# PROGRAM REVIEW

## Fairmont State Board of Governors

**Format for Programs Without Specialized Accreditation**

**Date Submitted:** 4/24/09

**Institution:** Fairmont State University

**Program:** Bachelor of Science in 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:**

__X__ **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:**

The math program at Fairmont State University (FSU) provides students with a quality educational experience that prepares them for a variety of careers upon graduation. The curriculum supports numerous academic programs on the campus of FSU, and the faculty provides a supportive environment in assisting students to master course content and program outcomes. The efforts extended by the faculty in helping students to be successful are beyond what is normally expected of the faculty, and the faculty is commended for these efforts.

The faculty needs to address student recruitment and retention. Further, the faculty must continue the collection and analysis of assessment data on a yearly basis. Program improvements in the future should be based on this assessment data being collected. It is necessary for the faculty to adjust course sequencing to reduce the number of low enrolled courses and the number of electives offered each semester. The faculty must also reduce the number of independent studies they undertake so that they can devote more time to student recruitment, retention, new curriculum development, and their own professional development. The faculty should also have discussions with other program areas on campus to address the duplication of Calculus based courses.

Lastly, the institution must address the need for more faculty to support the math program. While the numbers of majors in the program are low, the math program is clearly understaffed, and we are utilizing far too many adjuncts to meet programmatic needs. This is detrimental to fostering new initiatives, increasing the number of majors, and improving student success. The Dean of the College of Science and Technology highly recommends the continuation of this program.

**Signature of person preparing report:** _____ **Date** 4/24/09

**Signature of Dean or School Head** _____ **Date** 4/24/09

| | |
|---|---|
| **Signature of Provost and Vice President for Academic Affairs:** | **Date** |
| **Signature of President:** | **Date** |
| **Signature of Chair, Board of Governors:** | **Date** |

# Bachelor of Science Degree in Mathematics

2009 Review

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## PROGRAM DESCRIPTION

### Bachelor of Science in Mathematics at Fairmont State University

Critical thinking, logical reasoning, paying attention to detail, using precise language, and problem solving are skills that one acquires in any mathematics program. These are also skills that make one successful as a scientist, a systems analyst, a statistician, a market analyst, an industrial consultant, a cryptologist, an economist, a physician, a manager, a lawyer, and a host of other careers.

The Bachelor of Science degree in Mathematics equips students for employment in a wide variety of fields while simultaneously preparing them for graduate study in mathematics, engineering, statistics, law, or computer science. Moreover, the mission of the mathematics B.S. degree program supports and complements that of the university by providing students with the skills and confidence to be lifelong independent learners and helping them develop the disposition and ability to apply mathematical methods and ideas to a wide variety of problems, including problems not previously posed.

A challenging, but supportive, environment fosters intellectual growth in our students. Using a variety of methods, mathematics department faculty provide students with demanding course work designed to enhance their problem solving skills and help them build a solid understanding of related mathematical concepts. Faculty are dedicated to providing students with encouragement, sufficient success to build self-confidence and generous amounts of individual attention. Students learn how to read and digest mathematical material on their own and are encouraged to form cooperative groups in which they discuss the mathematics they are studying and improve their team problem-solving skills. Advanced majors often take an upper division course on a directed study basis from mathematics faculty who teach these courses beyond their regular full-time teaching loads. No part-time faculty members are used in the delivery of the program.

**A. Adequacy.**

**1. 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. Abstract algebra and linear algebra provide exposure to basic algebraic structures and more techniques for problem solving. The probability and statistics course adds breadth to the student's core of knowledge in an important and applicable area of applied mathematics. Electives broaden the student's exposure to various areas of mathematics and must include at least one of the more advanced courses: Real Analysis or Topology.

In 2006 the state requirements for education degrees changed so that all candidates for

secondary education degrees must complete the equivalent of a major in their field. Thus, math education majors must complete the requirements for a B. S. in Mathematics. The B.S. degree program in mathematics and the program which leads to a teaching degree for mathematics in grades 5 through adult differ only in the choice of electives. The teaching degree requires two courses, Introduction to Discrete Mathematics and Modern Geometry, which may be used as electives for the B.S. in Mathematics. There are no special mathematics courses for the teaching degree except for a course on methods for teaching mathematics. Students who are interested in teaching at the secondary level are able to complete the requirements for both degrees and can do so in four years, using the education degree as the minor required for the B.S. degree.

Four of the thirty graduates from May, 2004, through May, 2008, completed both degrees, thereby broadening their career options. Appendix I illustrates the requirements for the B.S. degree, the requirements for the B.A. Ed. degree with comprehensive (5-adult) teaching field in mathematics, the requirements for the Mathematics Subject Specialization for grades 5 through 9, and the requirements for a mathematics minor.

**2. Faculty.**

The Mathematics Department consists of five full-time faculty members who teach only mathematics courses, one member whose position is 50 percent in mathematics and 50 percent in computer science, one member who teaches 50 percent mathematics and 50 percent physics, and one member whose position is 25 percent in mathematics and 75 percent physics. Each term there are from nine to eighteen part-time faculty members teaching classes at the main campus, at the Caperton Center, or off-campus. Of the eight full-time faculty members teaching only on the main campus, five hold doctoral degrees, another has completed more than 60 hours of graduate credit in mathematics and has attained the rank of associate professor. The others have masters degrees in mathematics. Seven of the eight full-time faculty members hold tenure.

Generally, the teaching load of a full-time faculty member consists of twelve or thirteen credit hours and includes a variety of introductory courses and more advanced courses. Adjunct faculty are used exclusively in general studies and in the service courses for degree programs in technology, the sciences, and business. All mathematics courses required for the B.S. degree are delivered by the full-time mathematics faculty. The average FTE for full time mathematics faculty is 2.07. Data sheets for all mathematics faculty are found in Appendix II.

**3. Students.**

**a. Entrance standards.**

Admission to all four-year bachelor degree programs at the university is restricted to graduates of approved high schools who have either:

(1) a 2.0 high school grade average (GPA) and a composite score of at least 18 on the

Enhanced American College Test (ACT) or 870 on the Scholastic Aptitude Test (SAT)

or (2) at least a 3.0 high school GPA and ACT or SAT test scores.

In addition, students must have successfully completed:

| Units (Years) | Required Units |
|---|---|
| 4 | English (including courses in grammar, composition and literature) |
| 3 | Social Studies (including U.S. History) |
| 4 | Mathematics (three units must be Algebra I and higher) |
| 3 | Science (all courses to be college preparatory laboratory science) |
| 1 | Arts |
| 2 | Foreign Language (two units of the same foreign language) |

Any student who has been admitted to the university under the requirements listed above may choose to pursue a B.S. degree in Mathematics. It is expected that such a student will have sufficient mathematics background to begin in MATH 1190, Calculus I. That background must include high school Algebra I, Algebra II, geometry, and trigonometry. A student who lacks the expected preparation will be required to remove any deficiencies by completing appropriate lower level mathematics courses. The State has mandated that all students must have an ACT Math score of at least 19 before entering any college level mathematics course. In addition, the mathematics faculty has developed a graduated set of minimal requirements for each of the entry level mathematics courses. Refer to Appendix XI for a complete list of these requirements.

**b. Entrance abilities.**

Since many students earning a B.S. degree in Mathematics also double major in Computer Science or earn a B.A. degree in Education with a mathematics teaching specialization, accurate statistics are difficult to calculate. However, for those students who have officially declared themselves to be mathematics majors, the average ACT score is among the highest at the University. The following table gives comparative data for the last five years.

