Chapter 1.

A coordinated calendar is provided and is to be used by all Math 1430/1530 sections. Instructors should attempt to follow the pace to complete all content required for course to be transferrable as prerequisite credit within West Virginia. Please note where you are at 4, 8, 12, and 15 weeks. This information will be requested to adjust calendar. The primary goal is to ensure that students thoroughly understand content, not just finish the syllabus. Hence, small deviations from the calendar are expected. Modifications to the schedule/order should be discussed with Dennine LaRue/Beth Thompson prior to implementation.

### Textbook Purchase - 2 options.

Option #1: Hole punch pages and an access code to MyLabsPlus for [www.fairmont.mylabsplus.com](http://www.fairmont.mylabsplus.com) Cost is \$178.75.

Option #2: Only Access code to MyLabsPlus for [www.fairmont.mylabsplus.com](http://www.fairmont.mylabsplus.com) Pages of textbook may be printed from the website. Cost is \$147.


Fall Honors section is testing OpenStax College Algebra in Fall 2017. Honors section is not taught in Spring.

**IMPORTANT:** Students should purchase access code and hole punch pages only from the FSU Bookstore. Access code only purchase may be obtained from FSU Bookstore or directly at [www.fairmont.mylabsplus.com](http://www.fairmont.mylabsplus.com). Materials should NOT be purchased from any other sites since FSU has a dedicated MyLabsPlus website. Access codes purchased at other places may or may not work. There is no support/refund from Pearson if the code does not work and it was not purchased at the Fairmont State MyLabsPlus site or the FSU bookstore. Keep all receipts.

Required Material(s) (1)


Choice of Titles - Pick 1 of 2

Pick only 1 of the following 2 choices:

- MyMathLabPlus (Stand Alone Access Code) Edition: 2nd**  


Item	Buy/Rent	Option	Rental Period	Provider	In Stock	Year Price
MyMathLabPlus	Buy	None			✓	\$147.00

Author: Pearson  
Edition: 2nd  
ISBN: 9780321913883

Add to Cart
- College Algebra LL (w/MyMathLabPlus) FSU (CUSTOM) Edition: N/A**  


Item	Buy/Rent	Option	Rental Period	Provider	In Stock	Year Price
College Algebra LL	Buy	None			✓	\$178.75

Author: Pearson  
Edition: 9th  
ISBN: 9780321913883

Add to Cart

## Math 1430/1530 Instructor Checklist 07/24/2017

Check transcript and test scores of all students to determine if prerequisites are met. It is easier to get class list from Blackboard and then cross reference with FELIX. They have added pictures to FELIX and it is harder to get class list.

Sometimes students are able to register for classes without the appropriate pre-requisites. Also, some students are placed in a class that is lower than their ability or the incorrect class for major.

- Check each student's test scores and transcript using *FELIX*> *Faculty and Advisors*>*Summary class list*> *choose term*> *choose class*.
  - Click on *student name*>*site map*> *advisor menu* and then either Student Test Score or Student Academic Transcript Order by Term.
  - Spreadsheet to record findings is in the Office 365 group. Samples at end of handbook.
- Email any students who do not meet the pre-requisites. Request that they drop class and register for an appropriate class. Check catalog to offer advice.
  - If students do not move to an appropriate class after notification, the student can be administratively removed by the end of the second day of class.
  - Email Registrar with class CRN and student name and F#
- Determine if students have credit for WvEBAIgebra and/or WvEBTrig from WVU or FSU from high school. Students transfer credit to FSU and may enroll in a higher level math class or have earned gen ed credit.
- At midterm or after final, send names of Pre-Elementary Education majors to Stephanie Jones if you think they should consider a Math 5-9 Specialization.

### Syllabus

- Blackboard/Moodle section must contain a syllabus with university required information. Sample syllabus will be sent. Instructors modify some components for their course.
- Add **mhossain, alarue, lthompson2** as teaching assistant in Blackboard/Moodle.

### Department Grading Policies

- Instructor can determine homework policy.
  - Instructors should use a variety of homework options: textbook, worksheets, online MyLabsPlus (no more than 10% of the grade may be derived from MyLabsPlus)
  - Instructors are also strongly encouraged to use textbook problems and worksheets corresponding to the analysis level in Bloom's Taxonomy.
- Until a decision can be made about instituting common exams/common final, the following math department guidelines are implemented to assure some continuity for the entire Math 1430/1530 cohort.
  - At least 80% of the student grade must come from proctored work.
  - **Approximate** percentages of each type of grade -- Tests & Quizzes 60%, Final 20%, Classwork 10%, Homework 10%
  - Maximum number of extra points (bonus) which a student may earn is less than 10% of the total points.
  - In general, students are not permitted to retake tests a second time unless there was an extreme rare extenuating circumstance that would warrant administration of a different test on the same topic.
  - Instructors create their own tests and test dates should be set to coincide as closely as possible with the course calendar.
    - Testing occurs during class time via paper testing.
    - Tests should NOT be online, take home, or via MyLabsPlus
    - Partial credit should be awarded.
    - Student are not permitted to use note cards during a test.
    - Course assessment will be provided by the 1430/1530 coordinators.
    - Xerox an extra copy of each test and send to Dennine LaRue/BethThompson, 1530/1430 coordinators, after each test.

**Course Evaluations -See Page 12 for information about completion of faculty information form.**

**Assessment**

1. All students who are present complete the assessment on the designated day. Coordinators supply assessment with administration instructors. Instructors grade assessments.
  - a. For permanent documentation, enter rubric score in a designated column at the beginning of the Blackboard/Moodle gradebook. A spreadsheet containing number of students receiving each rubric score along with mean, median, standard deviation can also be sent to Dennine LaRue/Beth Thompson.
  - b. All student papers are returned to Dennine LaRue/Beth Thompson.
  - c. Number of points from the assessment which count toward student grade is at the discretion of the instructor. The point values and grading scale on the assessment must be followed to determine the rubric score on the Arizona Math Rubric.
  - d. Deadline for submission of the results is one week after administration of the assessment or the day final grades are due.

**Grades recorded in FELIX**

- All grades must be entered in Blackboard.
- Only letter grades of D and F are reported at the 4 weeks in FELIX. If no students earn a D or an F, grade sheet must still be opened and submitted. Midterm and Final grades entered in FELIX by the administrative deadline. Watch for an email with the dates from Registrar.

**Resources**

1. Office 365 Math 1430/1530 files
2. Pearson MyLabsPlus (See pages 10-11.)
3. Incorporate application problems and the use of graphing utilities. The following are excellent.
  - a. <http://etc.usf.edu/clipart/> free clipart & graphs
  - b. [www.desmos.com](http://www.desmos.com) (highly recommended –free online, iPad, smart phone) or [www.fooplot.com](http://www.fooplot.com)
  - c. [www.teacher.desmos.com](http://www.teacher.desmos.com) Premade activities available. Teacher can create own activities.
  - d. Scientific calculators for Chapter 4.
  - e. <http://shodor.org/interactivate/activities/slopeslider/>
  - f. <http://shodor.org/interactivate/activities/functionflyer/>
  - g. <http://www.shodor.org/interactivate/activities/MultiFunctionDataFly/>
  - h. Visualize composition of functions:  
<http://www.ltconline.net/green/java/IntermedCollegeAlgebra/FunctionOps/FunctionOps.html>
  - i. <http://illuminations.nctm.org>
  - j. Function matching <http://illuminations.nctm.org/Search.aspx?view=search&type=ac&page=2>

**Technology Use**

1. Students may appear to be technologically literate, but they do not understand the nuances of using a calculator and graphing utilities effectively.
2. Students should not become dependent upon any technology, but should receive instruction about appropriate times.
3. Students should be able to determine if the answer given by the technology is an appropriate answer.
4. Students to be able to use a graphing utility to solve a problem that would be too difficult without the use of a graphing calculator or a graphing utility.
  - a. Preferred graphing utility is [www.desmos.com](http://www.desmos.com)
  - b. iPads contain the Desmos graphing app (green.) There is also a version for test mode (blue.)
5. For Title III grant, please document your use of iPads, laptops, or materials purchased by the grant.



**Math 1430/1530 Coordinated Calendar Fall 2017-Summer 2018** 8/08/2017

1. First four weeks will fluctuate dependent upon when holidays appear or unforeseen weather cancellations.
2. TEXT: College Algebra 5e by Beecher, Penna, Bittinger, 2016
3. FOCUS: A visual and algebraic approach connecting the graph and the algebraic solution.
4. Since approach is different, students and faculty should read pages xii and xiii to understand approach.
5. Synthesis problems in homework are good group work problems.
6. Assessment will be either during the term on one of the classroom exams or as a page of the final exam which will be provided.

Fall 17-Sum18	Math 1430/1530 Sections/Topics Coordinated order among all sections	Just in Time Correlation- Pages 595-619	Math 1430 Specific Content
Week 1	<p><b>Syllabus Discussion, MLP Instructions, &amp; Prerequisite checks</b></p> <p><b>Just in Time #1- Real Numbers Page 595</b></p> <p><b>Just in Time #6- Interval Notation Page 601</b></p> <ul style="list-style-type: none"> <li>➤ Convert between interval notation and set builder inequality notation.</li> </ul> <p>Supplement: union versus intersection of intervals. Expected to know on pages 24 &amp; 82</p> <p><b>Sec 1.1 Introduction to Graphing</b></p> <ul style="list-style-type: none"> <li>➤ Suggestions for drawing graphs - page 5.</li> <li>➤ Page 4 –Intercept is defined as ordered pair, rather than just a numerical value. Important for the graph analysis approach.</li> <li>➤ Problems about quadratics can be skipped since there is a chapter later.</li> <li>➤ Page 8 - Distance formula– Should indicate that this is in the Cartesian plane.</li> <li>➤ Page 10 - Midpoint formula — There is only one midpoint per segment (not plural.)</li> <li>➤ Relate Pythagorean Theorem to Distance Formula</li> <li>➤ For most, this is first exposure to circles. All circles are in standard form. Students are NOT expected to change from general form to standard form by completing the square until Sec 7.2.</li> </ul> <p><b>Page 13– Visualizing the Graph</b></p>	<p>9-Order of Operations</p> <p>14-Solving Equation Principles</p> <p>7-integers as Exponents</p> <p>3–Absolute Value</p> <p>25-Pythagorean Theorem</p> <p>4–Rules for Operations on Real numbers</p> <p>22-Simplifying Radicals 1, 2, 3</p> <p>23-Rationalizing Denominator</p>	<p>Possible topics to review:</p> <p>Order of Operations</p> <p>Radicals</p> <p>Solving equation principles</p> <p>Pythagorean Theorem</p> <p>Absolute Value</p> <p>Fractions (never enough review)</p> <p><b>Possible Resources:</b></p> <p>Algebra I Station Activities- Page 54-Set 1</p> <p>Unit 4 "Working with Algebra Tiles"</p>
Week 2	<p><b>Sec 1.2 Functions and Graphs</b></p> <ul style="list-style-type: none"> <li>➤ Function Notation</li> <li>➤ Domain &amp; Range visually</li> <li>➤ Domain algebraically</li> <li>➤ Discrete versus continuous domains</li> <li>➤ Give students different characteristics and ask them to draw graphs with the characteristic to practice vocabulary.</li> </ul> <p><b>ERROR: Page 28 (#9) – Range is a set of arrangements of letters and numbers.</b></p> <p><i>Approach the linear sections 1.3 and 1.4 as review material. Non-linear functions are primary focus.</i></p> <p><b>Begin Sec 1.3 - Linear Functions, Graphs, &amp; Applications</b></p> <ul style="list-style-type: none"> <li>➤ Linear vs non-linear, horizontal vs. vertical</li> <li>➤ Page 39 –Slope is also called the average rate of change when the function is linear.</li> <li>➤ Page 41 – (different) y intercept is defined by an ordered pair (0, b) rather than just a numerical value.</li> </ul>	<p>9-Order of Operations</p> <p>12-Multiply Polynomials <u>FOIL is only an acronym.</u> Distributive property of Multiplication over Addition.</p> <p>13-Factor Polynomials – Mostly quadratics.</p> <p>16-Principle of Zero Products</p> <p>4–Rules for Operations on Reals</p>	<p>Multiplying Polynomials</p> <p>Interval Notation</p> <p>Factoring Polynomials</p> <p>Principle of Zero Products</p> <p>Help with 1112 homework and content review</p> <p>Algebra I Station Activities- Page 180-Set 1</p> <p>Algebra II Station Activities –</p>
Week 2			Page 14



	<ul style="list-style-type: none"> <li>➤ Emphasize slope intercept – Other forms are not necessary for function approach.</li> <li>➤ Consider writing equation of line by expressing slope as a constant equal to slope between (x, y) and a known point rather. To put in other forms (standard, point-slope, etc.) use algebraic manipulation to the proportion.</li> <li>➤ Consider equation of a line which contains points (0, 32) and (100, 212). See if students recognize the formula for Fahrenheit /Celsius Conversion. The write equation of line through (32,0) and (212,100)</li> </ul>	2-Properties of Real Numbers – Emphasize Distributive Property of Multiplication over Addition	<p>page 8 – set 1</p> <p>Interval notation worksheet (Kuta)</p>
<b>Week 3</b>	<p>Finish Sec 1.3</p> <p><b>Page 43 – Visualizing the Graph</b></p> <p><b>Sec 1.4 Equations of lines and modeling</b></p> <ul style="list-style-type: none"> <li>➤ Slopes of parallel vs. perpendicular lines.</li> <li>➤ Page 58 – linear regression, correlation coefficient – knowledge needed on Education Praxis test.</li> </ul> <p><b>Sec 1.5 Linear Equations, Functions, Zeros, and Applications</b></p> <ul style="list-style-type: none"> <li>➤ Page 64 &amp; 72-74 Zero Method versus Intersect Method to find the zeros of the function and x intercept of associated equation.</li> </ul> <p><b>Sec 6.1 - Solving Systems of Equations in Two Variables.</b> Focus: Solve systems of linear equations graphically and algebraically. Page 405 (1-40) <b>Necessary new topic for transfer.</b></p>	14- Equation Solving Principles	<p>Plotting points, graphing &amp; writing equations of lines, intro to how to use <a href="http://www.desmos.com">www.desmos.com</a></p> <p>Properties of real numbers</p> <p>Linking equations and graphs</p> <p>Algebra I Station Activities – Page 28-Set 2 and Page 46-Set 3</p> <p>Grade 8 Station Activities- Page 77 - Set 3</p>
<b>Week 4</b>	<p>Finish Sec 6.1</p> <p><b>Sec 1.6 Solving Linear Inequalities –optional section to be used if time allows for a brief review.</b> Use interval notation for solutions of linear inequalities.</p> <p><b>Chapter 1 Summary &amp; Review – Pg. 85-91</b> <b>Test Chapter 1</b></p> <p><b>Sec 2.1 Increasing, Decreasing, and Piecewise Functions; Applications</b></p> <ul style="list-style-type: none"> <li>➤ Mostly a visual analysis.</li> <li>➤ Introduce <a href="http://www.desmos.com">www.desmos.com</a></li> <li>➤ Desmos is free on computers and is a free app on smartphones and tablets</li> <li>➤ Piecewise may be difficult. Graph functions by hand. Use Desmos to check work and for non-linear examples.</li> </ul>	<p>15-Inequality Solving Principles</p> <p>5-Order on number line</p> <p>6-Interval Notation</p> <p>25-Pythagorean Theorem</p> <p>4-Rules for Operations on Reals</p> <p>18-Simplify Rational Expressions</p>	<p>Solving inequalities</p> <p>Review help for test</p> <p>Kuta worksheets – instructor's choice</p> <p><a href="http://www.desmos.com">www.desmos.com</a> - student demos</p>
<b>Week 5</b>	<p><b>Sec 2.4 Symmetry</b></p> <p><b>Sec 2.5 Transformations</b></p> <ul style="list-style-type: none"> <li>➤ Library of functions - See end sheets at back of book and page 134. (Note cards should contain linear, identity, constant, standard quadratic, square root, standard cubic, cube root, absolute value, reciprocal, greatest integer, exponential, logarithmic) Cards contain domain, range, x intercepts, y intercepts, increasing, decreasing, and constant intervals, one to one.</li> </ul> <p><b>Emphasize precision in graphing,</b> memorization of graphs and transformations.</p> <p>Use a one-unit scale on the x and y axis.</p> <ul style="list-style-type: none"> <li>➤ Identity and constant special cases of linear standard quadratic</li> </ul>	<p>3–Absolute Value</p> <p>Use iPads or computers to explore transformations</p>	<p>Lots of transformations overview &amp; graphing work</p> <p>Ipads to practice graphing in desmos</p> <p>Smart pals/graphing grids for group work</p> <p>Help with making library of function cards</p>

<p><b>Week 5</b></p>	<p>contains (-2,4) (-1, 1) (0,0) (1,1) (2,4)</p> <ul style="list-style-type: none"> <li>➤ Standard cubic and cube root contains (-2, -8) (-1, -1) (0,0) (1,1) (2,8)</li> <li>➤ Square root contains (0,0) (1,1) (4,2) (9,3)</li> <li>➤ Reciprocal contains (-1, -1) and (1, 1) &amp; is asymptotic to axes.</li> <li>➤ Discuss that absolute value is a piecewise defined function.  <math>f(x) = x</math>, if <math>x \geq 0</math>  and <math>f(x) = -x</math>, if <math>x \leq 0</math>.</li> <li>➤ Mention complex numbers as to why the domain of the square root function is restricted to <math>[0, \infty)</math>. More in chapter 3.</li> <li>➤ Use iPads or computers to explore transformations – <a href="http://www.desmos.com">www.desmos.com</a></li> </ul>		<p>Kuta worksheets – instructor's choice</p>
<p><b>Week 6</b></p>	<p><b>Practice graphing transformations of functions in the library of functions.</b></p> <ul style="list-style-type: none"> <li>➤ Give students graphs and have them write equations of the graphs</li> <li>➤ Give students discrete data, have them plot it at <a href="http://www.desmos.com">www.desmos.com</a> and then try to determine the equation of the graph. This skill needed in science and statistics classes. Worksheet available upon request.</li> <li>➤ <a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a>  Function Review by Katie O'Brien  Parent Function by Lauren Smith</li> </ul> <p><b>Graphing piecewise defined functions with library functions &amp; transformations.</b></p> <p><b>Page 143 – Visualizing the Graph</b>  <b>Sec 2.2 Algebra of Functions</b></p> <ul style="list-style-type: none"> <li>➤ <b>Skip Difference Quotient Page 114-115</b></li> <li>➤ Def Pg .111, graphical explanation Pg. 112</li> </ul> <p><b>Sec 2.3 Composition of Functions</b></p> <ul style="list-style-type: none"> <li>➤ Good Example Page 118</li> <li>➤ Note: graphs for example 1 on Page 119 are actually on Page 120</li> <li>➤ <b>ERROR: Page 121 – Next to last sentence is incorrect:</b> The inputs of <math>f \circ g</math> are only the <b>inputs</b> of <math>g</math> for which the outputs of <math>g</math> are in the domain of <math>f</math>. So the domain of <math>f \circ g</math> consists all values <math>x</math> in the domain of <math>g</math> for which <math>g(x) \neq 2</math>.</li> <li>➤ Middle of Page 122- First intro to writing domain when two values are excluded.</li> </ul>		<p>Extra help graphing piecewise functions</p> <p>Adding/subtracting polynomials</p> <p>Complex expressions</p> <p>Algebra II Station Activities- Page 64</p>
<p><b>Week 7</b></p>	<p><b>Finish Sec 2.3</b>  <b>Chapter 2 Summary and Review</b></p> <p><b>Test Chapter 2</b></p> <p><b>Sec 5.1 – Inverse functions – two days</b></p> <ul style="list-style-type: none"> <li>➤ Inverse relation is reflection in the identity function <math>f(x) = x</math>.</li> <li>➤ One-to-one functions and inverses</li> <li>➤ How to find the formula for the inverse function in Sec 5.2 Important for deriving logarithmic function.</li> <li>➤ Prove the derived function formula is the inverse via composition of the two functions</li> <li>➤ Compare inverse functions in the library of functions – identity, cubic</li> </ul>	<p>11-Add and Subtract Polynomials</p> <p>12-Multiply Polynomials <u>FOIL is only an acronym.</u> Distributive property of Multiplication over Addition.</p> <p>21-Simplify Complex Expressions</p>	<p>Lots of homework help and review</p> <p>Algebra II Station Activities- Page 36</p>