**Composite ACT scores for BS/BA degrees**

| Year | Math Majors (Rank) | Chemistry Majors | Computer Science Majors | University |
|---|---|---|---|---|
| 2004 | 23.50 | 22.88 | 21.97 | 25.50 |
| 2005 | 28.00 | 22.64 | 22.94 | 30.00 |
| 2006 | 27.17 | 21.73 | 23.30 | 30.00 |
| 2007 | 25.45 (1st) | 21.71 | 23.00 | 25.45 |
| 2008 | 26.63 (1st) | 21.54 | 22.70 | 26.63 |

For the previous five years, the average for math majors was 23.99, compared to 23.08 for Chemistry majors, 22.02 for Computer Science majors and 24.52 for the University.

**c. Exit abilities.**

For more than ten years, senior candidates for the B. S. in Mathematics degree have been asked, but not required, to sit for the ETS majors exam in mathematics. From 2003 through 2008, twenty-one of the twenty-six eligible students have taken the exam. Scores ranged from 137 to 199 with a mean of 152.1 and standard deviation of 13.9. According to the ETS, the mean score of 6290 students who took the exam from February 2004 to June 2008 was 155.9 with standard deviation of 17.9. Over the same time period, thirteen of the fourteen candidates for the B.A. in Education with 5-adult Math specialization passed the PRAXIS exam, as did twenty five of the twenty eight candidates for the B.A. in Education with 5-9 Math specialization. A more detailed display of exam scores and pass rates can be found in Appendix VIII.

**d. Graduates.**

Graduates with a Bachelor of Science degree in Mathematics have been successful both in finding employment in their field and in gaining admittance to graduate programs in mathematics, computer science, or related fields. Recent graduates are now pursuing, or have pursued, graduate degrees at West Virginia University, Clemson University, Hood College, Fairmont State, and the University of California in San Diego. As of January 14, 2009, thirty-four of the sixty-six graduates from all of our mathematics programs in the last five years had responded to a survey from our program. The survey revealed that twenty-nine of the thirty-four respondents either have, are pursuing, or are planning to pursue graduate degrees. Many are teaching at various levels in the public schools in several states. Those who are not teaching have been employed by Fairmont Federal Credit Union, National Cyber-Forensics and Training Alliance, Dominion Gas, International Game Technology, and a Naval Support Facility, to name a few. Included in Appendix IX is a copy of the survey sent to all graduates from any of our programs since 2003. Information from those forms has been incorporated above.

**4. Graduate and Employer Satisfaction.**

In the survey mentioned in 3. d. above, ninety percent of the graduates responding rated as above average their perception of how well the education they received at FSU prepared them for employment. Seventy-nine percent rated as above average their perception of how well their education prepared them for graduate studies. Summary results from the graduate survey are available in Appendix IX.

Employers of or graduates have also been surveyed. As of February 3, 2009, seven of the twenty-two employers surveyed had responded. In every category, all but one graduate had favorable reviews. A copy of the survey sent and summary results are included in Appendix IX.

**5. Resources.**

**a. Financial.**

For the year 2008-2009, the Computer Science, Mathematics and Physics Department (CSMP) has an operating budget of $22,337.70 of which about one third, or $7,445.90, is available for the mathematics programs. The School of Science and Technology has $9400.00 in library funds available for FY 2009.

Because of the large overlap between the program for the B.S. degree in Mathematics and the program for the B.A. Ed. degree with the 5-12 Comprehensive Teaching Specialization in Mathematics, and the fact that there are no separate sections of the mathematics courses required for both, elimination of one would probably eliminate the other. The B.S. program in Mathematics supports and complements other degree programs in the natural sciences and in Computer Science and provides another option for those students completing a mathematics teaching degree. Of the twenty-nine students who are working toward one of the two mathematics degrees, nine will double major or minor in Computer Science.

**b. Facilities.**

The physical facilities of our department help us to create a supportive atmosphere for our students. All classrooms and faculty offices are located in the new part of the Engineering Technology building. Faculty offices are clustered together and are near a student study room and lounge which is equipped with comfortable armchairs as well as tables with chairs, a computer, and two whiteboards. This area allows students to gather to work problems, study for exams, and converse. Faculty members frequently stop by to chat or are summoned there to help a group of students. University-paid tutors are available to students in the study room for about twenty hours per week. The tutors are upper division mathematics majors who have been selected by department faculty because of their ability to communicate mathematical ideas. Since the study room is near faculty offices, tutors can easily consult with faculty about assignments that have been given and the level of understanding required for a particular course. Faculty are available to help the tutor convey the message to the student being tutored, if necessary. For a quieter study area, the university library is just across the walkway from the Engineering Technology building.

The mathematics program owns classroom sets of various versions of Texas Instruments calculators along with other Texas Instrument auxiliary equipment and software. In addition,

fifteen laptop computers, overhead projectors, video projectors, DVD recorders, and projectors are available for classroom instruction. All full-time faculty members have up-to-date computers in their offices, and adjunct faculty have computer access. Computer labs are available for students at a number of locations on campus including three labs in the library. One computer is available in the study room for student use and demonstration purposes, and the Engineering Technology Building has wireless computer access. Available software includes Minitab, Geometer's Sketchpad, and Mathcad. A complete list of available technology can be found in Appendix VII.

The University Library System provides a wealth of information and services to the entire university community with over 300,000 books, journals, government documents, and alternative media. The library's website provides access to numerous databases, full text journals, and many other sources. There are labs with over 150 computers in the three library sites, and students have lab access for more than 139 hours per week. Library staff offer a wide variety of services including free interlibrary loans for both faculty and staff. Included in the library holdings are more than 2900 items related to mathematics, including both books and journals. Appendix XIV contains a list, provided by the Library, detailing services and holdings. Lists of specific mathematics related materials are too long for this document, but access to the lists is available on request.

### 6. Assessment Information. (Student and Programmatic)

Recently revised, the mission of the mathematics degree programs is to equip students with analytic and problem solving skills for careers and graduate work. Programs outcomes with learning objectives, assessment tools, and standards form the basis of the assessment plan for the B.S. in Mathematics. We are in the earlier stages of implementing a full assessment process. In Fall, 2008, learning outcomes, learning objectives, assessment measures, and standards were developed for all 1100 level mathematics courses. By March, 2009, the same will be completed for all 2200 level courses with 3300 and 4400 level courses to be completed by the spring of 2010. We have begun to collect data for the program assessment measures and for selected courses. We will be expanding data collection and analysis in the near future. Copies of all assessment documents are included in Appendix X.

In addition to the new assessment process, our faculty have for years used the following tools to assess the progress of students as they move through our programs:

- ACT scores and high school record to determine appropriate point of entry into the lower level mathematics sequence,
- course examinations which may include objective and/or multiple choice questions but which are increasingly free-response as the level of the courses increases,
- oral presentations which are encouraged in many entry level courses and required in upper

division courses,

- a summary course chosen from Math 3375 and Math 3391,
- dialogue with students throughout their college careers,
- discussions among the faculty about the progress of various students, which leads to better advising through early intervention for example, success on PRAXIS, ETS, and GRE exams, and continuing communication with students after they have graduated.

In the spring of 2004, the math program used the ETS Higher Education Assessment Program Self-Assessment Service. Twenty-four of the one hundred twenty three questionnaires sent to math alumni for the preceding five years were completed and returned for analysis. Summary results for the various categories are provided in Appendix XIII. In general, the alumni were satisfied with the mathematics program, the learning environment, and faculty concern for students. They were somewhat less satisfied with employment assistance and available resources.

### 7. Previous Reports.

The recommendations of the 2003 State Program Review Committee was that the B.S. degree program in Mathematics be continued. Dr. Barbara Faires, a consultant hired for our last review, was complimentary to our program. Our math education programs are fully accredited by NCATE. Documents related to various reviews are included in Appendix XIII. The most recent review, the Productivity Review 2003-2008, can be found in Appendix XVI.