<p><b>Week 7</b></p>	<p>and cube root, standard quadratic and square root, reciprocal</p> <ul style="list-style-type: none"> <li>➤ Consider graphing utility for Page 320 (33-60) then explain why this is the graph. Student may not be that efficient at graphing by hand. Plotting points is not purpose of these exercises.</li> </ul> <p>Rules for exponents – emphasize real numbers (positive, negative, zero, fractional.) Roots of variable expressions are not important at this point.</p>	<p>17-Principle of square roots</p> <p>7-integers as Exponents</p>	
<p><b>Week 8</b></p>	<p><b>Finish Sec. 5.1</b></p> <p><b>Sec 5.2 Exponential functions – Compare</b>  <math>f(x) = x + 2, f(x) = x - 2, f(x) = 2x,</math>  <math>f(x) = \frac{x}{2}, f(x) = x^7, f(x) = x^{1/2},</math>  <math>f(x) = 2^x</math></p> <p>Know characteristics of exponential function such as domain, range, x &amp; y intercepts, equation of asymptote, etc.</p> <ul style="list-style-type: none"> <li>➤ Practice graphing transformation of <math>f(x) = 2^x</math></li> <li>➤ Use a graphing utility for Page 330 (11-48) – too much variety for students with weak graphing skills. Good place to see purpose for a graphing utility such as <a href="http://www.desmos.com">www.desmos.com</a></li> </ul> <p><b>Sec 5.3 Logarithmic functions</b></p> <ul style="list-style-type: none"> <li>➤ Derive log function using inverse function for exponential function.</li> <li>➤ Finding logarithms mentally</li> <li>➤ Students need to memorize characteristics of the exponential and logarithmic functions on pages 325 &amp; 336</li> <li>➤ Determine graph of log function by graphing the corresponding exponential function and reversing ordered pairs (as in the explanation of how to find the inverse function.)</li> <li>➤ <a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a></li> </ul> <p>Polygraph: Exponential &amp; Logarithms by Stephanie</p>	<p>24-Rational Exponents</p>	<p>Review rules for exponents</p> <p>One-to-one functions</p> <p>New material – lots of review and practice needed!</p> <p>Using a calculator for logs</p> <p>Converting between log &amp; exp form</p> <p>Finding “simple” logarithms</p> <p>Kuta worksheets – instructor’s choice</p> <p><b>COLLECT NOTEBOOKS!!!</b></p>
<p><b>Week 9</b></p>	<p><b>Finish Sec 5.3 Logarithmic functions</b></p> <ul style="list-style-type: none"> <li>➤ Using a calculator Page 338</li> <li>➤ Natural logarithms</li> <li>➤ Change of Base Formula</li> <li>➤ Page 344 – Visualizing the Graph</li> </ul> <p><b>Sec 5.2 and 5.3 Applications – Compound interest and variety of application problems.</b></p> <p><b>Sec 5.4 Properties of Logarithms</b>  Have students create numerical examples for each of the properties.</p>	<p>7-integers as Exponents</p> <p>16-Principle of Zero Products</p>	<p>LOTS of extra practice!</p> <p>WAR Game using Logs</p> <p>Algebra II Station Activities- Page 151</p>
<p><b>Week 10</b></p>	<p><b>Extra Practice 5.2 through 5.4</b>  Resource: <a href="http://www.kutasoftware.com">www.kutasoftware.com</a>. Worksheets are organized by difficulty level rather than all mixed as in textbook.</p> <p><b>Sec 5.5 Exp. &amp; Log Equations</b></p> <ul style="list-style-type: none"> <li>➤ Relate solving equation and x coordinate of intersection points. Use iPad or computers <a href="http://www.desmos.com">www.desmos.com</a></li> <li>➤ <a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a></li> </ul> <p>Polygraph: Exponential &amp; Logarithms by Stephanie</p> <p><b>Sec 5.6 Exponential Growth &amp; Decay</b></p>	<p>7-integers as Exponents</p>	<p><a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a></p> <ul style="list-style-type: none"> <li>o Polygraph: Exponential &amp; Logarithms by Stephanie</li> </ul> <p>Exponential growth problems and worksheets</p>



<b>Week 11</b>	Finish Sec 5.6 <b>Chapter 5 Summary &amp; Review – Pg 381-387</b> <b>Test Chapter 5</b>		
<b>Week 12</b>	<b>Sec 3.1 Complex Numbers</b> <b>Page 169 &amp; Just in Time #1 Page 595.</b> Review operations on square roots of positive real numbers before square roots of negative real numbers. <b>Page 175 – Principle of Square Roots – why there are two answers? Relate to factoring, the Principle of Zero Products, and to the graph of a quadratic function which is not a one-to-one function.</b> Examine difference of the graphs between $f(x) = x^2$ and $f(x) = \sqrt{x}$ . <b>Sec 3.2 Quadratic Equations, Functions, Zeros, and Models</b> <ul style="list-style-type: none"> <li>➤ Note difference between a quadratic equation and quadratic function</li> <li>➤ Solve quadratic equations algebraically and graphically</li> <li>➤ Emphasize relationship between solution of equation and x intercepts of graph for associated function</li> <li>➤ Completing the Square</li> <li>➤ Quadratic Formula - Discuss conditional statements.</li> <li>➤ Discriminant –useful- If discriminant is a perfect square the quadratic equation is factorable. Otherwise, not factorable.</li> <li>➤ Equations reducible to a quadratic.</li> <li>➤ May need to supplement applications</li> </ul>	1-Real Numbers 22-Simplifying Radicals 1, 2,3 12-Multiply Polynomials <b>FOIL is only an acronym.</b> Distributive property of Multiplication over Addition. 7-Integers as Exponents 23-Rationalizing Denominator 13-Factor Polynomials 16-Principle of Zero Products 17-Principle of Square Roots 24-Rational Exponents 25-Pythagorean Theorem	Simplifying radicals Exponents and square roots Kuta worksheets – instructor's choice
<b>Week 13</b>	<b>Sec 3.3 Analyzing Graphs of Quadratic Equations</b> Use Transformations, average of x intercepts, y intercepts and symmetry points across the axis of symmetry, note graphic middle page 193 <ul style="list-style-type: none"> <li>➤ create quadratic functions with specific characteristics or zeros</li> <li>➤ Find Maximum or minimum value of a quadratic function to solve a model of real world problem.</li> <li>➤ Good practice: <a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a> <ul style="list-style-type: none"> <li>a. Will It Hit the Hoop? By Desmos</li> <li>b. Polygraph Parabolas by Desmos</li> <li>c. Where is the Vertex by Desmos</li> </ul> </li> </ul> <b>Page 198 – Visualizing the Graph</b> <b>Sec 4.6 Quadratic Inequalities</b> - Solve quadratic inequalities by finding critical values (i.e. split point method). Determine intervals where function is positive/negative and select solution set which satisfies the given condition.	21-Simplifying Complex Rational Expressions 3–Absolute Value	Zeros of a function Review principle of zero products Complex numbers Algebra II Station Activities- Page 53
<b>Week 14</b>	<b>Chapter Sec 3.1 to 3.3, 4.6 - Summary &amp; Review</b> <b>Test Sec 3.1 to 3.3 &amp; 4.6 midweek</b>		Good practice: <a href="https://teacher.desmos.com/">https://teacher.desmos.com/</a> o Will It Hit the Hoop? By Desmos o Polygraph Parabolas by

<b>Begin Skills Review Week</b>	<b>Sec 3.4 Solving Rational Equations and Radical Equations</b>		Desmos o Polygraph: Exponential & Logarithms by Stephanie o Where is the Vertex by Desmos
<b>Week 15 Skills Review Week</b>	<b>Sec 3.5 Solving Equations and Inequalities with Absolute Value</b> > Show that graph and algebraic method confirm each other using graphing utility to solve complex equations. > Due to time constraints, <u>level of difficulty of the problems at low to intermediate levels.</u> > Relate solution of the equation to the x intercepts of the function. Help visualize solution with Desmos. Express the function compared to zero or look for intersection points where $f(x) = g(x)$ . Determine appropriate intervals on the x axis which solve the equation/inequality.  <b>Review solving all types of equations which are based on the functions studied. Relate to graphs.</b> Linear, Quadratic, Exponential, Logarithmic, Radical, Rational, Absolute Value, Polynomial equations of degree 3+  <b>Visualizing the Graph – Possible Pages: 13, 43, 143, 198, 344, 547</b>	14- Equation Solving Principles   No reference was found for  8 –Scientific Notation  19 -Multiply and Divide Rational Expressions	Lots of review and practice.  Kuta worksheets – instructor's choice  <b>COLLECT NOTEBOOKS!!!</b>
<b>Final Exam Week</b> <b>Final exam</b> –Instructor created and comprehensive. Create questions which cover each of the four course outcomes and material from each of the four tests.			

Additional enrichment material (if time permits)

1. Sec 4.6 Polynomial and Rational Inequalities - approach from graph analysis and spit point method
2. Sec 8.1
  - a. Pages 526-527 and problems Page 531 (1-16). Relate to finding  $f(x)$  where domain is natural numbers  $\{1,2,3,4, \dots\}$  instead of all real numbers  $(-\infty, \infty)$
  - b. Read page 530- Recursion and problems Page 531 (61-66)
  - c. Read page 528 -- Finding a General Term and problems Page 531 (19-32)
3. Review of Area/Volume Formulas –End sheets in the back of textbook
4. Sec 4.3 (polynomial long division and synthetic substitution/division)
5. Sec 7.4 Systems of Non-linear equations – Page 514 (1-20) Do algebraically and check graphically using [www.desmos.com](http://www.desmos.com)
5. Sec 8.2, 8.3 Sequences- Arithmetic & Geometric
6. Visualizing the Graph - Page 404, 513

## MATH 1430 Alternative Schedule -- Logs after Quadratics Fall 2017

Fall 17-Sum18	Math 1430 Sections/Topics
Week 1	<b>Syllabus Discussion &amp; MLP Instructions</b> <b>Just in Time #1-</b> Real Numbers Page 595 <b>Just in Time #6-</b> Interval Notation Page 601 Sec 1.1 Introduction to Graphing Page 13– Visualizing the Graph
Week 2	Sec 1.2 Functions and Graphs Begin Sec 1.3 - Linear Functions, Graphs, & Applications
Week 3	Finish Sec 1.3, Page 43 – Visualizing the Graph Sec 1.4 Equations of lines and modeling Sec 1.5 Linear Equations, Functions, Zeros, and Applications Sec 6.1 - Solving Systems of Equations in Two Variables.
Week 4	Finish Sec 6.1 Sec 1.6 Solving Linear Inequalities Test Chapter 1
Week 5	Sec 2.1 Increasing, Decreasing, Piecewise Functions; Applications Sec 2.2 Algebra of Functions Skip Difference Quotient Page 114-115 Sec 2.3 Composition of Functions Library of Functions
Week 6	More Library of Functions work Sec 2.4 Symmetry Sec 2.5 Transformations Sec 2.6 Applications
Week 7	Ch. 2 review Graphing transformations of functions in the library of functions. Graphing piecewise defined functions with library functions & transformations. Page 143 – Visualizing the Graph Test Chapter 2
Week 8	Sec 3.1 Complex Numbers Page 169 & Just in Time #1 Page 595. Sec 3.2 Quadratic Equations, Functions Zeros, and Models
Week9	3.3 Graphs of Quadratic Functions 3.4 Solving Rational and Radical Equations 3.5 Solving Equations and Inequalities with Absolute Value
Week 10	Page 198 – Visualizing the Graph Sec 4.6 Quadratic Inequalities Review solving all types of equations based on functions studied. Relate to graphs. Review Ch. 3. Test Ch. 3
Week 11	Sec 5.1 – Inverse functions Rules for exponents –real numbers (positive, negative, zero, fractional.) Sec 5.2 Exponential functions
Week 12	Sec 5.3 Logarithmic functions Sec 5.4 Properties of Logarithmic Functions
Week 13	5.5 Solving Exponential and Logarithmic Equations 5.6 Applications
Week 14	Extra work on problem solving. Review Ch. 5. Test Ch. 5
Week 15	7.2 The Circle and the Ellipse 8.1 Sequences and Series Extensive skills review and prep for Final Exam
Final Exam Week	

# **Appendix C**

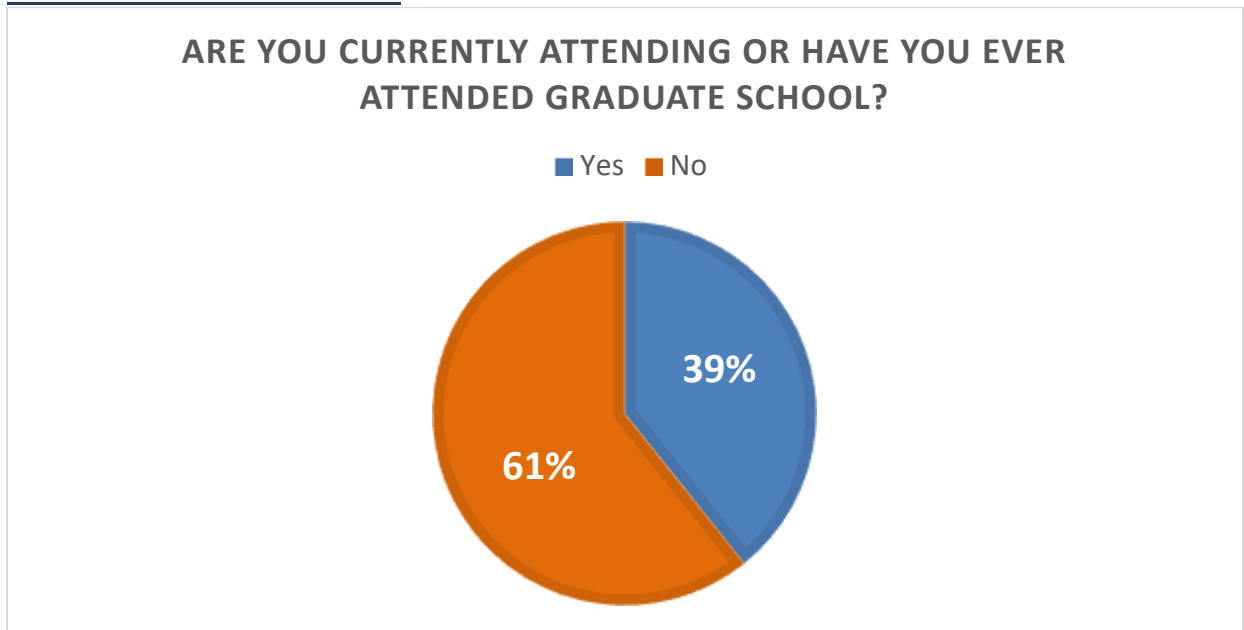
## **Survey Results**

## Summary of Fairmont State Mathematics Graduates Survey

Conducted Fall 2018

We identified 40 graduates during the years 2013-2018. Of these, 28 individuals responded to our survey.

### Graduate school information:



Of the 11 students who have or are attending graduate school, 7 have already earned their degree:

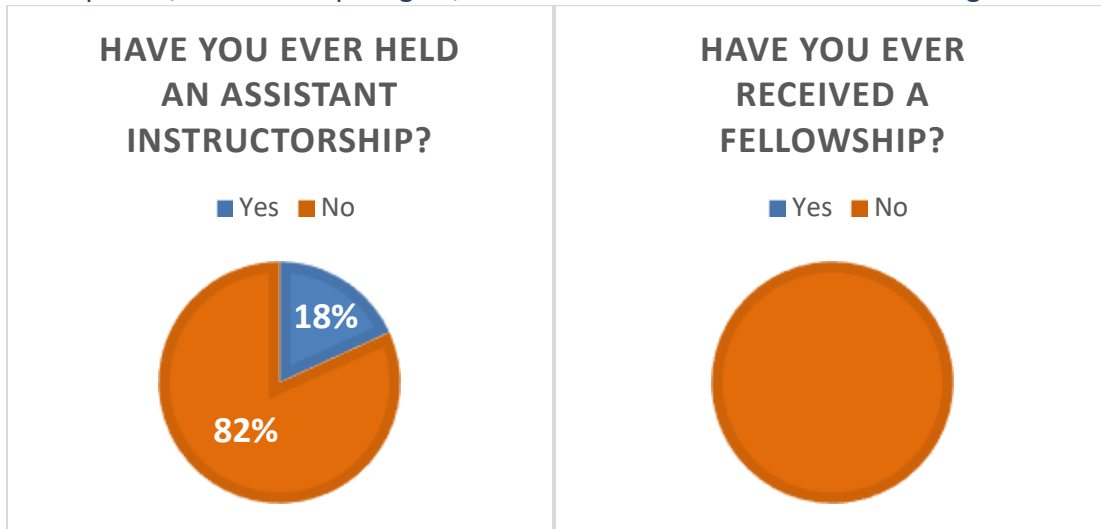
- M.Ed. Digital media, New Literacies, and Learning, from Fairmont State University
- M.A. Mathematics, West Virginia University
- M.A. Education, Fairmont State University
- M.A. Teaching, Fairmont State University
- M.S. Analytics, North Carolina State University
- M.S. Biostatistics, West Virginia University
- M.A. Education, Walden University

Four other graduates are earning degrees at

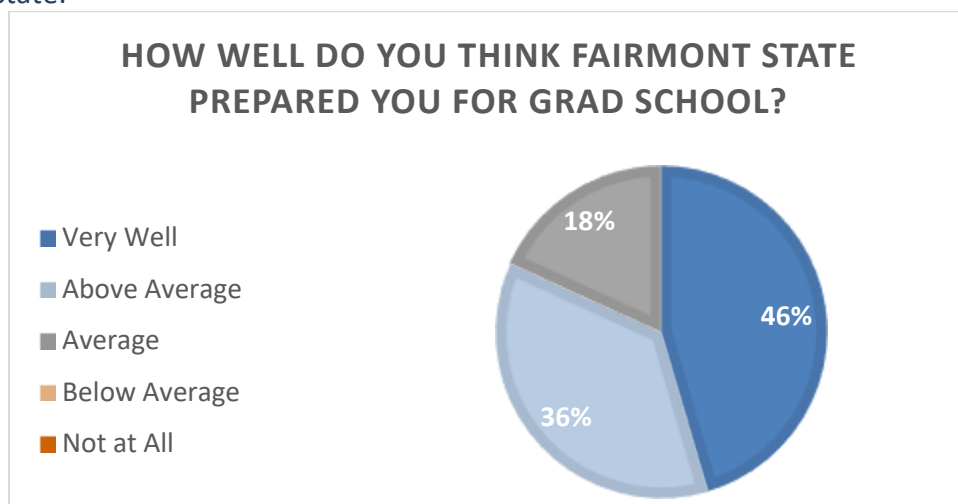
- University of Central Florida
- Arizona State University
- Strayer University
- West Virginia University



An area of weakness for the program is getting students into graduate schools with teaching assistantships and/or fellowships. Again, of the 11 students who were or are in graduate school:



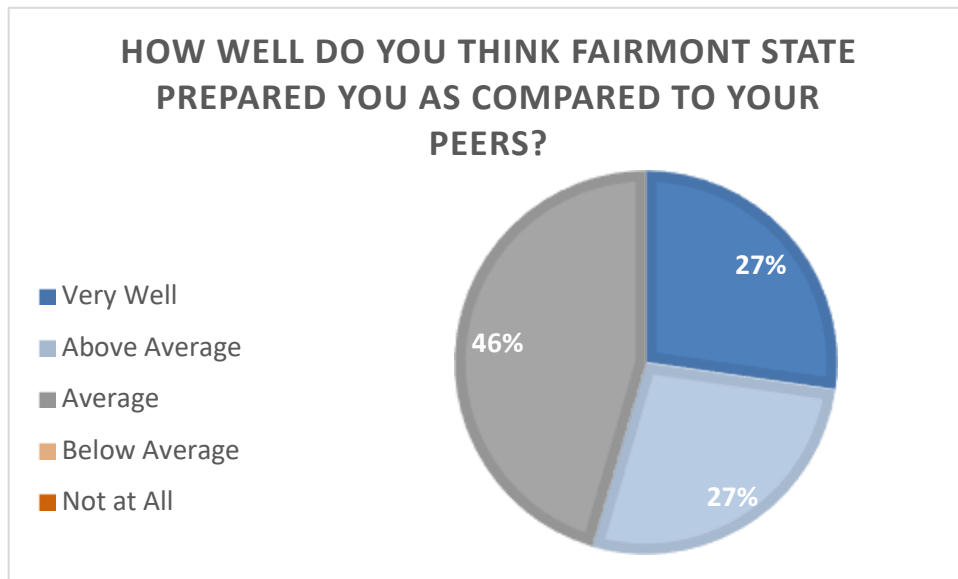
However, our graduates pursuing advanced degrees seem happy with their education at Fairmont State:



We also received a number of positive comments from graduates on this topic:

- The mathematics professors at FSU were all very involved in my success. Their doors were always open. I was prepared and confident when I entered grad school.
- I earned a B.S. in math and a MA in teaching. My math education didn't help or hinder my graduate education in teaching. I am considering returning to graduate school to earn a MS in math. My previous math education will be beneficial, if I decide to further my math education.
- I would've benefitted from more Analysis
- Math at FSU prepared me very well for my further academic studies. The math program was a family in which I was challenged and supported all the way through.
- My math courses prepared me well for graduate level classes and using critical thinking skills to solve problems.