### 8. Advisory Committee.

In the fall term of 2008, an advisory board was formed for the B.S. in Mathematics. Members of the board include three mathematics faculty members from local public schools, two faculty members from higher education outside Fairmont State University (FSU), one NASA engineer, one professional with mathematics background, and one recent graduate from the FSU with several years experience in industry. At a recent meeting, the board supported our request for more designated space for our program, helped us revise our mission statement, and approved the mission statement and our program goals.

### 9. Strengths and weaknesses.

One of the strengths of our department and programs is that we are able to attract students by giving them confidence to pursue a mathematics degree and by showing them the benefits of studying mathematics. Such benefits include opportunities for interesting and rewarding careers and for great personal satisfaction and the near certainty of employment in their chosen field.

While the number of graduates from our degree programs is small compared to many other fields, it represents approximately .92 percent of the number of recent graduates of

Fairmont State University with baccalaureate degrees. The national average for 2005-06 was about 1 percent according to National Center for Educational Statistics.

Strengths mentioned by those graduates who have responded to our survey include:

- course content focused on theory rather than mechanics,
- encouraged responsibility, inspired creative/logical thinking - great for analytical work,
- small classes and therefore more individual attention,
- faculty who are concerned about their students' progress and understanding,
- for education majors great help with preparing lessons and sharing activities that could be used in the classroom,
- strong relationships between faculty and students,
- teachers who make students become independent learners.

Weaknesses mentioned were that some people needed more use of statistical tools, and some would like to have more extracurricular activities. Some of the people who received teaching degrees said they needed more exposure to the use of technology or more experience in teaching students with varying ability levels within the same group.

Some weaknesses can be easily addressed in the existing program. Several of the comments addressed experience in the classroom. The School of Education at FSU has revised their program so that student teaching will be 14+ weeks, instead of 10. During the semester before student teaching, students will observe (do clinical hours) in the classroom where they will student teach. This will enable special methods teachers to work more closely with public school faculty to better prepare pre-service teachers. Clinical hours (observation hours) have also increased since several of those graduates who made the comments were at FSU.

**B. Viability.**

Introductory courses are available at the Caperton Center and at several other sites as listed in Appendix III. The mathematics program provides courses which support nearly all programs at the University. These courses include three three-hour courses for Elementary Education majors, two three-hour courses for Technology majors, and Applied Calculus I and II. Recent work has been done to create a Business Calculus course. While we do have a course designed specifically as a general studies mathematics course, nearly all of the mathematics courses will satisfy the general studies mathematics requirement. Appendix IV contains a list of departmental courses that are required for students in other majors. There are no articulation agreements with other institutions for delivery of the B.S. degree in Mathematics.

Most upper division courses are offered on a regular basis. When necessary, faculty members have taught upper division courses on a directed study basis, in addition to their normal teaching load and without extra compensation. Refer to Appendix V for a complete list of all upper division courses offered in the last five years and Appendix XI for a course rotation

schedule for the next four years.

Most of the faculty in the Computer Science Department have mathematics degrees and strongly encourage their students to augment the Computer Science degree with in Mathematics. Recently, more mathematics courses have been added to the requirements for the BS in Computer Science. Both mathematics faculty and computer science faculty will increase efforts to encourage CS students to double major or at least minor in mathematics. More extensive background in mathematics will enhance their employment options. In addition, mathematics combines well with any science and with most business-oriented degrees. Strong demand in those areas has a positive effect in our majors.

A predicted shortage of teachers in the near future should create increased interest in our teacher education programs and should impact positively on the B.S. program as well. From now on, all students earning a BA Ed. with 5-adult Mathematics specialization will complete a BS in Mathematics and the mathematics faculty will strongly encourage those students to apply for both degrees upon graduation. In the lower level mathematics courses, particularly those designed for the Elementary Education program, faculty will continue to recruit students to the Mathematics Education programs.

In Fall, 2009, a learning community will begin operation. The community will be open to all students in the College of Science and Technology, which includes mathematics. Plans include the designation of a separate floor in one of the dormitories, extra tutoring, and mentoring by upperclassmen for the students in the learning community.

Last fall, the College of Science and Technology hosted a Technology Challenge for students from two high schools. Students interested in mathematics played a game of Math Trivial Pursuit, which was designed by the math faculty and run by current Fairmont State math majors. Of the three students who asked the dean for admission information during the challenge, two asked for details on becoming a mathematics major. The Challenge will be an annual event for recruitment.

To retain students, the mathematics faculty work hard to create a supportive environment, encouraging students to frequent faculty offices, form study groups with peers, and spend time in the study room mentoring younger students. Free tutoring by upper level mathematics students is available for at least twenty hours per week in the study room. Twice each year, mathematics faculty arrange student trips to conferences to broaden their exposure to mathematics and to build comradery among students.

Costs per student credit hour for the last three years were:

| | |
|---|---|
| University 2007-2008 academic year | $85.65 |
| University average 2005-2008 | $74.88 |
| Mathematics 2007-2008 | $114.54 |

Many factors play a part in the fact that our average cost per student credit of $114.54 was significantly higher than the three year average for the University. Of the eight full-time faculty

who teach in our department, including five who teach only mathematics, five hold doctoral degrees, and five have been teaching in our department for between seventeen and forty-one years. Also, students often complete requirements for both mathematics degrees, but are not always counted twice. The same problem occurs with other students electing to double major.

**C. Necessity.**

**1. Job Placement.**

Our graduates have been highly successful in obtaining employment in areas related to their degree. The University's Office of Career Services provides students and alumni assistance in career exploration, gaining career related experience, and conducting employment searches. Guidance in resume writing and interviewing techniques is provided. Students may utilize interactive computer software and personalized career counseling to clarify their options. An extensive career resource library is also available.

This office has an informative handout that lists several career areas, types of employers, and career strategies for students earning a degree in mathematics.

Full and part-time job openings, as well as internships and other practical experience opportunities are listed on College Central, an online resume and employment database. An annual Career/Job Fair is held. At the Spring 2008 Job Fair, three companies listed internships and six organizations listed full-time employment opportunities in the Mathematics/Statistics/Computer Science area.

Faculty members also provide students with information on current internship, employment, and graduate school opportunities. Typically, students have the opportunity to travel with faculty members to an annual mathematics conference. This gives students an exposure to the professional culture of mathematics.

**2. Similar Programs.**

Geographically, the nearest state college with a comparable degree is West Liberty, which is approximately a two hour drive from Fairmont. West Virginia University, 20 miles away, has a comparable program but lacks the intimate, supportive atmosphere of our program.

**D. Consistence with Mission.**

The mathematics program mission mirrors that of the university. As stated previously, our goal is to produce 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 University 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 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.

APPENDIX I

Institution Fairmont State University  Person Responsible for Report _____

Degree program Bachelor of Science in Mathematics

| Courses Required in Major<br><br>All are Mathematics Courses | Total Required Hours | Additional Credit Required in Major | Total Hours | Related Fields Courses Required | Total Hours | Required in Liberal Studies/Electives | Total for Degree |
|---|---|---|---|---|---|---|---|
| 1190 Calculus I | 4 | Three Math electives that | | CS 1102 Principles of | 3 | Total Hours Required | 43 |
| 2200 Logic | 3 | include ONE of: | | Programming I | | | |
| 2212 Sets, Relations and Functions | 3 | 3375 Topology | | | | Math 1190 counts for | -4 |
| 3315 Calculus II | 4 | 3391 Real Analysis | | ONE of: | | Liberal Studies math | |
| 3316 Calculus III | 4 | | | CHEM 1101 General | 4 or | | |
| 3335 Probability and Statistics | 3 | and TWO of: | | Chemistry I | 5 or | Physics or Chemistry | -4 |
| 3361 Abstract Algebra | 3 | 2206 Number Theory | | CHEM 1106 Chemical | 4 or | course counts as | |
| 3362 Linear Algebra | 3 | 2216 Discrete Mathematics | | Principles I | 5 | Liberal Studies Lab | |
| | | 3342 Numerical Analysis | | PHYS 1101 Intro. to | | Science | |
| Total | 27 | 3372 Modern Geometry | | Physics I | | | |
| | | 4401 Differential Equations | | PHYS 1105 Principles | | | |
| | | | | of Physics I | | | |
| | | Total | 9 | | | Total Hours | 35 |
| | | | | Total | | | |
| | | | | | 7-8 | | |
| A minor is required. | | | | | | | |

**Professional society that may have influenced the program and requirements:** NCATE and NCTM requirement and standards have influenced the requirements for the BS in Mathematics since candidates for secondary teaching degrees in mathematics must complete a mathematics major and since there are no separate mathematics courses, except for the course (Math 4431) in teaching methods, for students in the two programs.