Although students feel prepared for graduate school, they are less confident when compared to their peers:



Comment on this question:

- Math at FSU taught me how to be more rigorous when doing my work in graduate school. I noticed this when I had to share my work.

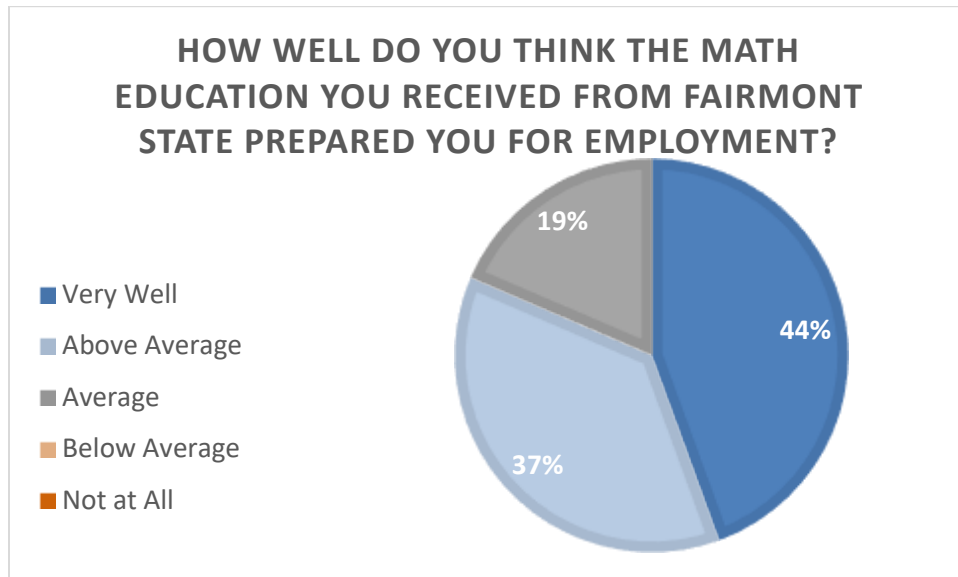
Employment Information:

Graduates were asked a number of questions about their employment. 27 of the 28 (96.4%) of the respondents are currently employed. The remaining individual is not looking for work.

Our graduates supplied us with a list of their current employers and job titles:

Harrison County Schools	Teacher (x3), Mathematics Teacher, AP Calculus Instructor
Berkeley County Schools	Teacher (x3)
Monongalia County Schools	Teacher
Taylor County Board of Education	Teacher, Mathematics Teacher
Atlantic High School	Mathematics Instructor
Fairmont State University	Adjunct Professor
Heritage Christian School	Substitute
Leidos	Junior Software Engineer (x2), Software Developer
WV Network	eLearning Developer
Arizona State University	Graduate Research Assistant
JP Morgan Chase & Co.	Senior Analyst
Google	Software Engineer
WVU Prevention Research Center	Research Assistant
The Jackson Laboratory	Business Intelligence Developer
Advanced Analytical Solutions	Laboratory Operations Director
Verizon Wireless	Tech Expert
Ideal Innovations, Inc.	--
Chi Alpha Campus Ministries	Campus Missionary in Training

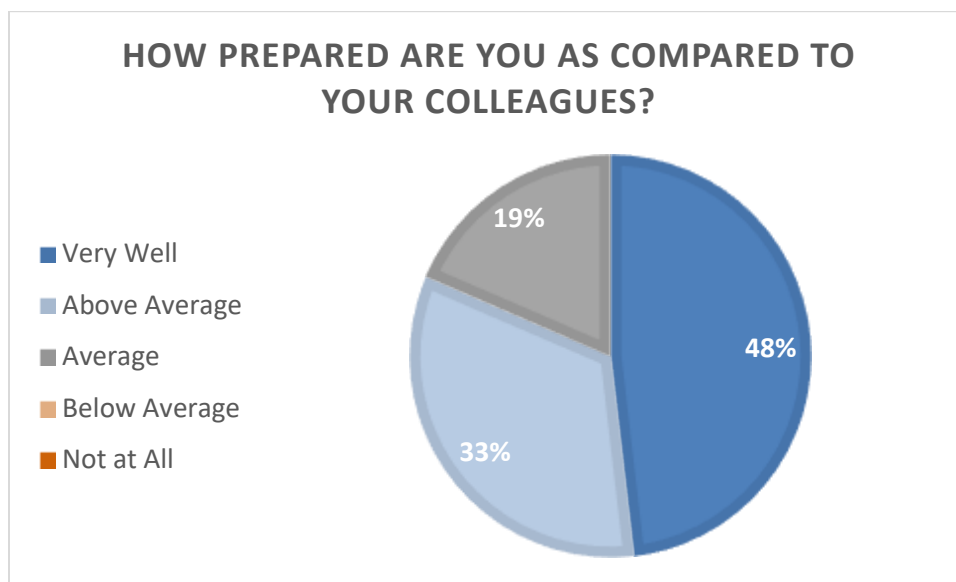
As with the graduate school portion of the survey, students were asked to subjectively evaluate how well Fairmont State’s mathematics program prepared them for employment:



Once again, there were a number of helpful comments to this question:

- I believe that having the knowledge and critical thinking abilities obtained through the Mathematics program greatly helped my abilities in the software engineering industry.
- This question is hard because right now my job doesn't have anything to do with math. However, we are looking to build math courses so this answer could change soon.
- The math department, my advisor Joe Riesen, and a professor critical to my development Mahmood Hossain ensured that I received the quality of education that allowed me to distinguish myself in my field.
- This program provides more than enough of the knowledge one would need to teach the subject. Also, the professors are excellent role models for future math teachers.
- I have been able to help even my students taking calculus 3 at WVU.
- I am beyond prepared to teach math after attending FSU. I am very thankful for my strong math content knowledge. It helps me recognize when a student is doing the math correctly even if it's not the exact way that I think about it or taught it.
- Fairmont State did a great job of preparing me for the field. I feel confident in my knowledge of content and pedagogical techniques.
- I am thankful that I was able to earn a Math degree in addition to my Math Education degree. Being required to take the same courses as a strictly math major forced me to expand my knowledge past what I would be teaching in middle or high school. I developed a much deeper understanding for mathematics and the “why” behind the basics that I teach in school.

Next, graduates were asked to compare their level of preparation with their colleagues, and the responses improved slightly:



**Comments:**

- I believe with the critical thinking abilities acquired from my Mathematics degree, I more often than not can solve complex problems at my workplace easier than some of my colleagues.
- I can write lesson plans, use manipulatives, and have the latest information and techniques from math education research.
- I would rate my knowledge as the same as my colleagues. We may ask each other questions for help on certain things or better ways to explain the material.

**General Comments:**

To close off the survey, graduates were asked to provide any general comments they had about the mathematics programs:

- Loved the program and the professors throughout my entire college career. Each professor seemed invested into each student.
- The Fairmont State University mathematics program is very well structured and provides a rich learning experience for anyone looking to pursue opportunities in mathematics. For myself personally, it helped with gaining critical thinking skills and problem solving abilities needed for my line of work (software development/engineering).
- I learned more in FSU's math program than any other time in my life.
- Fairmont State's faculty cares about the well-being and success of their students in a way that other institutions do not. They will truly do everything in their power to help you to be prepared for your future goals and to help you succeed.

- Amazing people with a rigorous curriculum, it would be a shame to see a quality program like this go anywhere.
- Personally, the professors are what made the program so enjoyable. Their availability seemed unlimited. They are all hardworking individuals with great, unique senses of humor.
- I was torn between several universities, but I'm thrilled I chose Fairmont State. The professors are amazing individuals who are there to help guide you through mathematics. Math became more than procedures, it's conceptual and logical.
- It was hard work but I learned a lot. Professors were always willing to help.
- FSU Mathematics prepared me well for graduate school and employment. The variety of courses ranging from Number Theory to Probability and Statistics gave me exposure to the theoretical aspects of math while equipping me with the necessary quantitative skills to solve problems in my master's program and in my current position as an analyst. Staff members were helpful in guiding me through my senior project and were encouraging when I discussed pursuing research opportunities and graduate school.

For many reasons - not limited to those listed above - I'm glad to have been a part of the math program at Fairmont State.

One major way in which the program could improve is evolving to help fill the needs of the current job market. An "applied" track or focus within the general math degree would be helpful in preparing students to move into positions as data scientists, analysts, quantitative researchers, and more (current shortage of 150,000-200,000 professionals in the US with analytical expertise, according to LinkedIn Workforce Report). This track could include more in-depth statistics classes (including statistical programming with R and Python) and data mining, while incorporating business/science-related case studies.

- Fairmont State did a great job at preparing me for my career as a teacher. The professors challenged me to stretch my knowledge of content and exposed me to pedagogical techniques that have best helped me to reach my students. I am very happy with my preparation from them.
- I greatly miss the mathematics program at FSU. In that program I learned so much with amazing support. I only wish I could have been in the program longer to learn more!
- Fairmont State University has a state-of-the-art mathematics program. All the professors are super helpful. Their walk-in office hour policy makes the program even better for the students who need extra guidance.
- I was very pleased with the education I received at Fairmont State University.
- I was very happy that I transferred to Fairmont to finish my education. I was only there for 2 years, but I felt like I belonged. The students and professors seemed to become a close knit group which made everything more comfortable while trying to understand the complex beauty that is mathematics.
- The mathematics program at Fairmont State gave me a deep, conceptual understanding of mathematics. They gave me the confidence to teach others about the wonderful world of mathematics.

# Summary of Fairmont State Mathematics Employer Survey

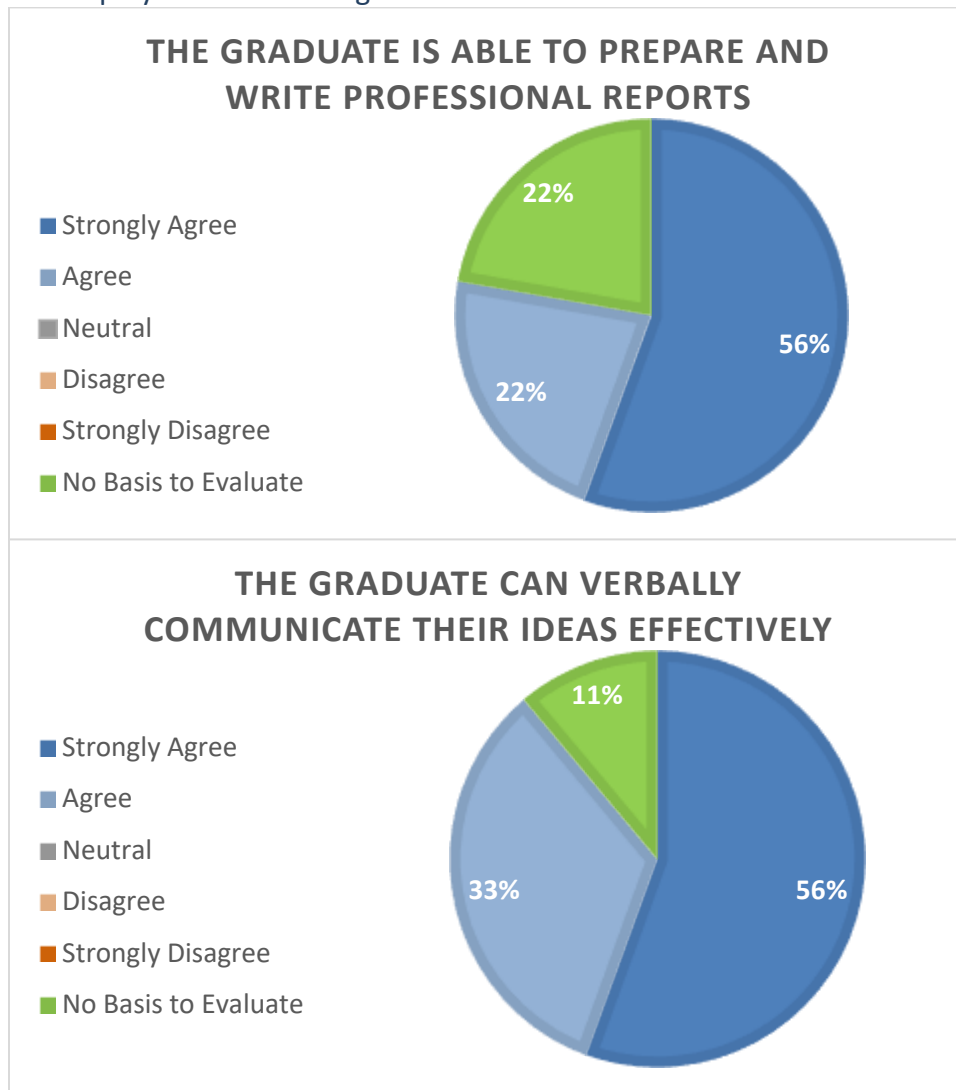
Conducted Fall 2018

## Overview:

The individuals who received the graduate survey were asked to identify their employers and provide contact information. A number of respondents were unwilling to provide this information, whether for privacy or security concerns (a number of students have jobs with the government or government contractors). All in all, we received around 16 viable supervisors to contact, and of those, nine took the time to respond. However, one of these individuals oversees two of our graduates, and so the results below pertain to 10 graduates.

## The Results:

We first asked employers to evaluate graduates' communication skills:

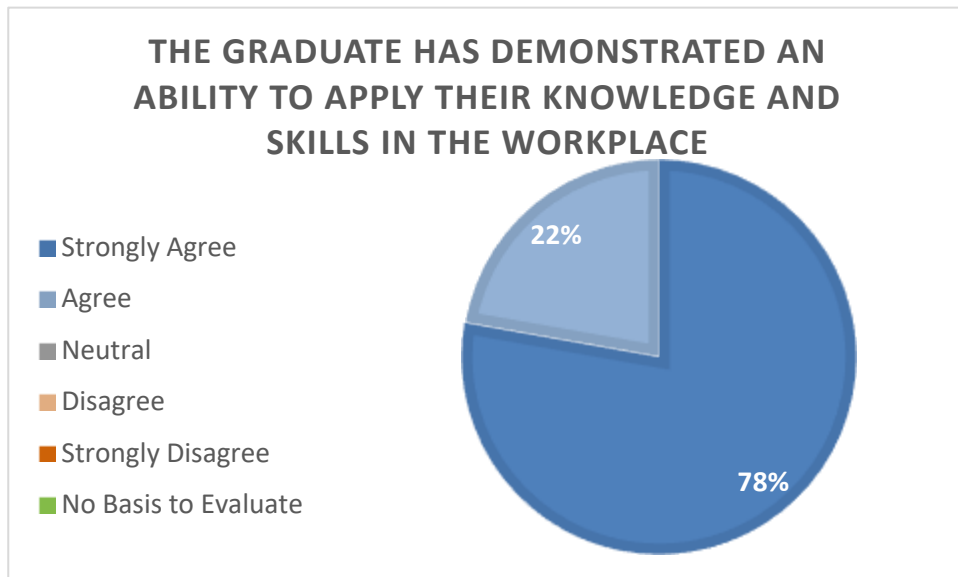
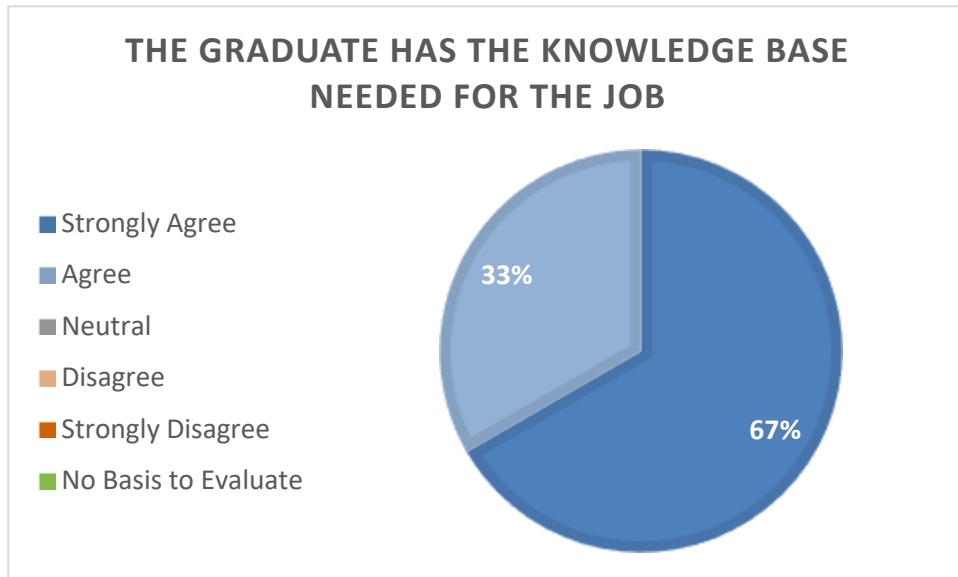


Employers were asked what the graduate would need to do to be a more effective communicator:

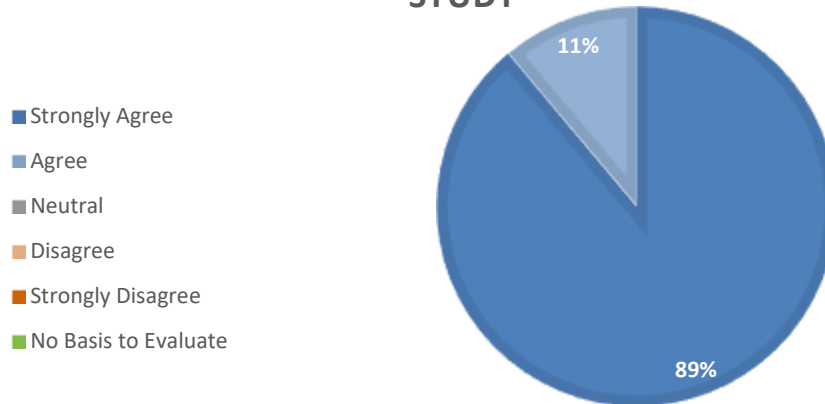
- [B]e more confident and assertive.
- Obtain additional experience with disseminating findings as research programs continue.