## Requirements for the Bachelor of Arts in Education
## Comprehensive Teaching Field in Mathematics for 5 - adult

Total 36 semester hours

| | | |
|---|---|---|
| MATH 1190 | Calculus I | 4 |
| MATH 2212 | Sets, Relation and Functions | 3 |
| MATH 2216 | Introduction to Discrete Mathematics | 3 |
| MATH 3315 | Calculus II | 4 |
| MATH 3316 | Calculus III | 4 |
| MATH 3335 | Probability and Statistics | 3 |
| MATH 3361 | Abstract Algebra | 3 |
| MATH 3362 | Linear Algebra | 3 |
| MATH 3372 | Modern Geometry | 3 |
| MATH 4431 | Methods and Materials for Teaching Mathematics | 3 |
| COMP 1102 | Principles of Programming I | 3 |

## Requirements for a 5-9 Mathematics Teaching Specialization

Total 26 Semester Hours

| | | |
|---|---|---|
| MATH 1112 | College Algebra* | 3 |
| MATH 1113 | Applied Statistics | 4 |
| MATH 1115 | Trig and Elementary Functions | 3 |
| MATH 1185 | Applied Calculus I | 4 |
| MATH 2216 | Introduction to Discrete Mathematics | 3 |
| MATH 2251 | Structure of the Real Numbers | 3 |
| MATH 2252 | Data Analysis and Geometry | 3 |
| MATH 3353 | Math Methods for Elementary Teachers | 3 |
| MATH 4431 | Methods and Materials in Teaching Mathematics | 3 |

* omit if Math ACT greater than or equal to 23

## Requirements for a Minor in Mathematics

Total 24 Semester Hours

| | | |
|---|---|---|
| MATH 1190 | Calculus I | 4 |
| MATH 3315 | Calculus II | 4 |
| MATH 3316 | Calculus III | 4 |

**AND four electives chosen from the following groups, with at least one from each group and two at the 3300 level or above.**

Group I

| | | |
|---|---|---|
| 2216 | Intro. To Discrete Mathematics | 3 |
| 3335 | Probability and Statistics | 3 |
| 3342 | Numerical Analysis | 3 |
| 3362 | Linear Algebra | 3 |
| 4401 | Differential Equations | 3 |

Group II

| | | |
|---|---|---|
| 2200 | Mathematical Logic | 3 |
| 2206 | Intro. To Number Theory | 3 |
| 2212 | Sets, Relations and Functions | 3 |
| 3361 | Abstract Algebra | 3 |
| 3372 | Modern Geometry | 3 |
| 3375 | Topology | 3 |
| 3391 | Real Analysis | 3 |

NOTE: On the faculty data forms that follow, any lines that do not apply to a particular faculty member have been omitted to conserve pages in the document.

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FACULTY DATA FORM

NAME: _____ Rank: _____

Employment Status: _____
Highest Degree Earned _____ Conferred by_____
Date Degree Received _____ Area of Specialization _____
Professional registration/licensure
Yrs. of employment at present institution ___ years
Years of employment in higher education ___ years
Yrs. of related experience outside higher education ___ years
Non-teaching experience ___years

(Courses taught in the last tow years with enrollments.)

| **Semester** | **Course Number and Title** | **Enrollment** |
|---|---|---|

1. Identify your professional development activities during the past five years.
2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years.
3. Indicate any other activities which have contributed to effective teaching.
4. List professional books/papers published during the last five years.
5. List externally funded research (grants and contracts) during last five years.

NAME: James O. Dunlevy Rank: Associate Professor

Employment Status: Full-time
Highest Degree Earned Masters Conferred by Arizona State University
Date Degree Received 1964 Area of Specialization Mathematics
Professional registration/licensure
Yrs. of employment at present institution 40 years
Years of employment in higher education 40 years
Yrs. of related experience outside higher education 40 years
Non-teaching experience 0

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1112 College Algebra | 30 |
| Spring 2007 | MATH 1190 Calculus I | 16 |
| Spring 2007 | MATH 2200 Mathematical Logic | 21 |
| Spring 2007 | MATH 3335 Probability and Statistics | 14 |
| | | |
| Fall 2007 | MATH 1112 College Algebra | 41 |
| Fall 2007 | MATH 1190 Calculus I | 16 |
| Fall 2007 | MATH 1115 Trigonometry & Elem Functions | 32 |
| Fall 2007 | MATH 2216 Intro to Discrete Mathematics | 27 |
| | | |
| Spring 2008 | MATH 1112 College Algebra | 27 |
| Spring 2008 | MATH 1190 Calculus I | 12 |
| Spring 2008 | MATH 2200 Mathematical Logic | 26 |
| Spring 2008 | MATH 3335 Probability and Statistics | 12 |
| | | |
| Fall 2008 | MATH 1112 College Algebra | 30 |
| Fall 2008 | MATH 1112 College Algebra | 32 |
| Fall 2008 | MATH 1190 Calculus I | 20 |
| Fall 2008 | MATH 2216 Intro to Discrete Mathematics | 25 |

1. Identify your professional development activities during the past five years.
*Attended the West Virginia Higher Education Mathematics Symposium twice.*
*Attended the WVMATYC conference twice.*
*Attended the annual conference of the Department of Mathematics and Statistics at Miami University of Ohio three times*
*Participated in faculty development projects at FSU each year.*

NAME: Melanie Jeanne Harris Rank: Professor

Employment Status: Full-time

Highest Degree Earned Doctorate Conferred by University of Pittsburgh

Date Degree Received 1991 Area of Specialization Math/Topology/Generalized Metric Spaces

Professional registration/licensure

Yrs. of employment at present institution 38 years

Years of employment in higher education 38 years

Yrs. of related experience outside higher education 38 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1115 Trigonometry & Elem Functions | 24 |
| Spring 2007 | MATH 3315 Calculus II | 23 |
| Spring 2007 | MATH 3361 Abstract Algebra | 11 |
| Spring 2007 | MATH 3375 Topology | 10 |
| | | |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 31 |
| Fall 2007 | MATH 1115 Trigonometry & Elem Functions | 34 |
| Fall 2007 | MATH 2212 Sets, Relations and Functions | 15 |
| Fall 2007 | MATH 3316 Calculus III | 15 |
| | | |
| Spring 2008 | MATH 1107 Fund Concept of Mathematics | 30 |
| Spring 2008 | MATH 1115 Trigonometry & Elem Functions | 27 |
| Spring 2008 | MATH 3361 Abstract Algebra | 14 |
| Spring 2008 | MATH 3391 Real Analysis | 5 |
| | | |
| Fall 2008 | MATH 1107 Fund Concept of Mathematics | 31 |
| Fall 2008 | MATH 1115 Trigonometry & Elem Functions | 30 |
| Fall 2008 | MATH 1190 Calculus I | 21 |
| Fall 2008 | MATH 2212 Sets, Relations and Functions | 9 |
| Fall 2008 | MATH 3362 Linear Algebra | 7 |
| Fall 2008 | MATH 4400 Honors project | 1 |