- She has done an excellent job in her new position.
- I have found NO Problems with communication either written or oral

Next, we asked employers to evaluate whether graduates have the requisite knowledge base for their position:



### THE GRADUATE IS ABLE TO CONCEPTUALIZE PROBLEMS RELATED TO THEIR FIELD OF STUDY



Finally, we closed the survey by asking employers how the graduate in question could be more effective in applying their knowledge:

- Graduate uses more of the skills from their master's degree than undergraduate.
- The graduate does a great job applying her knowledge to her current job.
- She is a very strong teacher.
- No Problems.



**Appendix D**

**CAEP**

**(Council for the Accreditation of  
Educator Preparation)**

**Criteria  
And  
Results**



### **A.5. Calculus**

To be prepared to develop student mathematical proficiency, all secondary mathematics teachers should know the following topics related to calculus with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.

**Satisfied**                      **Comments: None**

### **A.6. Discrete Mathematics (for 5-Adult and MAT only)**

To be prepared to develop student mathematical proficiency, all secondary mathematics teachers should know the following topics related to discrete mathematics with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.

**Satisfied**                      **Comments: None**

## **Standard 2: Mathematical Practices**

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Effective teachers of secondary mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. They understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching.

---

**Met**                              **Comments: None**

### **Preservice teacher candidates:**

2a) Use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.

**Met**                              **Comments: None**

2b) Reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others; represent and model generalizations using mathematics; recognize structure and express regularity in patterns of mathematical reasoning; use multiple representations to model and describe mathematics; and utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.

**Met**                              **Comments: None**

2c) Formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.

**Met**                              **Comments: None**

2d) Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.

**Met**                              **Comments: None**

2e) Demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.

**Met**                              **Comments: None**

2f) Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.

**Met**                    **Comments: None**

### **Standard 3: Content Pedagogy**

---

Effective teachers of secondary mathematics apply knowledge of curriculum standards for mathematics and their relationship to student learning within and across mathematical domains. They incorporate research-based mathematical experiences and include multiple instructional strategies and mathematics-specific technological tools in their teaching to develop all students' mathematical understanding and proficiency. They provide students with opportunities to do mathematics – talking about it and connecting it to both theoretical and real-world contexts. They plan, select, implement, interpret, and use formative and summative assessments for monitoring student learning, measuring student mathematical understanding, and informing practice.

---

**Met**                    **Comments: None**

#### **Preservice teacher candidates:**

3a) Apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.

**Met**                    **Comments: None**

3b) Analyze and consider research in planning for and leading students in rich mathematical learning experiences.

**Met**                    **Comments: None**

*[NOTE: Standard 3b was not met in one of three reports submitted. We still met the required percentage of sub-standards to Standard 3 and are fully accredited. Additional information will be included in future reports to ensure 3b is met in all reports.]*

3c) Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.

**Met**                    **Comments: None**

3d) Provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.

**Met**                    **Comments: None**

3e) Implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.

**Met**                    **Comments: None**

3f) Plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.

**Met**                    **Comments: None**

3g) Monitor students' progress, make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.

**Met**                    **Comments: None**

#### **Standard 4: Mathematical Learning Environment**

---

Effective teachers of secondary mathematics exhibit knowledge of adolescent learning, development, and behavior. They use this knowledge to plan and create sequential learning opportunities grounded in mathematics education research where students are actively engaged in the mathematics they are learning and building from prior knowledge and skills. They demonstrate a positive disposition toward mathematical practices and learning, include culturally relevant perspectives in teaching, and demonstrate equitable and ethical treatment of and high expectations for all students. They use instructional tools such as manipulatives, digital tools, and virtual resources to enhance learning while recognizing the possible limitations of such tools.

---

**Met**                    **Comments: None**

##### **Preservice teacher candidates:**

4a) Exhibit knowledge of adolescent learning, development, and behavior and demonstrate a positive disposition toward mathematical processes and learning.

**Met**                    **Comments: None**

4b) Plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.

**Met**                    **Comments: None**

4c) Incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.

**Met**                    **Comments: None**

4d) Demonstrate equitable and ethical treatment of and high expectations for all students.

**Met**                    **Comments: None**

4e) Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.

**Met**                    **Comments: None**

## **Standard 5: Impact on Student Learning**

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Effective teachers of secondary mathematics provide evidence demonstrating that as a result of their instruction, secondary students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased. These teachers support the continual development of a productive disposition toward mathematics. They show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematics-specific technology in building new knowledge.

---

**Met**                      **Comments: None**

### **Preservice teacher candidates:**

5a) Verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains.

**Met**                      **Comments: None**

5b) Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.

**Met**                      **Comments: None**

5c) Collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical proficiencies have increased as a result of their instruction.

**Met**                      **Comments: None**

## **Standard 6: Professional Knowledge and Skills**

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Effective teachers of secondary mathematics are lifelong learners and recognize that learning is often collaborative. They participate in professional development experiences specific to mathematics and mathematics education, draw upon mathematics education research to inform practice, continuously reflect on their practice, and utilize resources from professional mathematics organizations.

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**Met**                      **Comments: None**

### **Preservice teacher candidates:**

6a) Take an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics.

**Met**                      **Comments: None**

6b) Engage in continuous and collaborative learning that draws upon research in mathematics education to inform practice; enhance learning opportunities for all students' mathematical knowledge development; involve colleagues, other school professionals, families, and various stakeholders; and advance their development as a reflective practitioner.

**Met**                      **Comments: None**

6c) Utilize resources from professional mathematics education organizations such as print, digital, and virtual resources/collections. Candidates embrace technology as an essential tool for teaching and learning mathematics.

**Met**                      **Comments: None**

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### **Standard 7: Secondary Mathematics Field Experiences and Clinical Practice**

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Effective teachers of secondary mathematics engage in a planned sequence of field experiences and clinical practice under the supervision of experienced and highly qualified mathematics teachers. They develop a broad experiential base of knowledge, skills, effective approaches to mathematics teaching and learning, and professional behaviors across both middle and high school settings that involve a diverse range and varied groupings of students. Candidates experience a full-time student teaching/internship in secondary mathematics directed by university or college faculty with secondary mathematics teaching experience or equivalent knowledge base.

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**Met**                      **Comments: None**

#### **Preservice teacher candidates:**

7a) Engage in a sequence of planned field experiences and clinical practice prior to a full-time student teaching/internship experience that include observing and participating in both middle and high school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings under the supervision of experienced and highly qualified mathematics teachers in varied settings that reflect cultural, ethnic, linguistic, gender, and learning differences.

**Met**                      **Comments: None**

7b) Experience full-time student teaching/internship in secondary mathematics that is supervised by a highly qualified mathematics teacher and a university or college supervisor with secondary mathematics teaching experience or equivalent knowledge base.

**Met**                      **Comments: None**

7c) Develop knowledge, skills, and professional behaviors across both middle and high school settings; examine the nature of mathematics, how mathematics should be taught, and how students learn mathematics; and observe and analyze a range of approaches to mathematics teaching and learning, focusing on tasks, discourse, environment, and assessment.

**Met**                      **Comments: None**

**Appendix E**  
**Faculty Data Sheets**



## Full-time Faculty Data

Name :           Randy Baker           Rank:           Assistant Professor          

Check One: Full-time   X   Part-time        Adjunct        Graduate Asst.       

Highest Degree Earned   MS                   Date Degree Received   1985          

Conferred by                   West Virginia University                  

Area of Specialization           Mathematics                  

Professional registration/licensure        Yrs. of employment at present institution   32          

Years of employment in higher education   33   Yrs. of related experience outside higher education   1  

Non-teaching experience       1          

To determine compatibility of credentials with assignment:

(a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	MATH 1012 - College Algebra Support	17
F16	MATH 1012 - College Algebra Support	15
F16	MATH 1170 - Intro. To Mathematical Analysis	24
S17	MATH 1107 – Fund. Concepts of Math	19
S17	MATH 1107 – Fund. Concepts of Math	10
F17	MATH 1199 – Intro. to Math Reasoning	21
F17	MATH 1190 – Calculus I	12
S18	MATH 1507 – Fund. Concepts of Mathematics	19
S18	MATH 1561 – Intro. to Math Reasoning	10

(b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

(c) Identify your professional development activities during the past five years.

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

(e) Indicate any other activities which have contributed to effective teaching.

(f) List professional books/papers published during the last five years.

(g) List externally funded research (grants and contracts) during last five years.

## Full-time Faculty Data

Name : Brian Blackwood Rank: Associate Professor

Check One: Full-time X Part-time      Adjunct      Graduate Asst.     

Highest Degree Earned Ph.D. Date Degree Received 2008

Conferred by Ohio University

Area of Specialization Mathematics (Applied Linear Algebra and Noncommutative Ring Theory)

Professional registration/licensure      Yrs. of employment at present institution  
6

Years of employment in higher education 10 Yrs. of related experience outside higher education

Non-teaching experience     

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 16	MATH 1107 Fund Concepts of Mathematics	28
F 16	MATH 1107 Fund Concepts of Mathematics	29
F 16	MATH 1185 Applied Calculus I	8
F 16	MATH 2216 Introduction to Discrete Math	22
S 17	MATH 1012 College Algebra with support	22
S 17	MATH 1112 College Algebra	22
S 17	MATH 1185 Applied Calculus I	21
S 17	MATH 3375 Topology	9
F 17	MATH 1190 Calculus I	17
F 17	MATH 1190 Calculus I Honors	3
F 17	MATH 1507 Fund Concepts of Mathematics	30
F 17	MATH 1507 Fund Concepts of Mathematics	30
F 17	MATH 2216 Introduction to Discrete Math	19
F 17	MATH 4998 Undergraduate Research	4
S 18	MATH 1530 College Algebra	17
S 18	MATH 1585 Applied Calculus I	18
S 18	MATH 2562 Introduction to Discrete Math	10
S 18	MATH 4520 Abstract Algebra	6
S 18	MATH 4998 NASA Undergraduate Research	4

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

- Attended University-wide Faculty Development Week Fall 2013-2017, Spring 2014-2018.
- Attended the Allegheny Mountain Section MAA Annual Meeting, April 6 and 7, 2018, Penn State Behrend, Erie, PA.
- Attended the 2018 WVCTM Mathematics Conference from April 16, 2018 to April 17, 2018.
- Attended the 2017 WVCTM Conference.
- Youngstown State University Regional Pi Mu Epsilon Conference in Youngstown, OH on February 25, 2017.

- Presentation at the 2016 Conference of the West Virginia Council of Teachers of Mathematics. Topic: “Mathematics and Financial Literacy.”
  - Attended the 2016 WVCTM Conference.
  - Blue Ribbon Mathematics Partnership Meeting (March 2016)
  - Youngstown State University Regional Pi Mu Epsilon Conference in Youngstown, OH on February 20, 2016.
  - Attended the webinar “Math Lit: In the Classroom” with Kathy Almy on November 5, 2015.
  - Attended the "Co-Requisite Math Model" workshop by Heather Parizek in Fairmont, WV on August 12, 2015.
  - Summer Undergraduate Research Experience faculty advisor for Jeff Rush: “Zero-divisor Graphs of Commutative Rings”, Summer 2015
  - Attended the "Developmental Math" workshop by Loretta Griffy in Fairmont, WV on May 19, 2015.
  - Attended the “Celebration of Student Scholarship” on Wednesday, April 22, 2015 and was the faculty mentor for Jeff Rush who gave a talk entitled “Idempotents a la mod” and Abbigail Blosser who gave a talk entitled “A Further Journey Into Field Theory”.
  - Presentation at the 2015 Conference of the West Virginia Council of Teachers of Mathematics. Topic: “Writing in an Abstract Algebra Course.”
  - Attended the 2015 WVCTM Conference.
  - Attended the “Introduction to Using iPads to Teach Math” workshop by Gwyn Whieldon, Fairmont, WV on August 13, 2014.
  - Summer Undergraduate Research Experience faculty advisor for Jeff Rush: “Idempotents a la Mod”, Summer 2014.
  - Undergraduate Research advisor for Abbigail Blosser: “A Further Journey Into Field Theory”, Fall 2014.
  - Presentation at the 2014 Conference of the West Virginia Council of Teachers of Mathematics. Topic: “Will Technology Enhance My Course?”
  - Attended the 2014 WVCTM Conference.
  - Youngstown State University Regional Pi Mu Epsilon Conference in Youngstown, OH on February 22, 2014.
  - Attended “Active and Engaged Student Learning” by Todd Zakrajsek in Fairmont, WV on January 7, 2014.
  - Attended 2<sup>nd</sup> Annual Experiencing Math & Technology Workshop (Improving Outcomes through Technology) in Farmington, PA on November 15, 2013.
  - Attended the Blue Ribbon Mathematics Partnership Meeting in Fairmont, WV on September 11, 2013.
  - Engineering and Science Challenge, Fairmont State University (September 20, 2013)
  - Attended the Blue Ribbon Mathematics Partnership Meeting in Fairmont, WV on September 11, 2013.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- Nominated for the Faculty Recognition Award for the 2017-2018 academic year.
  - Nominated for the Straight Award for the 2016-1017 academic year.
- (e) Indicate any other activities which have contributed to effective teaching.  
Assessed outcomes in Math 1107, 1112, 1185, 1190, 2216, 3361, 3375
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.
- Grant from NVIDIA Corporation for a Titan XP graphics processing unit), 17 November 2017 (together with Tom Cuchta and Bob Niichel)
  - Grant from TMC Technologies of West Virginia Corp. subcontract number TMC-2017-002-10 NASA Technical Expertise Support Services (TESS) Issued Under Prime Contract: NNG4SA05Z, \$23,750, 1 August 2017–31 July 2018 (together with Tom Cuchta and Bob Niichel)

## Full-time Faculty Data

Name : Siegfried Bleher Rank: Temporary Assistant Professor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned PhD Date Degree Received August 1989

Conferred by University of Maryland

Area of Specialization Physics

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 2

Years of employment in higher education 16 Yrs. of related experience outside higher education \_\_\_\_\_

Non-teaching experience 20

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 15	MATH 1001 Applied Tech Math I Support	13
S 16	MATH 1012 College Algebra Support	26

- (b) If degree is not in area of current assignment, explain.  
Degree makes extensive use of area of support.

- (c) Identify your professional development activities during the past five years.

Participated in Fairmont State-sponsored Faculty Development Weeks F14, S15, F15, S16 semesters;  
participated in Teaching Professor Conference 2016 in Washington, DC

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

- (e) Indicate any other activities in which have contributed to effective teaching.

- (f) List professional books/papers published during the last five years.

- (g) List externally funded research (grants and contracts) during last five years.

## Full-time Faculty Data

Name : Tom Cuchta Rank: Assistant Professor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned: Ph.D. Date Degree Received: December 2015

Conferred by: Missouri University of Science and Technology

Area of Specialization: Mathematics

Professional registration/licensure: n/a Yrs. of employment at present institution: 1.5  
 Years of employment in higher education: 9.5 Yrs. of related experience outside higher education: n/a  
 Non-teaching experience: n/a

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	MATH 1190 Calculus I	18
Fall 2016	MATH 1190 Calculus I (Honors)	10
Fall 2016	MATH 1115 Trigonometry	24
Fall 2016	MATH 1112 College Algebra	25
Fall 2016	MATH 1011 Pre-College Algebra	20
Spring 2017	MATH 3315 Calculus II	25
Spring 2017	MATH 3315 Calculus II (Honors)	7
Spring 2017	MATH 2200 Mathematical Logic	24
Spring 2017	MATH 1113 Applied Statistics	30
Spring 2017	MATH 1101 Applied Tech Mathematics I	8
Fall 2017	MATH 1540 Trigonometry	26
Fall 2017	MATH 1540 Trigonometry	27
Fall 2017	MATH 3315 Calculus III (Honors)	1
Fall 2017	MATH 3315 Calculus III	9
Fall 2017	MATH 3362 Linear Algebra	14
Spring 2018	MATH 4590 Real Analysis	7
Spring 2018	MATH 2510 Mathematical Logic	10
Spring 2018	MATH 1586 Applied Calculus 2	10
Spring 2018	MATH 1540 Trigonometry	17

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**  
 n/a

- (c) Identify your professional development activities during the past five years.
- Weekly research meetings with David Grow&Nick Wintz, Matt Insall, Sabrina Streipert (Fall 2017-present) and Bob Niichel (Spring 2018-present)
  - Presentation: *Lambert W on time scales* (International Workshop on Nonlinear Dynamical Systems and Functional Analysis, Brasilia, Brazil 13-16 August 2018)
  - Volunteer scorer at Math Field Day (Huntington, WV; 21 April 2018)
  - Allegheny Mountain Section of MAA Director of E-Communications (7 April 2018-present)
  - Presentation: *Discrete special functions* (Erie, PA; 7 April 2018)
  - Allegheny Mountain Section of MAA Teaching Award Committee (Spring 2018)

- **2018 Peer Review:** 2 papers for Journal of Nonlinear Sciences and Applications; 1 paper for Journal of Classical Analysis
  - Participant: Project NExT workshop on engagement and grading (Grove City, PA; 30 September 2017)
  - Presentation: *Domain colorings* (St. Clairsville, OH; 27 October 2017)
  - **2017 Peer Review:** 2 papers for Journal of the Egyptian Mathematical Society; 2 papers for Journal of Difference Equations and Applications; 2 papers for Journal of Nonlinear Sciences and Applications
  - CSM(P) representative for faculty senate (Spring 2017-present)
  - Math Department advisory board committee member
  - Student Publications Board Committee (Fall 2017-present)
  - Wrote one letter of recommendation (Fall 2017). Wrote one letter of recommendation (Spring 2018). Wrote one letter of recommendation (Summer 2018)
  - Presentation: *The hypergeometric difference equation* (Timișoara, Romania; 28 July 2017)
  - Presentation: *The Bessel difference equation* (Pittsburgh, PA; 8 April 2017)
  - Participant: Project NExT workshop on expository writing (Pittsburgh, PA; 7 April 2017)
  - **2016 Peer Review:** 1 paper for Journal of Inequalities and Special Functions; 1 paper for Journal of Mathematics and Statistics
  - Maintainer of *timescalecalculus* Python repository on GitHub (<https://github.com/tomcuchta/timescalecalculus>)
  - Self publication: *Solutions manual to Rainville's Special Functions* (19 July 2013-29 August 2016)
  - Participant: Project NExT workshop on teaching statistics (Wooster, OH; 29 October 2016)
  - Presentation: *Gompertz dynamic equation* (Wooster, OH; 28 October 2016)
  - Participant: Project NExT workshop on teaching math to liberal arts majors (Indiana, PA; 24 September 2016)
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- NASA IV&V Grant Students: Carl Wahler, Anna Westfall, Dawn Sargent, Mattison Johnson (Carl, Anna, Dawn participated in Spring 2018 Allegheny MAA Section conference) – all four participated in a talk during May 2018 at NASA IV&V
  - Assessed outcomes for MATH 2200 and MATH 3315 (Spring 2017)
  - Facilitated undergraduate research (David Vazquez, Treston Brown, Zachary Linger (presented at Youngstown State Pi Mu Epsilon Conference and at Allegheny MAA Conference), Seth Backus)
  - Worked with foreign exchange student Antonietta Bonanno
  - Invited special mathematics lecturers in Fall 2016 (Dr. Patrick Juola and Dr. Annarosa Serpe), Spring 2017 (Dr. Bonita Lawrence), and Fall 2017 (Dr. Matt Insall, Mark Suder)
  - Student trips: Youngstown, OH (Pi Mu Epsilon conference) and to Marshall University (differential analyzer), took undergraduate to St. Clairsville, OH (MAA conference, student gave a talk)
  - Owner and operator of [specialfunctionswiki.org](http://specialfunctionswiki.org), [timescalewiki.org](http://timescalewiki.org), and [hyperspacewiki.org](http://hyperspacewiki.org)
- (f) List professional books/papers published during the last five years.
- Martin Bohner, Tom Cuchta. The generalized hypergeometric difference equation. *Demonstratio Mathematica*, 51(1), pp. 62-75 (2018).
  - Martin Bohner and Tom Cuchta. The Bessel difference equation. *Proc. Amer. Math. Soc.*, 145(4):1567–1580, 2017.
  - Tom Cuchta, Sabrina Streipert. Dynamic Gompertz model. Submitted.
- (g) List externally funded research (grants and contracts) during last five years.
- Grant from TMC Technologies of West Virginia Corp. subcontract number TMC-2017-002-10 NASA Technical Expertise Support Services (TESS) Issued Under Prime Contract: NNG4SA05Z, \$23,750, 1 August 2017–31 July 2018 (together with Brian Blackwood and Bob Niichel)
  - Grant from NVIDIA Corporation for a Titan XP graphics processing unit (~\$1,000), 17 November 2017 (together with Brian Blackwood and Bob Niichel)

## Full-time Faculty Data

Name: James O. Dunlevy Rank: Associate Professor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned MA Date Degree Received 1965

Conferred by Arizona State University

Area of Specialization Mathematics

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 47

Years of employment in higher education 50 Yrs. of related experience outside higher education \_\_\_\_\_

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2014	Math 1112 College Algebra	29
Fall 2014	Math 1115 Trigonometry & Elem. Functions	22
Fall 2014	Math 1190 Calculus I	20
Fall 2014	Math 1190 Calculus I – Honors	8
Fall 2014	Math 3362 Linear Algebra	10
Spring 2015	Math 1107 Fundamental Concepts	15
Spring 2015	Math 1115 Trigonometry & Elem. Functions	29
Spring 2015	Math 1190 Calculus I	19
Spring 2015	Math 1190 Calculus I – Honors	9
Spring 2015	Math 2200 Mathematical Logic	24
Fall 2015	Math 1112 College Algebra	19
Fall 2015	Math 1112 College Algebra	28
Fall 2015	Math 1115 Trigonometry & Elem. Functions	25
Fall 2015	Math 1190 Calculus I	13
Fall 2015	Math 1190 Calculus I – Honors	5
Spring 2016	Math 1112 College Algebra	26
Spring 2016	Math 1115 Trigonometry & Elem. Functions	23
Spring 2016	Math 1190 Calculus I	15
Spring 2016	Math 1190 Calculus I – Honors	4
Spring 2016	Math 2200 Mathematical Logic	21

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

(d)

In May of 2013, participated in a workshop to produce Fairmont State courses in developmental math.

In 2013, received training in the use of the Ipad .

Subscribed to and read The College Mathematics Journal and The Mathematics Magazine.

Borrow and read the AMATYC journal.

- (e) List awards/honors (including invitations to speak in your area of expertise) or special recognition



In last five years.

- (f) Indicate any other activities which have contributed to effective teaching.

Created online quizzes in Blackboard for use in my College Algebra and Trigonometry Classes.  
Helped with the administration of Engineering Challenge: Math Scavenger Hunt 2012-2013

- (f) List professional books/papers published during the last five years.

- (g) List externally funded research (grants and contracts) during last five years.

## Full-time Faculty Data

Name : Nadira Ghattas Rank: Temporary Assistant Professor of Supplemental Math

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned Ed.D Date Degree Received 2015

Conferred by West Virginia University Area of Specialization Science Education

Professional registration/licensure --- Yrs. of employment at present institution 2.5 yrs.

Years of employment in higher education:

- **4 yrs.** as a graduate research assistant and that included being an Instructor of the Professional Inquiry (Science)teaching (EDUC 200) in Fall 2014 at WVU, and being an Instructor of the graduate course Teaching Science in Secondary School (C&I) 644/444 in Fall 2013 at WVU.
- Since 2015-Present I have been Assistant Professor of Math Support at Fairmont State University teaching Math 1107/Fundamental concepts of Math with Support (1407 is the current course number), Math 1007/Fundamental Concepts of Math Support, and 1011/Pre College Algebra (Currently Math 1400/Foundations of Algebra).

Yrs. of related experience outside higher education 2

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Spring 2018	Math 1407- Fundamental Concept of Mathematics with Support	23
	Math 1407- Fundamental Concept of Mathematics with Support	23
	Math 1407- Fundamental Concept of Mathematics with Support	20
Fall 2017	Math 1407- Fundamental Concept of Mathematics with Support	23
	Math 1407- Fundamental Concept of Mathematics with Support	23
	Math 1407- Fundamental Concept of Mathematics with Support	23
Spring 2017	Math 1107- Fundamental Concept of Mathematics	14
	Math 1107- Fundamental Concept of Mathematics	8
	Math 1107- Fundamental Concept of Mathematics	9
	Math 1007- Fundamental Concept of Math Support	14
	Math 1007- Fundamental Concept of Math Support	8
	Math 1007- Fundamental Concept of Math Support	9
Fall 2016	Math 1107- Fund. Concepts of Mathematics	28
	Math 1107- Fund. Concepts of Mathematics	26
	Math 1007- Fund. Concepts of Math Support	11
	Math 1007- Fund. Concepts of Math Support	15
	Math 1007- Fund. Concepts of Math Support	15
	Math 1007- Fund. Concepts of Math Support	14

- (b) If degree is not in area of current assignment, explain.

### Curriculum and Instruction/Science Education

(c) Identify your professional development activities during the past five years.

- Attended Plagiarism Workshop: S Spears and R Shannon, Dining Hall at Fairmont State University, Fairmont, WV. August 09, 2017.
- Attended the Graduate Student Career Pathways Symposium, Mountainlair, West Virginia University, Morgantown, WV. Jan.31st, 2014.
- Attended a workshop titled “Writing a Conference Abstract,” Evansdale library, West Virginia University, Morgantown, WV. Jan 30th, 2014.
- Participated in the NASA StarLab, Morgantown, WV, 2011.
- Attended teacher training meetings on how to teach and encourage students in their learning process, 2005, 2006.

List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

(d) Indicate any other activities in which have contributed to effective teaching.

Integrated group work, Created worksheets and in-class activities, Communicated with students via blackboard and Remind App., Used Just In Time Teaching (JITT).

(e) List professional books/papers published during the last five years.

- Ghattas, Nadira I. & Carver, Jeffrey S. (2017). Cultural responsiveness of the next generation of science standards. *Journal of STEM Teacher Education*, 52 (1), 17-30.
- Ghattas, Nadira I. & Carver, Jeffrey S. (2012). Integrating nanotechnology into school education: A review of the literature. *Research in Science & Technological Education*, 30 (3), 271-284.

(f) List externally funded research (grants and contracts) during last five years.

- During 2011- 2015, I was hired as a Research Assistant for the Teacher Research Experience for the Advancement of Knowledge (TREK) and Learning Assistant (LA) programs on the “Bionanotechnology for Public Security and Environmental Safety” project. NSF Award Number EPS-1003907 (\$20,000,000), Curriculum and Instruction Department, West Virginia University.

## Full-time Faculty Data

Name: Susan Goodwin Rank: Professor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ed. D. Date Degree Received 1997

Conferred by West Virginia University

Area of Specialization Math Education

Professional registration/licensure X Yrs. of employment at present institution 26

Years of employment in higher education 37 Yrs. of related experience outside higher education 5

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 13	MATH 1112 College Algebra	20
F 13	MATH 2251 Structure of the Real Numbers	20
F 13	MATH 2252 Data Analysis and Geometry	20
F 13	MATH 3353 Math Methods for Elem. Teachers	18
F 13	MATH 4431 Methods and Materials in Teaching Math	11
S 14	MATH 1115 Trig and Elementary Functions	14
S 14	MATH 1113 Applied Statistics	30
S 14	MATH 2251 Structure of the Real Numbers	24
S 14	MATH 2252 Data Analysis and Geometry	17
S 14	MATH 3353 Math Methods for Elem. Teachers	11
F 14	MATH 1112 College Algebra	12
F 14	MATH 2251 Structure of the Real Numbers	11
F 14	MATH 2252 Data Analysis and Geometry	15
F 14	MATH 3353 Math Methods for Elem. Teachers	13
F 14	MATH 4431 Methods and Materials in Teaching Math	6
S 15	MATH 1115 Trig and Elementary Functions	10
S 15	MATH 1113 Applied Statistics	30
S 15	MATH 2251 Structure of the Real Numbers	10
S 15	MATH 2252 Data Analysis and Geometry	6
S 15	MATH 3353 Math Methods for Elem. Teachers	19

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

Presentation: WV Council of Teachers of Mathematics Conference "Exploring Patterns with the TI-15" 2010

Presentation: WV Council of Teachers of Mathematics Conference "Polygons, Angles, and Graphic Organizers" 2011

Presentation: WV Council of Teachers of Mathematics Conference "Billiards: The Bridge between Geometry and Factors" 2012

Presentation: WV Council of Teachers of Mathematics Conference "The Greatest and Least of These: GCF and LCM" 2014

Presentation: WV Council of Teachers of Mathematics Conference "Divide and Conquer: Dividing by Fractions" 2015  
WV Council of Teachers of Mathematics, VP 2008 - 2011  
Conducted FE review in Statistics 2010 – 2015  
Hosted Blue Ribbon Math Committee 2011-2015  
Created and graded the Team Power Question for Regional Math Field Day 2012  
Collected and analyzed data for NCATE reports 2008-Present  
Engineering Challenge: Math Trivial Pursuit 2009-2011  
Engineering Challenge: Math Scavenger Hunt 2012-2014  
Fairmont State University: Common Core Math Presentation 2012  
Conducted Mimio Training 2012  
Webinar: Math Study Skills with Alan Bass 2012  
Participant: HEPC Presentation on Developmental Math in WV 2012  
Participant: Blackboard 9.1 Training 2012  
Participant: Four-day Amatyc Traveling Workshop on Developmental Education 2013  
Coordinator Math 1101 and 1102, Applied Technical Mathematics  
WvEB Algebra/Trig Higher Ed Advisory Committee 2009-present  
NCATE Math Ed program reaccredited  
CAEP Math Ed program report author 2015  
Participant: Ipad Training 2013  
Supervised Math Student Teachers 2008-2015

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.

(e) Indicate any other activities which have contributed to effective teaching.

Assessed all outcomes in Math 1113, 2251, 2252, 3353, 4431  
Created Statistics Mimio Lessons

(f) List professional books/papers published during the last five years.  
None

(g) List externally funded research (grants and contracts) during last five years.  
None

## Full-time Faculty

Name : Erica Harvey Rank: Professor

Check One: Full-time x Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph.D. Date Degree Received 1990

Conferred by California Institute of Technology

Area of Specialization Chemistry

Professional registration/licensure NA Yrs. of employment at present institution 25

Years of employment in higher education 30 Yrs. of related experience outside higher education 0

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Spring 2015	MATH 1199 ST:College Algebra Extended Lab	16

**Plus multiple chemistry courses; See Table 11 of Chemistry Program Review, Spring 2018**

- (b) If degree is not in area of current assignment, explain. **N/A**
- (c) Identify your professional development activities during the past five years.
- National Meeting of the American Chemical Society, New Orleans, LA, **March 2018**
  - National Meeting of the American Chemical Society, Boston, MA, **August 2015**
  - South East Regional Meeting of the American Chemical Society/Solar Energy Research Conference, **2016, 2017**
  - Mid-Atlantic Regional Meeting of the American Chemical Society, Hershey, PA, **June 2017**.
  - Central Eastern Regional Meeting of the American Chemical Society, Covington, KY, **May 2016**.
  - West Virginia Science Teachers Association Annual Conference, **2014, 2015, 2016, 2017, 2018**.
  - West Virginia Academy of Sciences Annual Meeting, **2014, 2015, 2016, 2017**
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- Abelina Suarez Professorship, 2018-2023
  - William A Boram Award for Teaching Excellence, 2018
  - Invited presentation, Center for Chemical Innovation Solar Fuels Annual Conference, 2/6/16, CA.
  - “Yoga in Physical Chemistry...and Other Active Learning Adventures at a Primarily Undergraduate Institution.” Erica Harvey, invited lecture in Department of Chemistry at the University of Akron, Akron, OH, September 16, 2014.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- Additional papers in chemistry Program Review Spring 2018 Table 11.
1. “Molecular Dynamics Simulations as a Tool for Accurate Determination of Surfactant Micelle Properties.” Sadeqh Faramarzi, Brittany Bonnett\*, Carl A. Scaggs\*, Ashley Hoffmaster\*, Danielle Grodi\*, Erica Harvey, and Blake Mertz. *Langmuir*, 2017, 33 (38), 9934-9943. DOI: 10.1021/acs.langmuir.7b02666 (\* denotes FSU undergraduate.)
  2. “First2 Network: Improving rural STEM persistence in the first two years of college.” Sue Ann Heatherly, Erica Harvey, Caitlin Howley. *Proceedings of the West Virginia Academy of Sciences*, 89(1), 2017.

## Faculty Data

Name : Stephanie Jones Rank: Assistant Professor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned M.S. Date Degree Received 2006

\*Note: Ed.D. (Curriculum & Instruction, Math Education) is in progress.

Conferred by West Virginia University

Area of Specialization Mathematics

Professional registration/licensure X Yrs. of employment at present institution 3

WV Permanent Teacher Certification for Math 5-adult and Chemistry 9-adult

Years of employment in higher education 3 Yrs. of related experience outside higher education 9

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 16	MATH 2251 Structure of the Real Numbers	17
F 16	MATH 2252 Data Analysis and Geometry	20
F 16	MATH 3353 Math Methods for Elem. Teachers	11
F 16	MATH 4431 Methods and Materials in Teaching Math	5
S 17	MATH 1112 College Algebra	16
S 17	MATH 1112 College Algebra (Honors)	2
S 17	MATH 2251 Structure of the Real Numbers	15
S 17	MATH 2252 Data Analysis and Geometry	11
S 17	MATH 3353 Math Methods for Elem. Teachers	17
F17	MATH 2251 Structure of the Real Numbers	8
F 17	MATH 2252 Data Analysis and Geometry	19
F 17	MATH 3353 Math Methods for Elem. Teachers	16
F 17	MATH 4431 Methods and Materials in Teaching Math	4
S 18	MATH 2551 Structure of the Real Numbers	19
S 18	MATH 2552 Data Analysis and Geometry	15
S 18	MATH 3553 Math Methods for Elem. Teachers	10

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

- Participant: CASE Math Test Analysis (WVDE) (July 2015)
- West Virginia Council of Teachers of Mathematics Conference (March 2016)
  - Presenter: Looking for and Making Use of Structure with “Contemplate Then Calculate”
- Blue Ribbon Mathematics Partnership Meeting (March 2016)
- Supervised 5 Math Student Teachers (2015-16)
- Engineering Challenge: Math Scavenger Hunt (Fall 2015)
- Participant: Teaching with Taskstream (Fall 2015)
- Scholarly Readings



- Numerous journal articles in preparation for my dissertation
  - Read “The Numerati” in preparation for use in Honors College Algebra (Spring 2017)
  - Read “The Undergraduate Experience” as part of the campus-wide discussion (Spring 2017)
  - Read “Intentional Talk: How to Structure and Lead Productive Mathematical Discussions” by Elham Kazemi & Allison Hintz (Summer 2017)
  - Attended Informational Session on Moodle (April 2016)
  - Attended EPPAC Meeting (April 2016)
  - Blue Ribbon Mathematics Partnership Meeting (September 2016)
  - Blue Ribbon Mathematics Partnership Meeting (November 2016)
  - Association of Mathematics Teacher Educators Conference (February 2017)
    - Presenter: Using Rehearsals to Support Secondary Teacher Candidates’ Use of Student Ideas in Whole-Class Discussions
  - West Virginia Council of Teachers of Mathematics Conference (March 2017)
    - Presenter: Tell Us About It! Making Student Reasoning Central to Class Discussions
  - Blue Ribbon Mathematics Partnership Meeting (April 2017)
  - Mathematics Advisory Board Meeting (April 2017)
  - Attended EPPAC Meeting (May 2017)
  - Participant: Fairmont State’s Undergraduate Experience Group Discussions (Spring 2017)
  - Attended webinar to learn to use Vosaic Connect (video annotation software) (Summer 2017)
  - Participant: Minimizing Academic Dishonesty While Increasing Student Learning (Faculty Development week - August 2017)
  - Attended a talk about the projects at the NASA IV & V Facility (November 2017)
  - West Virginia Council of Teachers of Mathematics Conference (March 2018)
    - Presenter: Making Student Reasoning Central to Class Discussions with Choral Counting
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- West Virginia Council of Teachers of Mathematics
    - 2015 Secondary Teacher of the Year Award
- (e) Indicate any other activities which have contributed to effective teaching.
- Research on Responsive Teaching and how to encourage Teacher Candidates to teach responsively (Fall 2015 – Spring 2018)
  - Utilized resources from tedd.org in MATH 3553 and 4531 to provide opportunities for teacher candidates to refine their practice
  - Organized and ran Mock Parent Teacher Conference for MATH 4431 (Fall 2015 – 17)
  - Created Mimio Lessons for Math 1112, 2251, 2252, 3353, and 4431
  - Assessed all outcomes in Math 2251, 2252, 3353, and 4431
- (f) List professional books/papers published during the last five years.  
None
- (g) List externally funded research (grants and contracts) during last five years.  
None

## Full-time Faculty Data

Name : Alice Dennine LaRue Rank: Temporary Assistant Professor  
 Check One: Full-time X Part-time      Adjunct      Graduate Asst.     