1. Identify your professional development activities during the past five years.
   *Attended annual math conference at Miami University 4 years.*
   *Participated in numerous faculty development activities provided by FSU.*
2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years.
   *Nominated for the Boram Teaching Award 2006.*

NAME: Susan Goodwin Rank: Professor

Employment Status: Full-time

Highest Degree Earned Doctorate Conferred by West Virginia University

Date Degree Received 1997 Area of Specialization Math Education

Professional registration/licensure Permanent WV 7-12 Math Teaching Certification

Yrs. of employment at present institution 34 (20 full time/ 14 part time) years

Years of employment in higher education 36 (20 full time/ 16 part time) years

Yrs. of related experience outside higher education 36 (20 full time/ 16 part time) years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1101 App Tech Math I | 27 |
| Spring 2007 | MATH 1113 Applied Statistics | 23 |
| Spring 2007 | MATH 2210 Math for Elem Teachers II | 23 |
| Spring 2007 | MATH 3323 Math for Elem Teachers III | 22 |
| | | |
| Fall 2007 | MATH 2251 Structure of the Real Numbers | 17 |
| Fall 2007 | MATH 2210 Math for Elem Teachers II | 20 |
| Fall 2007 | MATH 3323 Math for Elem Teachers III | 25 |
| Fall 2007 | MATH 4431 Method/Material Teaching Math | 6 |
| | | |
| Spring 2008 | MATH 1102 Applied Tech Mathematics II | 24 |
| Spring 2008 | MATH 1113 Applied Statistics | 21 |
| Spring 2008 | MATH 2252 Data Analysis & Geometry | 30 |
| Spring 2008 | MATH 3323 Math for Elem Teachers III | 19 |
| | | |
| Fall 2008 | MATH 1112 College Algebra | 18 |
| Fall 2008 | MATH 2251 Structure of the Real Numbers | 31 |
| Fall 2008 | MATH 3353 Math Methods for Elem Teachers | 10 |
| Fall 2008 | MATH 3372 Modern Geometry | 10 |
| Fall 2008 | MATH 4431 Method/Material Teaching Math | 5 |

1. Identify your professional development activities during the past five years.

*1. Higher Ed Math Symposium (04, 05, 06, 07, 08) Conf. Chair (07, 08) 2. WVCTM Conf. (04, 05, 06, 07, 08) College V. P. (05, 06, 07, 08) 3. T3 Conf. 07 4. Appalachian Assoc. of Math. Teacher Educators Conf. 07 5. Web Algebra Training 05, 06, 07, 08 6. FSU Faculty development (04, 05, 06, 07, 08) 7. Quantile training 08 8. Formative Assessment Training 05 9. WVMATYC Conf. (04, 05, 06, 07, 08) 10. NCATE Training 08 11. Math Teacher Preparation in Appalachia 04, 05 12. Organized TI preservice workshop 06 13. AMAYTC National Conference 11/08 14. TI Navigator Training 06, 07*

2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years. *WVCTM 2008 Teacher of the Year. Presentations 1. "The MALT Shoppe: Math Literature, and the TI-15" at the T3 Regional Conf. 3/17/07 2. "Quantitative Literacy, Math Anyone" at the Higher Ed Math Symposium 2/24/07 3. "Developing a NCTM Student Affilliate" at WVCTM 3/14/08 4. "Transitions to Proof: A Guided Discussion among Participants " at Higher Ed Math Symposium 4/5/08 5. "Book a Math Trip" at WVCTM Conference 2005*

3. Indicate any other activities which have contributed to effective teaching. *Co-directed Project Ample (05, 06, 07, 08) Served on WV State Math Task Force (04, 05, 06, 07, 08) Member Blue Ribbon Math Committee*

NAME: Joseph Riesen Rank: Professor

Employment Status: Full-time

Highest Degree Earned Doctorate Conferred by Northwestern University

Date Degree Received Fall 1993 Area of Specialization Mathematics-Abstract Algebra

Professional registration/licensure

Yrs. of employment at present institution 16 years

Years of employment in higher education 16 years

Yrs. of related experience outside higher education 16 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1102 Applied Tech Mathematics II | 9 |
| Spring 2007 | MATH 1185 Applied Calculus I | 24 |
| Spring 2007 | MATH 1186 Applied Calculus II | 17 |
| Spring 2007 | MATH 2206 Intro to the Theory of Numbers | 11 |
| Spring 2007 | MATH 1199-Ring Theory-Honors Project | 1 |
| | | |
| Fall 2007 | MATH 1185 Applied Calculus I | 24 |
| Fall 2007 | MATH 1190 Calculus I | 27 |
| Fall 2007 | MATH 3362 Linear Algebra | 18 |
| | | |
| Spring 2008 | MATH 1185 Applied Calculus I | 23 |
| Spring 2008 | MATH 1186 Applied Calculus II | 17 |
| Spring 2008 | MATH 3315 Calculus II | 25 |
| Spring 2008 | MATH 1199-Vector Calculus | 2 |
| | | |
| Fall 2008 | MATH 1112 College Algebra | 30 |
| Fall 2008 | MATH 1185 Applied Calculus I | 24 |
| Fall 2008 | MATH 3316 Calculus III | 18 |

1. Identify your professional development activities during the past five years. *2004: Youngstown State University Pi Mu Epsilon Conference, February, WVCTM Annual Conference, March, The Mathematics of the GPS presentation at WVCTM, March Attended Math Conference, Miami University of Ohio (Students also attended) 10-04 Attended Java Workshop, Univ. of Dayton, May 18-20 , Workshops August--Mon-Wed. 10 hours, WVCTM Conference--Flatwoods, March 2005 Organized ( and drove) Student Trip to Youngstown State University for the Pi Mu Epsilon Student Math Conference AP Grading--56 hours--7 full days, June 1-8, 2005 Presentation about AP Calculus to the WV Higher Ed Math Symposium--March 2005 Attended WV Higher Ed Math Symposium--March 2005 Attended WVCTM Conference, March 2006, Organized Student Trip to Youngstown State University for the Pi Mu Epsilon Student Math Conference Organizing Committee for WV Higher Ed Math Symposium--March 2006 Attended WV Higher Ed Math Symposium--March 2006 Grading AP Calculus Exams-June 2006 Faculty Development in Spring and Fall 2006->20 hours 2007: Student Math Conference (Youngstown, OH)-February 17, Student Math Conference (Miami, OH) September 28-29 WV Higher Ed Math Symposium (Two days) WV Higher Ed Calculus Working Group (36 hrs)Writing CSOs for a High School Calculus Course that is NOT AP Calculus WVCTM-Post Conference-T^3: TI-86 Presentation (90 minutes) + 2-day conference Spring Faculty development-- 25 hours Fall Faculty development activities-- 12 hours Higher Ed Math Symposium--12 hours TI^3 Conference-- 7 hours WVCTM Conference--8 hours 2008: AP Calculus Reading/grading 56 hrs June, College Professors Teaching Conf. May 15-17, Great Teachers Conference June 23-26*

NAME: A. Dennine LaRue Rank: Assistant Professor

Employment Status: Full-time

Highest Degree Earned Masters Conferred by West Virginia University

Date Degree Received 1984 Area of Specialization Mathematics

Professional registration/licensure WV Permanent Teacher Certification for Math 5-12 and Journalism 7-12