Highest Degree Earned M.S. Date Degree Received 1984

Conferred by West Virginia University  
 Area of Specialization Mathematics

Professional registration/licensure X Yrs. of employment at present institution 29.5  
 WV Permanent Teacher Certification for Math 5-12 and Journalism 7-12  
 Years of employment in higher education 29.5 Yrs. of related experience outside higher education 23  
 Non-teaching experience 3

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	MATH 1112 College Algebra	31
F16	MATH 1115 Trig and Elementary Functions	29
F16	MATH 1125 Math Reasoning: Reading & Writing	19
F16	MATH 3372 Modern Geometry	8
Sp17	MATH 1107 Fundamental Concepts of Math Honors	8
Sp17	MATH 1112 College Algebra	17
Sp17	MATH 1115 Trig and Elementary Functions	24
Sp17	MATH 1115 Trig and Elementary Functions	19
F17	MATH 1199(1561) Introduction to Mathematical Reasoning	15
F17	MATH 1530 College Algebra	13
F17	MATH 1530 College Algebra	27
F17	MATH 1540 Trig and Elementary Functions	21
Sp18	MATH 1507 Fundamental Concepts of Math Honors	7
Sp18	MATH 1540 Trig and Elementary Functions	19
Sp18	MATH 1540 Trig and Elementary Functions	16
Sp18	MATH 1561 Introduction to Mathematical Reasoning	20

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

- Blue Ribbon Mathematics Partnership Meetings
  - Presenter Fall 2013 Mathematics Reasoning Math 1125
  - Presenter Fall 2014 CBMS Forum on Success in the First Two Years of College
  - Presenter Fall 2015 Smarter Balanced Achievement Level Settings
- 2013 MAA Allegheny Mountain Meeting at Indian University of Pennsylvania April 6, 2013
- Book review: Pearson Book Publishers Diary Review of the textbook "College Algebra: An Early Functions Approach."
- Book Review: Blitzer Consumer Mathematics Review for Chapter 8 from Thinking Mathematically.

WV Council Teachers of Mathematics Annual Conference meetings

- Presenter WVCTM Conference March 16-17, 2018 Overview of WV Geometry Standards K-12

- Presenter WVCTM Conference March 17-18, 2017 Logarithms
- Presenter WVCTM Conference March 11-12, 2016 Growing with Quadratic Equations, Functions, and Graphs
- Presenter WVCTM Conference March 11-12, 2016 Higher Education Meeting
- Presenter WVCTM conference March 14-15, 2015 Reflect on This! (Composition of reflections in transformational geometry)
- Presenter WVCTM conference March 2014 Mathematics Reasoning Math 1125

WV Developmental Taskforce

- HEPC presentation about Developmental Math in WV on Jan. 11, 2013
- West Virginia Education Summit June 5-6, 2013
- Complete College America Academies Jan 9-10, 2014, Sept.8-9, 2016
- Dana Center Co-requisite workshop May 15-16, 2017
- Prepared support class parallel content in preparation for AMATYC Traveling Conference on Developmental Education.

Scholarly Readings

- Math 1112 honors section Fall 2013, popular math book about game theory "Rock, Paper, Scissors."
- Studied American Mathematical Society 2012 report on the Mathematics Education of Teacher II (MET II).
- Continued to read journals concerning math pedagogy, math topics, or developmental education.
- Read book "The Numerati" in preparation for use in Honors College Algebra
- Attended Math 2200 –Math Logic to learn more about the subject – Spring 2014, Spring 2015, Spring 2016
- Read Hidden Figures about the men and women who were behind the successful NASA program, but have been hidden from history
- Participant: May 20-23, 2013 Four-day AMATYC Traveling Workshop on Developmental Education
- Participant: Ipad Training 2013
- Participant: Oct 2014 – Attended Conference Board of Mathematical Sciences Forum on Success in the First Two Years of College.
- Participant: Sept.1, 2015. Attended Town Hall Meeting about Common Core and WV NexGen Standards

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.

Selected for HEPC Series 21 Revision Committee on Freshman Assessment & Placement Standards April 2018-Nov 2018

Selected for HEPC West Virginia State Math Taskforce by Corley Dennison, Provost Academic Affairs, June 2015-present

- Attendance at meetings to develop statewide course equivalencies.
- Attendance at meetings to develop statewide essential topics for a quantitative reasoning course.
- Selected as vice-chair of committee Fall 2017

Selected to serve on Praxis committee for Math 1 and Algebra 1, 2016

Selected to serve as the WV Higher Education representative at Smarter Balance Achievement Level settings. Oct. 2014

- (e) Indicate any other activities which have contributed to effective teaching.
- WV Council of Teachers of Mathematics, VP 2013-2017
  - Created Mimio Lessons for Math 1107, 1112, 1115, 1125, 1561, 3372
  - Member of West Virginia State Math Field Day Organization. This organization organizes and administers the West Virginia State Math Field Day competition for students in grades 4-12. I serve as secretary/historian. Site Coordinator for hosting the West Virginia State Math Field Day competition at Fairmont State University in 2016.
  - Organized and ran Mock Parent Teacher Conference for Math 4431 Methods class during Fall 2012. Participant 2013-16

- (f) List professional books/papers published during the last five years. None

- (g) List externally funded research (grants and contracts) during last five years. None

## Full-time Faculty Data

Name :     Ted LaRue     Rank:     Assistant Professor    

Check One: Full-time   X   Part-time      Adjunct      Graduate Asst.     

Highest Degree Earned     MS     Date Degree Received     1981    

Conferred by     West Virginia University      
Area of Specialization     Mathematics    

Professional registration/licensure      Yrs. of employment at present institution     38      
Years of employment in higher education     38     Yrs. of related experience outside higher education       
Non-teaching experience     

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	MATH 1112 College Algebra- Honors	17
Sp17	MATH 1112 College Algebra	19
F17	MATH 1530 College Algebra - Honors	16
Sp18	MATH 1530 College Algebra	17

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

Developed Java application for practicing vocabulary for GRE preparation  
Improved efficiency for a complex machine control program for a sawmill  
Developed Java application for maintaining and viewing scaled grades  
Wrote apps for smart phone

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years. None

- (e) Indicate any other activities which have contributed to effective teaching.

Reading current literature and experimenting with new languages and other new software; building microcontroller circuits.

- (f) List professional books/papers published during the last five years. None

- (g) List externally funded research (grants and contracts) during last five years. None



February 27, 2018 Hawkes Learning Information Session at Fairmont State University – session to discuss materials for math courses.

- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

Virtual vs. Face to Face Study (Fall 2013). In cooperation with Polyhedron Learning Media and Amanda Francis, Robert Kresiberg (PI); received \$10,000 grant to study the effects of virtual vs. face to face physical science labs.

## Full-time Faculty Data

Name : Steven Morrow Rank: Assistant Professor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph. D. Date Degree Received 2012

Conferred by Indiana University

Area of Specialization Mathematics

Professional registration/licensure X Yrs. of employment at present institution 1

Years of employment in higher education 1 Yrs. of related experience outside higher education X

Non-teaching experience 7

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 12	MATH 1101 Applied Technical Math 1	29
F 12	MATH 1115 Trig and Elementary Functions	14
F 12	MATH 1107 Fundamental Concepts of Math	29
F 12	PHYS 1101 Introduction to Physics	31
F 12	PHYS 1101 Physics 1 Lab	17
F 12	PHYS 1101 Physics 1 Lab	18
S 13	MATH 1102 Applied Technical Math 2	29
S 13	MATH 3335 Probability and Statistics	11
S 13	MATH 1107 Fundamental Concepts of Math	13
F 13	MATH 1101 Applied Technical Math 1	30
F 13	MATH 1113 Applied Statistics	27
F 13	MATH 1185 Applied Calculus 1	19
F 13	MATH 3342 Numerical Methods	5
S 14	MATH 1102 Applied Technical Math 2	15
S 14	MATH 1102 Applied Technical Math 2	18
S 14	MATH 3391 Real Analysis	12
S 14	MATH 1186 Applied Calculus 2	20

- (b) If degree is not in area of current assignment, explain.

**Degree is in area of current assignment for mathematics.  
(I taught Physics in Fall, 2012 due to a faculty illness.)**



(c) Identify your professional development activities during the past five years.

Attended Blue Ribbon Math Committee Meetings at Fairmont State in 2012 and 2013

Participated in 3-day Developmental Mathematics workshop and planning for future Fairmont State courses in developmental math.

Attended "Effects" Training workshop where several speakers presented examples of hands-on classroom techniques

Serving on the Faculty Welfare Committee and Technology Subcommittee for 2013-2014

Participated in Engineering Challenge: Math Scavenger Hunt 2012-2013 for the College's recruitment day.

Participated in Ipad Training (2013)

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.

Speaker at the American Math Society Fall Sectional meeting held at University of Louisville, October, 2013

The title of the talk was "A Coboundary Theorem for a collection of  $C[0,1]$ -valued random variables"

(e) Indicate any other activities which have contributed to effective teaching.

Learned software to be used in three different classes: Python, Mathcad, and Minitab

Participated in Assessment of outcomes in Math 1107, 1101, 1102, and 3335

(f) List professional books/papers published during the last five years.

Ph.D. Thesis: "Coboundary Theorems for Collections of Random Variables", November, 2012

(g) List externally funded research (grants and contracts) during last five years.

None

## Full-time Faculty Data

Name : Robert J. Nijchel Rank: Assistant Professor  
 Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph.D Date Degree Received 2012

Conferred by Indiana University  
 Area of Specialization Mathematics/Probability

Professional registration/licensur 0 Yrs. of employment at present institution 4

Years of employment in higher education 5 Yrs. of related experience outside higher education 3  
 Non-teaching experience 0

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	M1101 Applied Tech Math I	8
F16	M1101 Applied Statistics	50
F16	M1190 Calculus I	23
F16	M3362 Linear Algebra	7
S17	M1102 Basic Technical Mathematics II	17
S17	M1113 Applied Statistics	28
S17	M1186 Applied Calculus II	17
S17	M3335 Probability and Statistics	13
S17	M4401 Differential Equations	10
S17	M4998 Undergraduate Research	1
Summer 17	M1113 Applied Statistics	13
F17	M1510 Applied Tech. Math I	9
F17	M1550 Applied Statistics	26
F17	M1595 Applied Calculus I	10
F17	M3316 Calculus III	12
F17	M4998 Undergraduate Research	4
S18	M1550 Applied Statistics	40
S18	M2502 Calculus II	19
S18	M3550 Probability and Statistics	9

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

- Attended CBMS Conference in October 2014
- Spoke at Blue Ribbon Meetings
- Attended JMM in January 2015
- Presented at WVCTM conference in March of 2015
- Attended Teaching Professor Conference in June 2016

- Attended JMM in January 2018
- Attended MAA Sectional Meeting April 2018
- Attended PIC Math Workshop in May 2018

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.

(e) Indicate any other activities which have contributed to effective teaching.

- Attended Student Engagement workshop on campus in January 2015
- Attended Corequisite Mathematics presentation in May 2015
- Attended Corequisite Mathematics presentation in August 2016

(f) List professional books/papers published during the last five years.

**R.J. Niichel** "A bivariate CLT under rho-prime mixing." Brazilian Journal of Probability and Statistics.  
Vol. 28, no. 3 (2014)

(g) List externally funded research (grants and contracts) during last five years.

- NASA Faculty Research Enhancement Grant
- NASA/TMC<sup>2</sup> Research Grant
- MAA Preparation for Industrial Careers Math Grant

## Full-time Faculty Data

Name : Joseph Riesen Rank: Professor

Check One: Full-time x\_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph.D. Date Degree Received December 1993

Conferred by Northwestern University

Area of Specialization Group Cohomology

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 26

Years of employment in higher education 26 Yrs. of related experience outside higher education None

Non-teaching experience None

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	Math 1115 Trig and Elementary Functions	29
Fall 2016	Math 1185 Applied Calculus I	24
Fall 2016	Math 2212 Sets, Relations, and Functions	8
Fall 2016	Math 3316 Calculus III	12
Spring 2017	Math 1102 Applied Technical Math II	24
Spring 2017	Math 1115 Trigonometry and Elementary Functions	27
Spring 2017	Math 1190 Calculus I	19
Spring 2017	Math 3361 Abstract Algebra	4
Fall 2017	Math 1510 Applied Technical Math I	25
Fall 2017	Math 1185 Applied Calculus I	28
Fall 2017	Math 2212 Sets, Relations, and Functions	9
Fall 2017	Math 1190 Calculus I	9
Spring 2018	Math 1520 Applied Technical Math II	15
Spring 2018	Math 1540 Trigonometry and Elementary Functions	17
Spring 2018	Math 2501 Calculus I	23
Spring 2018	Math 2520 Theory of Numbers	3

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

- Attended University-wide Faculty Development Week Fall 2013-2017, Spring 2014-2018
- Graded AP Calculus Exams-Full week-8 hours/day each June 2013-2018 (Kansas City)
- Attended Developmental Math Conference, June 4-5, 2013, Flatwoods
- Attended three day Developmental of Remedial Mathematics Presentation and workshop, Fairmont State May 20-22, 2013
- Attended CCSS Workshop for Higher Education, April 3, 2013, Flatwoods
- Attended Combined Math Meeting-Forum for first two years of math, Reston, VA Oct 5-7, 2014
- Attended Title III Workshop for Co-Requisite Math courses-May 19, 2015
- Attended West Virginia Higher Education Co-requisite Mathematics Conference, May 15-16, 2017

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.

(e) Indicate any other activities which have contributed to effective teaching.

- Wrote and Graded WV State Math Field Day Team Power Question for State High School Competition (April 2016)
- Organized and facilitated the writing, grading, administering and hosting of the WV State Math Field Day Competition for high school students (April 2016)
- Organized transportation and brought students to Pi Mu Epsilon Student Math Conference at Youngstown State University (February 2018)

(f) List professional books/papers published during the last five years. **NONE**

(g) List externally funded research (grants and contracts) during last five years. **NONE**

## Full-time Faculty Data

Name : Robynn Shannon Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph.D. Date Degree Received 2005

Conferred by University of Connecticut  
 Area of Specialization Ecology

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 3  
 Years of employment in higher education 11 Yrs. of related experience outside higher education  
20  
 Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2015	MATH 1012-04 College Algebra Support	9
Fall 2015	MATH 1012-06 College Algebra Support	10

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Full-time Faculty Data

Name : Lyvon "Beth" Thompson Rank: Coordinator of Math Support / FEAP

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned M.Ed. Date Degree Received Dec. 20, 2008

Conferred by Fairmont State University

Area of Specialization Professional Studies with Online Learning Certification

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 14

Years of employment in higher education 14 Yrs. of related experience outside higher education 15

Non-teaching experience 3

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 16	MATH 1101: Applied Technical Math	38
F 16	MATH 1001: Appl. Tech Math Supp.	20
F 16	MATH 1011: Pre-College Algebra	29
F 16	MATH 1199: ST Core Test Support	16
S 17	MATH 1107: Fund. Conc. of Math	24
S 17	MATH 1007: Fund. Conc. of Math Support	24
S 17	MATH 1112: College Algebra	23
S 17	MATH 1012: College Algebra Support	23
F 17	MATH 1199: ST Core Test Support	16
F 17	MATH 1400: Foundations of Algebra	27
F 17	MATH 1400: Foundations of Algebra	24
F 17	MATH 1430: College Algebra with Support	12
S 18	MATH 1199: ST Praxis Prep for Math	4
S 18	MATH 1400: Foundations of Algebra	25
S 18	MATH 1407: Fund. Conc. of Math w/Supp.	27 (*instructor of record)
S 18	MATH 1430: College Algebra with Support	21
Summer 18	MATH 1407: Fund Conc of Math w/Supp-Onl	18

- (b) If degree is not in area of current assignment, explain.

Undergraduate degree is in chemistry with a math minor. One year of work (20+ hours) completed at Penn State in a chemistry doctoral program with a focus on computational chemistry. M.Ed. degree earned, which is important for curriculum design when working with math support students.

- (c) Identify your professional development activities during the past five years.

- Attended and served as a facilitator for Complete College America's Momentum Leadership Conference – Charleston, WV – Feb. 2018
- Attended Complete College America's National Convening as an invited presenter – New Orleans - Nov. 2017
- Collaborated with Casey Sacks, Vice-Chancellor of WVCTCS, on a Bridge to Baccalaureate NSF grant submission



- Attended WV Association of Developmental Education Conference – North Bend State Park – Oct. 2017
  - Attended Pearson Conference for Corequisite Education – Seven Springs Resort – Sept. 2017
  - Worked with the Office of Exploratory Advising to assist with freshmen orientations – 2016-17 AY
  - Presented at Fairmont Advising Network Meeting – Apr. 2017
  - Mentored two math faculty members from WV Tech to assist in corequisite math development – Apr. 2017
  - Developed and coordinated STEM bridge program for incoming freshman – Aug. 2016.
  - Developed and coordinated Math Skills workshops for high school seniors – May. 2017.
  - Presented at Fairmont Advising Network Meeting – Apr. 17
  - Mentored two math faculty from WV Tech to assist in coreq math development at their school – Apr. 2017
  - Project judge for WV State First Lego League Tournament – Dec. 2016
  - Attended WV Corequisite Academy – Stonewall Jackson – Sept. 2016
  - Attended WV HEPC CompactCON – Oct. 2016
  - Dana Center Co-requisite Workshop – May 2016
  - Attended & served as a panelist at WV Summit on Remedial Education – Charleston, WV – Apr. 2016
  - Attended WV HEPC CompactCON - Charleston, WV - Oct. 2015
  - Member of WV Team at Complete College America Corequisite Academy – Indianapolis, IN – Nov. 2015
  - Coordinated and attended the "Developmental Math" workshop by Loretta Griffy at Fairmont State – May 2015
  - Attended Conference Board of the Mathematical Sciences Forum – Washington, DC – Oct. 2014
  - Attended the “Introduction to Using iPads to Teach Math” workshop by Gwyn Whieldon – Fairmont State – Aug. 2014
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- Nominated for Straight Award - Spring 2018
  - Presented with WV team at Complete College America’s National Convening – Nov. 2017
  - Paid guest speaker at the Texas Conference on Corequisite Math – Austin – July 2017
  - Recognition of success of the Math Support Program in local media, as well as by WV HEPC and provost.
  - Invited to be a team member for the WV team at CCA’s Corequisite Academy.
  - Invited to speak as a panelist at the WV Summit for Remedial Education.
  - Judges’ award in Vex U robotics at the Catskills Invitational – Feb. 2017.
  - Outreach Mentor for Mountaineer Area Robotics – 2017 World FRC Chairman’s winners.
- (e) Indicate any other activities in which have contributed to effective teaching.
- Founded competitive Vex U (Millennial Falcons) team at Fairmont State – Aug. 2016 (ongoing)
    - Participated in numerous campus discussions about math support curriculum models.
    - Drafted successful curriculum proposal for 4 new Math Support courses.
    - Interview, supervise, and provide training for all new math support instructors.
    - Pilot and assess new curricular models
    - Advise, place, and provide overrides for all math support students in need of those services.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.
- Received WV HEPC Summer Bridge Grant – funds to develop and report on efficacy of math bridge programs - \$15,000 – Aug. 2016-May 2017.

## Full-time Faculty Data

Name : Lindsey Walck Rank: Instructor- Assistant Coordinator

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned M.A. Date Degree Received May 2014

Conferred by West Virginia University

Area of Specialization Secondary Education Mathematics

Professional registration/licensure Math 5-Adult teaching license WV

Yrs. of employment at present institution 3

Years of employment in higher education 3

Yrs. of related experience outside higher education 2

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	Math 1011 Pre-College Algebra	30
Fall 2016	Math 1011 Pre-College Algebra	27
Fall 2016	Math 1012 College Algebra Support	16
Fall 2016	Math 1012 College Algebra Support	13
Spring 2017	Math 1011 Pre-College Algebra	25
Spring 2017	Math 1112 College Algebra	12
Spring 2017	Math 1112 College Algebra	24
Spring 2017	Math 1012 College Algebra Support	12
Spring 2017	Math 1012 College Algebra Support	24
Summer 2017	Math 1112 College Algebra	12
Summer 2017	Math 1012 College Algebra Support	9
Fall 2017	Math 1407 Fundamental Concepts of Math with Support	17
Fall 2017	Math 1430 College Algebra with Support	24
Fall 2017	Math 1430 College Algebra with Support	22
Spring 2018	Math 1430 College Algebra with Support	20
Spring 2018	Math 1430 College Algebra with Support	20
Spring 2018	Math 1430 College Algebra with Support	20

- (b) If degree is not in area of current assignment, explain. N/A

- (c) Identify your professional development activities during the past five years.

Attended Innovative Educators Summit Workshop March 2018

Facilitator at Math Skills Improvement Workshop at Fairmont State May 2017

Attended HEPC Co-Requisite Math Workshop May 2017

Participant and Presenter at West Virginia Council of Teachers of Mathematics Annual Conference March 2017

Attended Complete College America Co-Requisite Workshop August 2016

Facilitator at STEM Bridge Program at Fairmont State 2016

Attended co-teaching and professional developmental training sessions hosted by Anne Benninghoff 2015-2016

Participant in Southern Regional Education Board (SREB) Math Design Collaborative (MDC) 2014-2015

Participant in Marion County Math Cadre 2013-2015

Conducted mini professional development session on project-based learning 2014

Attended National Association of Professional Development Schools Annual Conference 2014  
Attended West Virginia Council of Teachers of Mathematics Annual Conference 2013  
Attended National Council of Teachers of Mathematics Annual Conference 2013

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

Presenter at West Virginia Council of Teachers of Mathematics Annual Conference March 2017

- (e) Indicate any other activities in which have contributed to effective teaching.

President of Council for Mathematics Educators (CME) at WVU 2013-2014

Conducted action research and inquiry on effectiveness of guided notes on student achievement and understanding of math topics

Member of The National Society of Leadership and Success- WVU Chapter of Sigma Alpha Pi, National Society of Leadership and Success

Vice President of Council for Mathematics Educators (CME) at WVU 2013

- (f) List professional books/papers published during the last five years. N/A

- (g) List externally funded research (grants and contracts) during last five years. N/A

## Full-time Faculty Data

Name : James Weekley Rank: Instructor

Check One: Full-time X Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned MS Date Degree Received 2005

Conferred by University of Kentucky

Area of Specialization Pharmaceutical Sciences

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 12

Years of employment in higher education 12 Yrs. of related experience outside higher education 1

Non-teaching experience United States Navy 8yrs

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2016/Spring	Math 1012 College Algebra Support	15

- (b) If degree is not in area of current assignment, explain. Taught math support section
- (c) Identify your professional development activities during the past five years.  
Title III grant training
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Patricia Bush Rank: Adjunct Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Masters + 45 Date Degree Received 1980's

Conferred by West Virginia University

Area of Specialization Mathematics Education

Professional registration/licensure X Yrs. of employment at present institution >5

Years of employment in higher education >5 Yrs. of related experience outside higher education 30

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 12	MATH 1107 Fundamental Principles of Math	12
F 12	MATH 1107 Fundamental Principles of Math	10
S 13	MATH 1107 Fundamental Principles of Math	12
S 13	MATH 1107 Fundamental Principles of Math	13
S 14	MATH 1107 Fundamental Principles of Math	9

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

- (c) Identify your professional development activities during the past five years.

Participated in WV Council of Teachers of Mathematics Meetings  
 WV Council of Teachers of Mathematics, past member  
 Participant: Blackboard Training 2012

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

- (e) Indicate any other activities which have contributed to effective teaching.

- (f) List professional books/papers published during the last five years.  
 None

- (g) List externally funded research (grants and contracts) during last five years.  
 None

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Robert Clonch Rank : Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned M.A. (M.A. + 30) Date Degree Received 1975

Conferred by West Virginia University

Area of Specialization Mathematics Education

Professional registration/licensure 19 Yrs. of employment at present institution 15

Years of employment in higher education 21 Yrs. of related experience outside higher education 19

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	MATH 1107 Fundamental Concepts	24
F16	MATH 1112 College Algebra	25
F16	MATH 1112 College Algebra	30
S17	MATH 1107 Fundamental Concepts	24
Summer 2017	MATH 1107 Fundamental Concepts	12
F17	MATH 1507 Fundamental Concepts	22
F17	MATH 1530 College Algebra	24
F17	MATH 1530 College Algebra	29
S18	MATH 1507 Fundamental Concepts	21

- (b) If degree is not in area of current assignment, explain.

**Degree is in the area of the current assignment.**

- (c) Identify your professional development activities during the past five years.

**Participant: Blackboard 9.1 Training 2012**

**Participant: AMATYC Workshop 2013**

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

- (e) Indicate any other activities which have contributed to effective teaching.

**Member of Mathematical Association of America**

- (f) List professional books/papers published during the last five years.

- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Brittany Cuchta Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MS Date Degree Received May 2014

Conferred by Missouri University of Science and Technology

Area of Specialization Mathematics

Professional registration/licensure \_\_\_\_\_ -Yrs. of employment at present institution 2

Years of employment in higher education 6 Yrs. of related experience outside higher education 0

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	Math 1112 – College Algebra	31
Fall 2016	Math 1107 – Fundamental Concepts of Math	15
Fall 2016	Math 1112 – College Algebra	32
Spring 2017	Math 1011 – Pre-College Algebra	25
Spring 2017	Math 1112 – College Algebra with Support	6
Spring 2017	Math 1012 – College Algebra Support	6
Fall 2017	Math 1430 – College Algebra with Support	15
Fall 2017	Math 1430 – College Algebra with Support	12
Spring 2018	Math 1400 – Foundations of Algebra	12
Spring 2018	Math 1430 – College Algebra with Support	11

- (b) If degree is not in area of current assignment, explain. NA
- (c) Identify your professional development activities during the past five years.  
 Oct 2016 : Attended Project NExT workshop on “Teaching Math to Liberal Arts Majors”, Indiana, PA  
 Sept 2016: Attended Project NExT Workshop on teaching statistics
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
 Dec 2016: GTA Teaching Excellence Award (First Place)  
 May 2013: “We Love Your Class,” chosen by the freshman engineering class among all university instructors and professors at Missouri S&T  
 Dec 2013: GTA Teaching Excellence Award (Honorable Mention), chosen by the mathematics department at Missouri S&T; based on student feedback, performance, among other things.
- (e) Indicate any other activities in which have contributed to effective teaching. NA
- (f) List professional books/papers published during the last five years. NA
- (g) List externally funded research (grants and contracts) during last five years.  
 2014: “Exploring the Genetic Cause of Auxin Regulation in Arabidopsis,” a project in epigenomics; joint work with the biology department at University of Missouri – St. Louis  
 2012: “Modelling Gravitropism in Pea Plants Using MATLAB,” funded by NSF



## Adjunct Faculty/ Graduate Teaching Assistants

Name : Victor Wayne Daniel Rank: Adjunct Professor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned Ph. D. Date Degree Received 1970

Conferred by University of Virginia (Charlottesville)  
Area of Specialization Mathematics

Professional registration/licensure  Yrs. of employment at present institution 5  
Years of employment in higher education 30 Yrs. of related experience outside higher education 10  
Non-teaching experience 10

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 12	MATH 0080 Developmental Math	20
F 12	MATH 0080 Developmental Math	20
S 13	MATH 1100 Intermediate Algebra	13
S 13	MATH 1112 College Algebra	11
F 13	MATH 1107 Fundamentals of Mathematics	18
F 13	MATH 1100 Intermediate Algebra	11
S 14	MATH 1100 Intermediate Algebra	??
S 14	MATH 1112 College Algebra	??
F14	MATH 1107 Fundamentals of Mathematics	23

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**
- (c) Identify your professional development activities during the past five years.
- Participant: West Virginia Developmental Education Summit, Stonewall Jackson Resort, June 2013.
  - Participant: West Virginia Developmental Education Conference, Stonewall Jackson Resort, June 2012.
  - Participant: Modularizing Curricula -- Lessons and Best Practices, Charleston, March 2012.
  - Presentation: "Teaching Math and Statistics Concepts using a Generic Mathematical Package," West Virginia Academy of Science Annual Meeting, Fairmont, WV, April 2008.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Susan Goodwin Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ed.D. Date Degree Received 1997

Conferred by West Virginia University

Area of Specialization Mathematics Education

Professional registration/licensure WV Professional Teaching License Yrs. of employment at present institution 42

Years of employment in higher education 43 Yrs. of related experience outside higher education 5

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	Math 1112 College Algebra	10
S17	Math 1115 Trig and Elementary Functions	6
F17	Math 1530 College Algebra	7

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**
- (c) Identify your professional development activities during the past five years.  
Attended Blue Ribbon Math Committee Meeting
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
Severed on WV Selection Committee for the Presidential Award in Mathematics 2016
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Emily Harris Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MS Date Degree Received May 2014

Conferred by West Virginia University

Area of Specialization Safety Management

Professional registration/licensure N/A Yrs. of employment at present institution 0.75

Years of employment in higher education 0.5 Yrs. of related experience outside higher education 1

Non-teaching experience 4

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2014	MATH 1101 Applied Tech Math	25
Fall 2014	MATH 1101 Applied Tech Math Lab	15

- (b) If degree is not in area of current assignment, explain.  
 a. Bachelor of Science Degree from Wheeling Jesuit University December 2010.
- (c) Identify your professional development activities during the past five years.  
 American Society of Safety Engineers *May 2013 to May 2015*  
 Society of Women Engineers *August 2013 to May 2014*  
 Association for Women in Science *August 2013 to May 2014*
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
 Hawk Scholarship, *Wheeling Jesuit University*  
 Presidential Scholarship, *Wheeling Jesuit University*  
 Golden Key International Honor Society, *West Virginia University*
- (e) Indicate any other activities in which have contributed to effective teaching.  
 a. American Red Cross certified CPR/First Aid/AED Instructor.
- (f) List professional books/papers published during the last five years.  
 N/A
- (g) List externally funded research (grants and contracts) during last five years.  
 N/A

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Olena Hawranick Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time X Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned B.S. Date Degree Received 1987

Conferred by Kiev State University of Economics, Ukraine

Area of Specialization Finance and Credit

Professional registration/licensure n/a Yrs. of employment at present institution 3

Years of employment in higher education 7 Yrs. of related experience outside higher education 6

Non-teaching experience 8

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F16	1107 008 Fundamental Concepts of Math	28
	1007 003 Fundamental Concepts of Math Support	15
	1007 004 Fundamental Concepts of Math Support	14
	1012 005 College Algebra Support	20
S17	1107 005 Fundamental Concepts of Math	14
	1007 005 Fundamental Concepts of Math Support	14
F17	1407 005 Fundamental Concepts of Math with Support	24
	1407 006 Fundamental Concepts of Math with Support	24
S18	1407 004 Fundamental Concepts of Math with Support	22

- (b) If degree is not in area of current assignment, explain. Degree is in the area of current assignment.

- (c) Identify your professional development activities during the past five years.

Last five years - a student in Fairmont State majoring in Mathematics, graduated in May 2017 with B.S. in Math Summa Cum Laude.

Since Fall 2017 – now graduate student in WVU, Dept. of Mathematics.

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Karen Leffard Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MEd \_\_\_\_\_ Date Degree Received 4/2001

Conferred by \_\_\_\_\_  
Area of Specialization Math Education

Professional registration/licensure yes Yrs. of employment at present institution 1  
Years of employment in higher education 5 Yrs. of related experience outside higher education  
15  
Non-teaching experience 5

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>		<u>Enrollment</u>
Fall 2015	Co-Requisite Math	1007/1107	30
Spring 2016	Co-Requisite Math	1007/1107	30

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.  
I have been in a Doctoral Program in Math Education throughout the last five years. That was the only professional development I had.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
I presented at the NAPDS conference in Atlanta in March 2015.
- (e) Indicate any other activities in which have contributed to effective teaching.  
I supervised student teacher in mathematics. I worked as a liaison with the Professional Development Schools consortium with WVU's Benedum Program.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Hannah Ludwick Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned B.S., BA Date Degree Received May 2016

Conferred by Fairmont State University

Area of Specialization Mathematics, Secondary Education

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 3

Years of employment in higher education \_\_\_\_\_ Yrs. of related experience outside higher education \_\_\_\_\_

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2015/ Fall Semester	Math 1012 College Algebra Support	10

- (b) If degree is not in area of current assignment, explain.  
I did not yet receive my degree when I taught this course, but I was a peer mentor and tutor for several semesters beforehand. Since this was a support class, I used my experience as a tutor and mentor and my experience in education
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
Margaret MacLuckie Scholarship, graduated Summa Cum Laude
- (e) Indicate any other activities in which have contributed to effective teaching.  
Weekly meetings with the other College Algebra Support teachers
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name: Francisco J. Lüttecke Rank: Part-Time Instructor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned Ph.D. Date Degree Received 1992

Conferred by State University of New York at Stony Brook

Area of Specialization Mathematics ( Analysis and ODE's)

Professional registration/licensure  Yrs. of employment at present institution 11

Years of employment in higher education 41 Yrs. of related experience outside higher education 0

Non-teaching experience 0

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
SPRING 2012	MATH 1107	27
SUMMER 2012	MATH 1107	16
SPRING 2013	MATH 1107	28
SUMMER 2013	MATH 1107	9
SPRING 2014	MATH 1107	18

- (b) If degree is not in area of current assignment, explain.  
Degree is in area of current assignment.
- (c) Identify your professional development activities during the past five years.
- Acquisition and maintenance of personal mathematics library, currently over 100 volumes; historical, theoretical, etc
  - Acquisition of mathematics software programs, i.e., PCTeX, MATHEMATICA.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.  
None.
- (e) Indicate any other activities which have contributed to effective teaching.
- Translation of mathematics textbooks (junior high and high school). This work has provided an excellent source of current educational techniques and methods, as well as classroom strategies.
- (f) List professional books/papers published during the last five years.  
None. (But I've been working on counterexamples in General Topology and also on metric spaces.)
- (g) List externally funded research (grants and contracts) during last five years.  
None.



## Adjunct Faculty/ Graduate Teaching Assistants

Name :           Larry W Mason           Rank:           Instructor            
 Check One: Full-time        Part-time        Adjunct   X   Graduate Asst.       

Highest Degree Earned   Masters           Date Degree Received   May 1989          

Conferred by                           WVU                            
 Area of Specialization                   Speech Communication                  

Professional registration/licensure WVDE        Yrs. of employment at present institution   21    
 Years of employment in higher education   21   Yrs. of related experience outside higher education   37    
 Non-teaching experience                           

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F13	Math 1101 Tech Math I Math 1102/Tech Math II	30 27
S14	Math 1101 Tech Math I Math 1107/Fundamental Concepts	17 23
F 14	Math 1107/Fundamental Concepts Math 1102/Tech Math II	25 31
S15	Math 1112/College Algebra	14
F15	Math 1107/Fundamental Concepts (2 sections)	57

- (b) If degree is not in area of current assignment, explain.  
 20 plus graduate hrs in Mathematics.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Megan Michael Rank: Adjunct Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned B.S. Date Degree Received 2015

Conferred by West Virginia University

Area of Specialization Business Administration, Major in Marketing, Minor in Communication

Professional registration/licensure N/A

Yrs. of employment at present institution 5 months

Years of employment in higher education 5 months

Yrs. of related experience outside higher education 4

Non-teaching experience 4

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2017	Math 1400 Foundations of Algebra	16

- (b) If degree is not in area of current assignment, explain. Finance background considered adequate for developmental content. Taught with supervision from full-time faculty, who acted as instructor of record.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
Dean's List WVU 2012-2015  
President's List WVU 2011  
Member of The National Society of Leadership and Success
- (e) Indicate any other activities in which have contributed to effective teaching.  
Tutor high school and college students in Algebra, Geometry, and Spanish
- (f) List professional books/papers published during the last five years. N/A
- (g) List externally funded research (grants and contracts) during last five years. N/A

## Adjunct faculty/ Graduate Teaching Assistants

Name : Hannah Morris Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned BA Date Degree Received May 2011

Conferred by Fairmont State University

Area of Specialization Math

Professional registration/licensure R7M133700632 State of WV

Yrs. of employment at present institution 2

Years of employment in higher education 2

Yrs. of related experience outside higher education 7

Non-teaching experience N/A

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2017	11937 Foundations of Algebra MATH-1400-005	21
Fall 2017	11938 Foundations of Algebra MATH-1400-006	21
Spring 2018	21643 Foundations of Algebra MATH-1400-005	21

- (b) If degree is not in area of current assignment, explain.

- (c) Identify your professional development activities during the past five years.

I have taken several Professional Development courses within the last five years with Marion County Board of Education on subjects varying from technology specialties to Mathematics Design Collaborative. I have also completed 12 hours of graduate credit towards my recertification.

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

In 2014, I was selected by the Bill and Melinda Gates Foundation to attend the ECET2 (Elevating and Celebrating Effective Teaching and Teachers) Conference in New Orleans, LA. A few teachers were selected from each state to attend this conference.

In 2014, I presented at the SREB (Southern Regional Education Board) Conference in Nashville, TN. I presented to math educators around the nation about mathematical practices that I use in my classroom and how successful they were.

- (e) Indicate any other activities in which have contributed to effective teaching.

I am a member of the Marion County Math Cadre which meets monthly to discuss and implement strategies. We work on curriculum maps, math programs of study, vertical alignment, college and career readiness, and textbook adoption.

- (f) List professional books/papers published during the last five years.

None

- (g) List externally funded research (grants and contracts) during last five years.

None

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Diana Munza Rank: \_\_\_\_\_

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Masters (+90) Date Degree Received Masters - 1974

Conferred by West Virginia University

Area of Specialization Math Education

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution  
10

Years of employment in higher education 11 Yrs. of related experience outside higher education  
39

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F13	MATH 1107 Fundamental Concepts of Math	25
	MATH 1107 Fundamental Concepts of Math	27

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.  
Algebra Academy for incoming 9<sup>th</sup> graders – Writer, presenter and teacher coach Summers 2009 – 2012  
Co-instructor for Blue Ribbon Math 1 for Diverse learners course – WVU Summer 2013
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.  
Math Assessment Coach for RESA VII 2013 - 2014
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Jeffrey S. Noel Rank: Adjunct Instructor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned M.S. Date Degree Received \_\_\_\_\_

Conferred by West Virginia University

Area of Specialization Mathematics

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 5

Years of employment in higher education 5 Yrs. of related experience outside higher education \_\_\_\_\_

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Summer 2014	MATH 1107 Fundamental Concepts of Mathematics	25
Summer 2014	MATH 1112 College Algebra	24
Fall 2015	MATH 1007 Fundamental Concepts of Math Support	15

- (b) If degree is not in area of current assignment, explain. Degree is in area of assignment.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct Faculty/ Graduate Teaching Assistants

Name : Julia Oliveto Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned B.S. Date Degree Received May 2016

Conferred by Fairmont State University

Area of Specialization Mathematics & Chemistry

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution <1

Years of employment in higher education 1 Yrs. of related experience outside higher education 4

Non-teaching experience 0

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2015/Fall	MATH 1012 College Algebra Support	5
2015/Fall	MATH 1012 College Algebra Support	6

If degree is not in area of current assignment, explain.

- (b) Identify your professional development activities during the past five years.

n/a

- (c) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

FSU Outstanding Chemistry Senior (2015)  
FSU James LaRue Mathematics Award (2016)

- (d) Indicate any other activities in which have contributed to effective teaching.

Employed as library tutor for 4 years and FSU peer tutor for 2 years

- (e) List professional books/papers published during the last five years.

n/a

- (f) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

- (g) Indicate any other activities in which have contributed to effective teaching.