Yrs. of employment at present institution 19 years

Years of employment in higher education 19 years

Yrs. of related experience outside higher education 19 years

Non-teaching experience 3

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1110 Math for Elem Teachers I | 20 |
| Spring 2007 | MATH 1112 College Algebra | 27 |
| Spring 2007 | MATH 1112 College Algebra | 28 |
| Spring 2007 | MATH 1115 Trigonometry & Elem Functions | 25 |
| | | |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 9 |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 30 |
| Fall 2007 | MATH 1112 College Algebra | 37 |
| Fall 2007 | MATH 1112 College Algebra | 41 |
| | | |
| Spring 2008 | MATH 1107 Fund Concept of Mathematics | 29 |
| Spring 2008 | MATH 1112 College Algebra | 29 |
| Spring 2008 | MATH 1112 College Algebra | 29 |
| Spring 2008 | MATH 1115 Trigonometry & Elem Functions | 21 |
| | | |
| Fall 2008 | MATH 1107 Fund Concept of Mathematics | 30 |
| Fall 2008 | MATH 1112 College Algebra | 30 |
| Fall 2008 | MATH 1112 College Algebra Honors | 14 |
| Fall 2008 | MATH 1115 Trigonometry & Elem Functions | 30 |

1. Identify your professional development activities during the past five years. *K-6 Math Specialization Committee Meeting. New Faculty Meeting discussing book by Ken Bain: What the Best College Teachers Do. Academic Alliances meetings with high school math and science teachers. Showcase on Learning meetings with Dee Fink. Blue Ribbon Math Meetings. Higher Education Math Symposium.*

3. Indicate any other activities which have contributed to effective teaching. *Officer for WV State Math Field Day and Region VII Math Field Day. Proctored at Marion County Math Field Day. Teacher for SM2 Summer Math Enrichment Camp. Researched popular books about math topics to be added to the Fairmont State Library. Have read several popular math books about topics in my classes to use for enrichment. Presented general studies outcomes and helped with a presentation on teaching proof at the Higher Education Math Symposium. Also co-presented activities on teaching transformation in College Algebra.*

NAME: Randy Baker Rank: Assistant Professor

Employment Status: Full-time

Highest Degree Earned Masters Conferred by West Virginia University

Date Degree Received August, 1985 Area of Specialization Numerical Analysis, Combinatorics

Professional registration/licensure Member of MAA, AMS, AMATYC

Yrs. of employment at present institution 23 years

Years of employment in higher education 26 (includes 2 yrs. Grad. Ass't.) years

Yrs. of related experience outside higher education 26 (includes 2 yrs. Grad. Ass't.) years

Non-teaching experience Mathematician, U.S. Dept. of Energy, 1 year

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1170 Intro to Math Analysis | 11 |
| Spring 2007 | MATH 4401 Differential Equations | 9 |
| Fall 2007 | MATH 1101 App Tech Math I | 21 |
| Fall 2007 | MATH 1170 Intro to Math Analysis | 18 |
| Spring 2008 | MATH 1107 Fund Concept of Mathematics | 30 |
| Spring 2008 | MATH 1170 Intro to Math Analysis | 10 |
| Fall 2008 | MATH 1170 Intro to Math Analysis | 19 |
| Fall 2008 | MATH 3342 Numerical Analysis | 8 |

1. Identify your professional development activities during the past five years. *Attended the Annual Miami University (Oxford, Ohio) Dept. of Math and Statistics Conference, 2004, 2006, and 2007. Attended the West Virginia Mathematics Association of Two-Year Colleges conference, 2007 and 2008 Participated in the West Virginia Higher Ed. Math Symposium, 2007 and 2008. Attended the Mathematics textbooks web seminar, FSU, 2004. Participated in a My Math Lab seminar, FSU, 2008. Participated in three Mathematica web seminars, Wolfram Education Group, 2008.*

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NAME: Donald Stephen Haynes Rank: Professor

Employment Status: Full-time

Highest Degree Earned Doctorate Conferred by Florida State Univ.

Date Degree Received 1971 Area of Specialization Physics

Professional registration/licensure

Yrs. of employment at present institution 39 years

Years of employment in higher education 39 years

Yrs. of related experience outside higher education 39 years

Non-teaching experience Engineer (Lockheed-Ga Co.)-1963-1964, 1965

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1112 College Algebra | 32 |
| Fall 2007 | MATH 1101 App Tech Math I | 26 |
| Spring 2008 | MATH 1101 App Tech Math I | 26 |
| Fall 2008 | MATH 1101 App Tech Math I | 30 |
| Fall 2008 | MATH 1101 App Tech Math I | 31 |

2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years. *Boram Award for Teaching Excellence Faculty Recognition Award*

NAME: Ashley M. Martin, III Rank: Professor

Employment Status: Full-time

Highest Degree Earned Doctorate Conferred by Florida State University

Date Degree Received 1970 Area of Specialization Experimental Nuclear Physics

Professional registration/licensure

Yrs. of employment at present institution 29 years years

Years of employment in higher education 39 years years

Yrs. of related experience outside higher education 39 years years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1112 College Algebra | 32 |
| Spring 2007 | MATH 1112 College Algebra | |
| Fall 2007 | MATH 1112 College Algebra | 41 |
| Fall 2007 | MATH 1112 College Algebra | 41 |
| Spring 2008 | MATH 1112 College Algebra | 20 |
| Spring 2008 | MATH 1112 College Algebra | 29 |
| Fall 2008 | MATH 1112 College Algebra | 31 |
| Fall 2008 | MATH 1112 College Algebra | 31 |

1. Identify your professional development activities during the past five years. *Faculty Devel. Sessions twice yearly one week per term. June 2007 Real-Time Physics Workshop Beaverton, OR*

2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years. *Fairmont State Faculty Recognition Award Spring 2007.*

3. Indicate any other activities which have contributed to effective teaching. *Developed and used MyMath Lab/Course Compass online Homework and Quiz Exercises ( Last 3 years ) Developed and used Mastering Physics online Homework Exercises. ( Last 3 years ).*

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NAME: Ted LaRue Rank: Instructor / Lecturer

Employment Status: Full-time

Highest Degree Earned Masters Conferred by West Virginia University

Date Degree Received 1981 Area of Specialization Mathematics

Yrs. of employment at present institution 27 years

Years of employment in higher education 27 years

Yrs. of related experience outside higher education 27 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1112 College Algebra | 22 |
| Fall 2007 | MATH 1112 College Algebra | 44 |
| Spring 2008 | MATH 1112 College Algebra | 15 |
| Spring 2008 | MATH 1112 College Algebra | 30 |
| Fall 2008 | MATH 1112 College Algebra | 31 |

Indicate any other activities which have contributed to effective teaching. *Constant adjustment to address needs of a constantly changing audience (set of students) based on personal interaction with those students.*

NAME: Samuel Nelson Elliott Rank: Instructor / Lecturer

Employment Status: Part-time

Highest Degree Earned Masters Conferred by Salem Teikyo University

Date Degree Received 1998 Area of Specialization Mathematics

Yrs. of employment at present institution 25 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1107 Fund Concept of Mathematics | 30 |
| Spring 2007 | MATH 1107 Fund Concept of Mathematics | 31 |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 35 |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 36 |
| Spring 2008 | MATH 1107 Fund Concept of Mathematics | 30 |
| Spring 2008 | MATH 1107 Fund Concept of Mathematics | 34 |
| Fall 2008 | MATH 1107 Fund Concept of Mathematics | 33 |
| Fall 2008 | MATH 1107 Fund Concept of Mathematics | 33 |

1, Identify your professional development activities during the past five years. *2004 T^3 Conference 2005 T^3 conference 2006 T^3 conference 2008 8th grade math academy*

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NAME: Kevin Wright Rank:

Employment Status: Part-time

Highest Degree Earned Masters Conferred by WVU

Date Degree Received 1980 Area of Specialization Mathematics Education

Yrs. of employment at present institution 31 years

Years of employment in higher education 16 years

Yrs. of related experience outside higher education 28 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1102 Applied Tech Mathematics II | 25 |
| Spring 2007 | MATH 1107 Fund Concept of Mathematics | 17 |
| Fall 2007 | MATH 1101 App Tech Math I | 30 |
| Fall 2007 | MATH 1102 Applied Tech Mathematics II | 25 |
| Spring 2008 | MATH 1101 App Tech Math I | 28 |
| Spring 2008 | MATH 1102 Applied Tech Mathematics II | 20 |
| Fall 2008 | MATH 1101 App Tech Math I | 32 |
| Fall 2008 | MATH 1102 Applied Tech Mathematics II | 29 |