## Adjunct faculty/ Graduate Teaching Assistants

Name : Marcie Raol Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time X Adjunct \_\_\_\_\_ Graduate Asst. \_\_\_\_\_

Highest Degree Earned MA Date Degree Received May 2003

Conferred by West Virginia University

Area of Specialization Elementary Education, Middle School Math and Science Emphasis

Professional registration/licensure 5-Alg 1 Mathematics Yrs. of employment at present institution \_\_\_\_\_

Years of employment in higher education 3 Yrs. of related experience outside higher education 2

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2016 Spring	MATH 1012 – College Algebra Support	13
2016 Spring	PHSC 2202 – Geosphere	23
2015 Fall	PHSC 4412 – Elementary Science Methods	15
2015 Fall	PHSC 2201 – Exosphere	23
2015 Spring	SCIE 1100 – Science that Matters	18 ?
2015 Spring	PHSC 4412 – Elementary Science Methods	15
2014 Fall	PHSC 4412 – Elementary Science Methods	16
2014 Fall	PHSC 2201 – Exosphere	9 ?

- (b) If degree is not in area of current assignment, explain.  
My certification for the WV Department of Education is through Algebra 1 and my Algebra teaching experience combined with my experience teaching for higher education made me a good candidate for the college algebra support course.
- (c) Identify your professional development activities during the past five years.  
Professional development has focused on science instruction. Attendance at the WV Science Teacher Association Conference and online trainings through National Science Teacher Association.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (g) Indicate any other activities in which have contributed to effective teaching.



## Adjunct faculty/ Graduate Teaching Assistants

Name :     Jakob Rinehart     Rank:     Graduate Assistant    

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct \_\_\_\_\_ Graduate Asst.     x    

Highest Degree Earned     M.S.     Date Degree Received     2015    

Conferred by     West Virginia University    

Area of Specialization     Sport Management    

Professional registration/licensure     N/A    

Yrs. of employment at present institution     one semester    

Years of employment in higher education     one semester    

Yrs. of related experience outside higher education     N/A    

Non-teaching experience     4 yrs.    

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	MATH 1007 Fund. Conc. Math Support	13
Fall 2016	MATH 1107 Fund. Conc. Math	13

- (b) If degree is not in area of current assignment, explain. Master's earned and current student in M.Ed. program at institution. Supervised by coordinator of math support.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- Dean's List

President's List

RCBHS Academic Excellence Award

AEMA Scholarship
- (e) Indicate any other activities in which have contributed to effective teaching.
- Assistant director of Mountaineer Maniacs, Sport Management Graduate Program Treasurer, baseball coach and umpire, personal trainer, assistant director of football operations at FSU, student manager.
- (f) List professional books/papers published during the last five years. N/A
- (g) List externally funded research (grants and contracts) during last five years. N/A

## Adjunct faculty/ Graduate Teaching Assistants

Name : Sherea Savage Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Masters Date Degree Received May 2003

Conferred by West Virginia University

Area of Specialization Secondary Mathematics Education

Professional registration/licensure \_\_\_\_\_ X Yrs. of employment at present institution 4 yrs

Years of employment in higher education 4yrs Yrs. of related experience outside higher education 13yrs

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2015	Math 1112 College Algebra	8

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct faculty/ Graduate Teaching Assistants

Name : Jarrod Schiffbauer Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Ph.D. Date Degree Received August 2011

Conferred by WVU

Area of Specialization Theoretical Physics

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution \_\_\_\_\_  
 Years of employment in higher education \_\_\_\_\_ Yrs. of related experience outside higher education \_\_\_\_\_

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F15	MATH 1007: Fund Conc of Math Support	13
F15	MATH 1007: Fund Conc of Math Support	16
F15	MATH 1011: Pre-College Algebra	25
S16	MATH 1107: Fund. Conc. of Math	30
S16	MATH 1007: Fund Conc of Math Support	15
S16	MATH 1007: Fund Conc of Math Support	15

- (b) If degree is not in area of current assignment, explain.  
 Physics is a closely related field to mathematics. Experience teaching math classes through calculus, as well as non-linear dynamics.
- (c) Identify your professional development activities during the past five years.
- Invited faculty seminar at West Virginia University, Dept. of Mechanical and Aerospace Engineering, Oct. 2012
  - Recipient of Technion Postdoctoral Fellowship September, 2012-2014
  - Invited faculty seminar at Ben Gurion University Dept. of Solar Energy and Environmental Physics, June, 2012
  - Recipient of WVU Physics Dept. Teaching Assistant work performance award March, 2011
  - Invited participant in Israeli Science Foundation Research Workshop on Electrokinetic Phenomena in Nanocolloids and Nano-fluidics December, 2010
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

### CONTRIBUTED TALKS AND POSTERS

- Electrokinetic Instability, Geometric Confinement, and Overlimiting Conductance, J. Schiffbauer, M.B. Andersen, A. Mani, and G. Yossifon, APS-DFD, 2014
- Concentration-Polarization, Electro-Convection and Colloid Dynamics in Microchannel-Nanochannel Interface Devices, G. Yossifon, N. Liebowitz, Y. Green, U. Liel, J. Schiffbauer, and S. Park, APS-DFD, 2014

- Probing Space Charge and Resolving Overlimiting Current Mechanisms at the Micro-Nanochannel Interface Using Electrochemical Impedance Spectroscopy, N. Liebowitz, J. Schiffbauer, U. Liel, S. Park, and G. Yossifon, AiChE, 2014
- Electrical Impedance Spectroscopy of Colloid-Nanoslot Interactions, J. Schiffbauer, S. Park, and G. Yossifon, AiChE, 2014 Electrokinetic Colloid and Micro-Vortex Dynamics in Heterogeneous Nano-Slot Devices, G. Yossifon, N. Liebowitz, Y. Green, J. Schiffbauer, and S. Park ,AiChE, 2014
- Electrical impedance characterization of micro-nanochannel devices, J. Schiffbauer, U. Liel, S. Park, N. Liebowitz, and G. Yossifon, ACS Colloids and Surfaces, 2014 Electroconvection in Heterogeneous Permselective Systems, Y. Green, N. Leibowitz, J. Schiffbauer, S. Park, and G. Yossifon, ACS Colloids and Surfaces, 2014
- Probing space charge and resolving overlimiting current mechanisms at the micro-nanochannel interface using electrochemical impedance spectroscopy, J. Schiffbauer, N. Liebowitz, U. Liel, S. Park, and G. Yossifon,, ELKIN 2014
- Probing electrokinetics in microchannels and nanochannels with electrochemical measurements, J. Schiffbauer, S. Park, and G. Yossifon, APS-DFD 2013
- Geometric Modulation of Electro-Osmosis of the Second Kind in Micro-Nanochannel Interface Devices, G. Yossifon, N. Leibowitz, Y. Green, J. Schiffbauer, and S. Park, APS-DFD 2013 Transient response of the micro-nanochannel interface near the overlimiting transition, J. Schiffbauer, N. Leibowitz, S. Park, U. Liel, and G. Yossifon, BIFD 2013
- Transient response of the micro-nanochannel interface: effects of fluid-flow, space charge, and non-ideal selectivity, J. Schiffbauer, S. Park, U. Liel, and G. Yossifon, AMN 2013
- Transient response at the microchannel-nanochannel interface: chronopotentiometry, chronoamperometry, and electrochemical impedance , J. Schiffbauer, Y. Green, S. Park, and G. Yossifon, APS-DFD 2012
- J. Schiffbauer p. 6 Role of Electro-Osmosis in Microchannel-Nanochannel Impedance Response J. Schiffbauer and G. Yossifon, AiChE Annual Meeting 2012
- Computational modeling of traveling wave electrophoresis, R. Correll, J. Schiffbauer, and L. Carroll, APS March Meeting 2012

(e) Indicate any other activities in which have contributed to effective teaching.

(f) List professional books/papers published during the last five years.

#### REFEREED JOURNAL PUBLICATIONS

- [18] Transient Electrokinetic Response and Single-Frequency Impedance of Charge-Selective Interfaces J. Schiffbauer, N. Liebowitz, and G. Yossifon, manuscript in preparation
- [17] Ion Current Rectification in Funnel-Shaped Nanochannels: Hysteresis and Inversion Effects L. Rosentsvit, W. Wang, J. Schiffbauer, H-C Chang, and G. Yossifon, manuscript submitted to J. Chem. Phys.

(g) List externally funded research (grants and contracts) during last five years.

## Adjunct faculty/ Graduate Teaching Assistants

Name : AMANDA M SMITH Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MASTER IN EDUCATION Date Degree Received DECEMBER 2016

Conferred by FAIRMONT STATE UNIVERSITY  
 Area of Specialization DIGITAL MEDIA, NEW LITERACIES AND LEARNING

Professional registration/licensure \_\_\_\_\_ Yrs. of employment at present institution 3  
 Years of employment in higher education \_\_\_\_\_ Yrs. of related experience outside higher education \_\_\_\_\_  
 Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2016	MATH 1007-007 Fund Concepts of Math Support	14
	MATH 1007-008 Fund Concepts of Math Support	14
	MATH-1107-005 Fund Concepts of Math	28
Spring 2017	MATH 1011-002 Pre-College Algebra	25
	MATH 1012-005 College Algebra Support	19
	MATH 1112-005 College Algebra	19
Summer 2017	MATH 1007-001 Fund Concepts of Math Support	9
	MATH-1107-001 Fund Concepts of Math	9
Fall 2017	MATH 1400-01 Foundations of Algebra	22
	MATH 1400-02 Foundations of Algebra	24
Spring 2018	MATH 1400-01 Foundations of Algebra	22
	MATH 1400-02 Foundations of Algebra	22

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct faculty/ Graduate Teaching Assistants

Name : Heather Snodgrass Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Post masters Date Degree Received December 2016

Conferred by Marshall University

Area of Specialization School Administration

Professional registration/licensure WV State Teaching License

Yrs. of employment at present institution 2

Years of employment in higher education 2 Yrs. of related experience outside higher education 16

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2016/Fall	Math 1007/1107 Fund Concepts of Math with Support	27
2017/Spring	Math 1007/1107 Fund Concepts of Math with Support	6
2017/Fall	Math 1407 Fund Concepts of Math with Support	23
2018/Spring	Math 1407 Fund Concepts of Math with Support	23

- (b) If degree is not in area of current assignment, explain.

I have an undergrad degree in education with a specialization in math. I also have a masters in education as well.

- (c) Identify your professional development activities during the past five years.

Attended various sessions offered through Marion County Board of Education regarding good practices in teaching and

especially teaching mathematics.

Also completed my post masters degree in school administration with many professional development opportunities built into this program.

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

- (e) Indicate any other activities in which have contributed to effective teaching.

Work with the pre-service teachers who were assigned to our school from Fairmont State.

- (f) List professional books/papers published during the last five years.

- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct faculty/ Graduate Teaching Assistants

Name : Grant Spencer Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MA Date Degree Received 2007

Conferred by WVU

Area of Specialization Mathematics

Professional registration/licensure X Yrs. of employment at present institution 12 part-time

Years of employment in higher education 12 Yrs. of related experience outside higher education 17

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
S 15	MATH 1112 College Algebra	30
S 15	MATH 1102 Applied Technical Math II	30
F 15	MATH 1112 College Algebra	30
S 16	MATH 1112 College Algebra	30
S 16	MATH 1102 Applied Technical Math II	30
Summer I 2016	MATH 1112 College Algebra	30
F 16	MATH 1112 College Algebra	30
S 17	MATH 1112 College Algebra	30
S 17	MATH 1207 Fundamental Concepts	30
S 17	MATH 1207S Support Fundamental Concepts	30
F 17	Math 1112 College Algebra	30
F 17	Math 1207 Fundamental Concepts	30
F 17	Math 1207S Support Fundamental Concepts	30

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**
- (c) Identify your professional development activities during the past five years.  
 Supervised 63 secondary math teachers in Harrison County Schools 2009-Present  
 Led Common Core trainings in Math I, Math II, Math III, and Math IV 2011 – Present  
 Led technology integration sessions using iPads in the Math classroom 2011 – Present  
 Mentor new hires in Harrison County schools 2013-Present  
 Attended WVCTM conference in 2012 and 2013  
 Attended WVDE sessions on school improvement  
 Attended AP training sessions 2013 - Present
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.



2010 Harrison County Teacher of the Year Runner-Up  
Invited to lead sessions at the Teacher Leadership Institute by the WVDE

- (e) Indicate any other activities in which have contributed to effective teaching.  
I am well versed in Carnegie-problem based learning and using technology in the classroom  
I work on the connection between high school and college mathematics with our teachers via the ACCUPLACER, ACT, and SAT
- (f) List professional books/papers published during the last five years.  
None
- (g) List externally funded research (grants and contracts) during last five years.  
None

## Adjunct faculty/ Graduate Teaching Assistants

Name : Carol Stewart Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned MA Communication Studies Date Degree Received December 1996

Conferred by West Virginia University

Area of Specialization \_\_\_\_\_

Professional registration/licensure WV Permanent Certificate in Secondary Education

Yrs. of employment at present institution 32

Years of employment in higher education 32 Yrs. of related experience outside higher education 32

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2016/Fall	Math 1101 App Tech Math Support	13
	Math 1101 App Tech Math I	32
	Math 1102 App Tech Math II	15
2017/Spring	Math 1101 Applied Technical Math I	29
	Math 1001 App Tech Math I Support	16
2017/Fall	Math 1510 Applied Technical Math I	6
	Math 1520 Applied Technical Math II	17
2018/Spring	Math 1510 Applied Technical Math I	25
	Math 1520 Applied Technical Math II	12

- (b) If degree is not in area of current assignment, explain.

AB in Secondary Education Mathematics 7-12 Fairmont State College  
 Masters plus 30 hours of graduate work which include C& I and Mathematics courses from WVU  
 Facilitator for College Algebra and College Trigonometry courses offered through WVU at North Marion High School

- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities in which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.

## Adjunct faculty/ Graduate Teaching Assistants

Name : Merle Thomas, Jr. Rank: Adjunct Instructor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned M.A. Date Degree Received 1961

Conferred by University of Texas

Area of Specialization Mathematics

Professional registration/licensure  Yrs. of employment at present institution 15

Years of employment in higher education 56 Yrs. of related experience outside higher education 35

Non-teaching experience 3

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 12	Math 1102 Applied Tech Math II	6
S13	Math 1102 Applied Tech Math I	9
F13		
S14	Math 1102 Applied Tech Math I	12

- (b) If degree is not in area of current assignment, explain. Degree is in area of current assignment
- (c) Identify your professional development activities during the past five years.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.



## Adjunct faculty/ Graduate Teaching Assistants

Name : Paula Vilone Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_  
 Highest Degree Earned M.A. Date Degree Received 1977

Conferred by West Virginia University  
 Area of Specialization Mathematics Education

Professional registration/licensure X Yrs. of employment at present institution 13  
 Years of employment in higher education 17 Yrs. of related experience outside higher education  
35  
 Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
F 12	MATH 1112 College Algebra	26
F12	MATH 1112 College Algebra	26
S13	MATH 1112 College Algebra	26
S13	MATH 1112 College Algebra	23
F13	MATH 1112 College Algebra	25
F13	MATH 1112 College Algebra	24

- (b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**
- (c) Identify your professional development activities during the past five years.
- Blackboard Training
  - MyLabsPlus Training
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.
- (f) List professional books/papers published during the last five years.  
None
- (g) List externally funded research (grants and contracts) during last five years.  
None

## Adjunct faculty/ Graduate Teaching Assistants

Name : Brittany Vincent Rank: Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned Doctorate Date Degree Received December 2016

Conferred by West Virginia University

Area of Specialization Pure Mathematics, Research in Undergraduate Mathematics Education

Professional registration/licensure yes Yrs. of employment at present institution 5

Years of employment in higher education 8 Yrs. of related experience outside higher education

1

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
2018/Spring	Math 1530 College Algebra	8
2017/Fall	Math 1507 Fundamental Concepts of Math	19
2016/Fall	Math 1107 Fundamental Concepts of Math	27
2015/Spring	Math 1107 Fundamental Concepts of Math	18
2015/Spring	Math 1107 Fundamental Concepts of Math	17

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.  
 Attended and presented a talk at the Research in Undergraduate Mathematics Education Conference, 2014  
 Attended the 2016 RUME Conference and presented preliminary results for the research related to my thesis.
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.  
 N/A
- (e) Indicate any other activities in which have contributed to effective teaching.  
 Conducted research and completed thesis on undergraduate calculus students' understanding of the tangent line and how this impacts their comprehension of the derivative.
- (f) List professional books/papers published during the last five years.  
 Calculus Students' Early Concept Images of Tangent Lines (2014)
- (g) List externally funded research (grants and contracts) during last five years.  
 Thesis Research- First Semester Calculus Students' Concept Definitions and Concept Images of the Tangent Line and How These Relate to Students' Understandings of the Derivative

## Adjunct faculty/ Graduate Teaching Assistants

Name : Lindsey Walck Rank: Adjunct Instructor

Check One: Full-time \_\_\_\_\_ Part-time \_\_\_\_\_ Adjunct X Graduate Asst. \_\_\_\_\_

Highest Degree Earned M.A. Date Degree Received May 2014

Conferred by West Virginia University

Area of Specialization Secondary Education Mathematics

Professional registration/licensure Math 5-Adult teaching license WV

Yrs. of employment at present institution 1 Years of employment in higher education 1

Yrs. of related experience outside higher education 2 Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
Fall 2015	Math 1011 Pre-College Algebra	25
Spring 2016	Math 1011 Pre-College Algebra	24

- (b) If degree is not in area of current assignment, explain. N/A
- (c) Identify your professional development activities during the past five years.

Attended co-teaching and professional developmental training sessions hosted by Anne Benninghoff 2015-2016  
 Participant in Southern Regional Education Board (SREB) Math Design Collaborative (MDC) 2014-2015  
 Participant in Marion County Math Cadre 2013-2015  
 Conducted mini professional development session on project-based learning 2014  
 Attended National Association of Professional Development Schools Annual Conference 2014  
 Attended West Virginia Council of Teachers of Mathematics Annual Conference 2013  
 Attended National Council of Teachers of Mathematics Annual Conference 2013

- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition in last five years.

Presenter at West Virginia Council of Teachers of Mathematics Annual Conference March 2017

- (e) Indicate any other activities in which have contributed to effective teaching.

President of Council for Mathematics Educators (CME) at WVU 2013-2014  
 Conducted action research and inquiry on effectiveness of guided notes on student achievement and understanding of math topics  
 Member of The National Society of Leadership and Success- WVU Chapter of Sigma Alpha Pi, National Society of Leadership and Success  
 Vice President of Council for Mathematics Educators (CME) at WVU 2013

- (f) List professional books/papers published during the last five years. N/A

- (g) List externally funded research (grants and contracts) during last five years. N/A



## Adjunct faculty/ Graduate Teaching Assistants

Name : Kimberly Hope Wright Rank: Adjunct Instructor

Check One: Full-time  Part-time  Adjunct  Graduate Asst.

Highest Degree Earned MS Date Degree Received 2010

Conferred by West Virginia University

Area of Specialization Math Education

Professional registration/licensure  Yrs. of employment at present institution 1/2

Years of employment in higher education 1/2 Yrs. of related experience outside higher education 4

Non-teaching experience \_\_\_\_\_

To determine compatibility of credentials with assignment:

- (a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

<u>Year/Semester</u>	<u>Course Number &amp; Title</u>	<u>Enrollment</u>
S14	Math 1107 Fundamentals of Math	27

- (b) If degree is not in area of current assignment, explain.
- (c) Identify your professional development activities during the past five years.  
 FSHS – Math Cadre  
 WV Math I training  
 WV Smarter Balance training  
 WV NxG Standards/Math Curriculum Training
- (d) List awards/honors (including invitations to speak in your area of expertise) or special recognition  
 In last five years.
- (e) Indicate any other activities which have contributed to effective teaching.  
 High School Math Teacher at Fairmont Senior High School
- (f) List professional books/papers published during the last five years.
- (g) List externally funded research (grants and contracts) during last five years.