NAME: Grant Spencer Rank: Instructor / Lecturer

Employment Status: Part-time

Highest Degree Earned Masters Conferred by West Virginia University

Date Degree Received 2007 Area of Specialization Mathematics

Years. of employment at present institution 3 years

Years of employment in higher education 3 years

Yrs. of related experience outside higher education 3 years

| Semester | Course Number and Title | Enrollment |
|---|---|---|
| Spring 2007 | MATH 1112 College Algebra | 26 |
| Spring 2007 | MATH 1107 Fund Concept of Mathematics | 10 |
| Fall 2007 | MATH 1112 College Algebra | 30 |
| Fall 2007 | MATH 1107 Fund Concept of Mathematics | 19 |
| Fall 2007 | MATH 1101 App Tech Math I | 21 |
| Spring 2008 | MATH 1112 College Algebra | 33 |
| Fall 2008 | MATH 1112 College Algebra | 32 |
| Fall 2008 | MATH 1107 Fund Concept of Mathematics | 24 |
| Fall 2008 | MATH 1101 App Tech Math I | 17 |

1. Identify your professional development activities during the past five years. 1*AP Mentor credentials AP Calculus Institutes College Algebra and College Trigonometry facilitator training through WVU.*

2. List awards/honors (including invitations to speak in your area of expertise) or special recognition in the past five years. *Great Teachers of WV nomination by a student that attended the Governor's Honors Academy Golden Apple nomination by a student.*

3. Indicate any other activities which have contributed to effective teaching. *Intelliboard training throughout county. Presented math department at BHS instruction on use of intelliboard in the classroom.*

5. List externally funded research during last five years. Wrote a mini-grant to obtain TI SmartView software for our teachers. Wrote a mini-grant to obtain MathType 6 software for our teachers.

# APPENDIX II

| Faculty who have taught four or fewer courses in the last two years | | | | | | |
|---|---|---|---|---|---|---|
| Faculty Member | Degree/ conferred by | Field | Courses taught in last two years | | | Campus |
| Mary Beth Angeline | Masters WVU | Mathematics and Tech. | Spring 2007<br>Fall 2008 | MATH 1107 Fund Concept of Math<br>MATH 1101 App Tech Math I | 31<br>30 | MC |
| Linda King | Masters WVU | Mathematics with Secondary Emphasis | Spring 2007<br>Fall 2007 | MATH 1107 Fund Concept of Mathematics<br>MATH 1107 Fund Concept of Mathematics | 31<br>29 | MC |
| William Finley | Masters Lehigh Univ. | Functional Analysis and Statistics | Fall 2007<br>Fall 2008 | MATH 1185 Applied Calculus I<br>MATH 1185 Applied Calculus I | 22<br>15 | MC |
| Patricia Jo Bush | Masters WVU | Math Ed. | Spring 2007<br>Fall 2007<br>Spring 2008<br>Fall 2008 | MATH 1107 Fund Concept of Mathematics<br>MATH 1107 Fund Concept of Mathematics<br>MATH 1107 Fund Concept of Mathematics<br>MATH 1107 Fund Concept of Mathematics | 13<br>13<br>19<br>17 | OC |
| Brenda Flanigan | Masters WVU | Mathematics | 0Fall 2008 | MATH 1112 College Algebra | 11 | CC |
| Stephanie Yoho | Masters WVU | Mathematics | Fall 2008 | MATH 1112 College Algebra | 22 | MC |
| Deborah Stiles | Masters WVU | Business | Fall 2007 | MATH 1107 Fund Concept of Math | 21 | OC |
| Jennifer Ellison | Masters WVU | | Fall 2008 | MATH 1107 Fund Concept of Math | 14 | CC |
| Russelle Campbell | | | Spring 2008 | MATH 1112 College Algebra | 34 | OC |
| Thomas Clayton | Masters WVU | Mathematics | Spring 2008 | MATH 1112 College Algebra | 17 | OC |
| Robert Clonch | | | Fall 2008 | MATH 1107 Fund Concept of Math | 21 | OC |
| Susan Delong | | | Fall 2007 | MATH 1107 Fund Concept of Math | 9 | OC |

| | | | | | | |
|---|---|---|---|---|---|---|
| Linda Grose | | | Spring 2008 | MATH 1107 Fund Concept of Math | 8 | OC |
| Craig Kellar | | | Spring 2007<br>Spring 2008 | MATH 1112 College Algebra<br>MATH 1112 College Algebra | 14<br>13 | OC |
| Rysa Hulsey | | | Spring 2007<br>Fall 2007<br>Spring 2008<br>Fall 2008 | MATH 1107 Fund Concept of Math<br>MATH 1107 Fund Concept of Math<br>MATH 1107 Fund Concept of Math<br>MATH 1107 Fund Concept of Math | 19<br>19<br>18<br>28 | MC |
| Loretta Leeson | | | Spring 2007<br>Fall 2007 | MATH 1107 Fund Concept of Math<br>MATH 1107 Fund Concept of Math | 19<br>15 | OC |
| Francisco Luttecke | Doctorate | | Spring 2008 | MATH 1107 Fund Concept of Math | 22 | CC |
| Larry Mason | | | Spring 2007<br>Spring 2007 | MATH 1101 App Tech Math I<br>MATH 1102 Applied Tech Maths II | 30<br>17 | MC |
| Amy Quinn | | | Fall 2007 | MATH 1107 Fund Concept of Math | 26 | CC |
| Cathy Rafferty | | | Spring 2007<br>Fall 2007<br>Fall 2007 | MATH 1112 College Algebra<br>MATH 1112 College Algebra<br>MATH 1112 College Algebra | 10<br>16<br>20 | OC |
| Nathaniel Sams | Masters WVU | | Spring 2008 | MATH 1112 College Algebra | 18 | MC |
| Rae Ann Self | | | Spring 2008 | MATH 1107 Fund Concept of Math | 16 | OC |
| James Stemple | | | Spring 2008 | MATH 1107 Fund Concept of Math | 29 | CC |
| Jeremy Zelkowski | Doctorate Ohio Univ. | Math. Ed. | Spring 2008 | MATH 1199 Business Calculus | 8 | MC |

| The following faculty members have taught mathematics class in the past five years but not in the last two years. | | | |
|---|---|---|---|
| Faculty Member | Degree/Conferred by | Field | Campus |
| Larry Allen | Masters WVU | Electrical Engineering | MC |
| Yi Wang | Doctorate WVU | Numerical Analysis | MC |
| Lalah Larew | Doctorate WVU | Curriculum and Instruction - Mathematics | MC |
| Carol Stewart | Masters WVU | Mathematics | MC |
| Paula Vilone | Masters WVU | Mathematics Education | MC |
| Cathy Shay | Masters WVU | Mathematics | CC |
| Florin Bocaneala | Doctorate Ohio State University | Physics | MC |
| Valentin Brimkov | Doctorate University of Sophia, Bulgaria | Computer Science | MC |
| Jeannina Butcher-Ice | Masters WVU | Mathematics Education | MC |
| Mary Kuhn | Masters WVU | | MC |
| Paula Nelson | | | MC |
| Craig Shanholtzer | Masters | | CC |
| Bruce Stinard | Masters | | CC |
| Mark Suder | Masters WVU | | MC |
| Beverly Conley | | | OC |
| Deborah Grimes | | | OC |
| M. Hogan | | | OC |

MC Main Campus
CC Caperton Center
OC Off Campus

| The following faculty members have taught mathematics class in the past five years but not in the last two years. | | | |
|---|---|---|---|
| Faculty Member | Degree/Conferred by | Field | Campus |
| Larry Allen | Masters WVU | Electrical Engineering | MC |
| Yi Wang | Doctorate WVU | Numerical Analysis | MC |
| Lalah Larew | Doctorate WVU | Curriculum and Instruction - Mathematics | MC |
| Carol Stewart | Masters WVU | Mathematics | MC |
| Paula Vilone | Masters WVU | Mathematics Education | MC |
| Cathy Shay | Masters WVU | Mathematics | CC |
| Florin Bocaneala | Doctorate Ohio State University | Physics | MC |
| Valentin Brimkov | Doctorate University of Sophia, Bulgaris | Computer Science | MC |
| Jeannina Butcher-Ice | Masters WVU | Mathematics Education | MC |
| Mary Kuhn | Masters WVU | | MC |
| Paula Nelson | | | MC |
| Craig Shanholtzer | Masters | | CC |
| Bruce Stinard | Masters | | CC |
| Mark Suder | Masters WVU | | MC |
| Beverly Conley | | | OC |
| Deborah Grimes | | | OC |
| M. Hogan | | | OC |

MC Main Campus
CC Caperton Center
OC Off Campus

Appendix III
OFF MAIN CAMPUS COURSES
**Caperton Center**

| Term | Course Number | Course Title | Enrollment |
|---|---|---|---|
| Fall 2008-9 | MATH 1101 | Applied Technical Mathematics I | 17 |
| | MATH 1107 | Fund. Concepts of Mathematics | 14 |
| | MATH 1107 | Fund. Concepts of Mathematics | 24 |
| | MATH 1112 | College Algebra | 32 |
| | | **Total** | **87** |
| Summer 2008 | MATH 1112 | College Algebra | 15 |
| | | **Total** | **15** |
| Spring 2007-8 | MATH 1107 | Fund. Concepts of Mathematics | 22 |
| | MATH 1107 | Fund. Concepts of Mathematics | 29 |
| | MATH 1112 | College Algebra | 33 |
| | | **Total** | **84** |
| Fall 2007-8 | MATH 1101 | Applied Technical Mathematics I | 21 |
| | MATH 1107 | Fund. Concepts of Mathematics | 15 |
| | MATH 1107 | Fund. Concepts of Mathematics | 26 |
| | MATH 1107 | Fund. Concepts of Mathematics | 19 |
| | MATH 1112 | College Algebra | 30 |
| | | **Total** | **111** |
| Summer 2007 | MATH 1112 | College Algebra | 24 |
| | | **Total** | **24** |
| Spring 2006-7 | MATH 1107 | Fund. Concepts of Mathematics | 10 |
| | MATH 1107 | Fund. Concepts of Mathematics | 19 |
| | MATH 1112 | College Algebra | 26 |
| | | **Total** | **55** |

Appendix III
OFF MAIN CAMPUS COURSES
**Other campuses**

| Term | Course Number | Course Title | Location | Enrollment |
|---|---|---|---|---|
| Fall 2008-9 | MATH 1101 | Applied Technical Mathematics I | V | 30 |
| | MATH 1107 | Fund. Concepts of Mathematics | LEW | 17 |
| | MATH 1107 | Fund. Concepts of Mathematics | MON | 21 |
| | MATH 1107 | Fund. Concepts of Mathematics | V | 28 |
| | MATH 1112 | College Algebra | DE | 4 |
| | MATH 1112 | College Algebra | DE | 18 |
| | | | **Total** | **118** |
| Summer 2008 | MATH 1107 | Fund. Concepts of Mathematics | V | 21 |
| | MATH 1186 | Applied Calculus II | V | 5 |
| | | | **Total** | **26** |
| Spring 2007-8 | MATH 1107 | Fund. Concepts of Mathematics | DE | 2 |
| | MATH 1107 | Fund. Concepts of Mathematics | LEW | 19 |
| | MATH 1107 | Fund. Concepts of Mathematics | MON | 16 |
| | MATH 1107 | Fund. Concepts of Mathematics | RAN | 8 |
| | MATH 1107 | Fund. Concepts of Mathematics | V | 18 |
| | MATH 1112 | College Algebra | DE | 13 |
| | MATH 1112 | College Algebra | LEW | 18 |
| | MATH 1112 | College Algebra | MON | 17 |
| | | | **Total** | **111** |
| Fall 2007-8 | MATH 1107 | Fund. Concepts of Mathematics | BAR | 9 |
| | MATH 1107 | Fund. Concepts of Mathematics | LEW | 13 |
| | MATH 1107 | Fund. Concepts of Mathematics | MON | 21 |
| | MATH 1112 | College Algebra | DE | 16 |
| | MATH 1112 | College Algebra | DE | 20 |
| | | | **Total** | **79** |
| Summer 2007 | MATH 1107 | Fund Concepts of Mathematics | V | 17 |
| | | | **Total** | **17** |
| Spring 2006-7 | MATH 1107 | Fund. Concepts of Mathematics | LEW | 13 |
| | MATH 1107 | Fund. Concepts of Mathematics | MON | 10 |
| | MATH 1107 | Fund. Concepts of Mathematics | V | 19 |
| | MATH 1112 | College Algebra | DE | 14 |
| | MATH 1112 | College Algebra | UPS | 10 |
| | | | **Total** | **66** |

APPENDIX 1V
Service Courses with Programs Supported

| Course Number | Course Title | Program Supported |
|---|---|---|
| MATH 1101 | Applied Technical Mathematics I | Most technology programs |
| MATH 1102 | Applied Technical Mathematics II | Most technology programs |
| | | |
| MATH 1107 | Fund Concepts of mathematics | Liberal Studies |
| | | |
| MATH 1112 | College Algebra | All sciences, Liberal Studies, Business |
| MATH 1113 | Applied Statistics | Liberal Studies, Biology, Technology, Elem. Educ. Math 5-9, Allied Health Admin. |
| MATH 1115 | Trig and Elementary Functions | All sciences, Liberal Studies, Economics minor, Elem. Educ. Math 5-9 |
| MATH 1170 | Foundations of Mathematics | Computer Science |
| | | |
| MATH 1185 | Applied Calculus I | Some technology programs, Biology, Chemistry, Elem. Ed. 5-9 Math specialization |
| MATH 1186 | Applied Calculus II | Some technology programs, Chemistry |
| MATH 1190 | Calculus I | Computer Science, Economics minor |
| | | |
| MATH 2200 | Mathematical Logic | Computer Science |
| MATH 2216 | Discrete Mathematics | Computer Science, Elementary Ed. 5-9 math specialization |
| | | |
| MATH 2251 | Structure of Real Numbers | Elementary Education |
| MATH 2252 | Data Analysis and Geometry | Elementary Education |
| MATH 3353 | Math Methods for Elem. Teachers | Elementary Education |
| | | |
| MATH 4431 | Methods and Materials for Teaching Mathematics | Mathematics Education |

Note: All of the upper division mathematics courses support the Bachelor of Arts in Education degree program with comprehensive teaching field in mathematics 5- adult.

| Math Service Course | Enrollments | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spring 2003-4 | Summer 2003-4 | Fall 2004-5 | Spring 2004-5 | Summer 2004-5 | Fall 2005-6 | Spring 2005-6 | Summer 2005-6 | Fall 2006-7 | Spring 2006-7 | Summer 2006-7 | Fall 2007-8 | Spring 2007-8 | Summer 2007-8 | Fall 2008-9 |
| 1101 | 57 | | 101 | 56 | | 100 | 52 | | 83 | 47 | | 64 | 39 | 6 | 111 |
| 1102 | 75 | | 33 | 64 | | 28 | 64 | | 23 | 46 | | 21 | 39 | | 28 |
| 1107 | 164 | 39 | 162 | 143 | 44 | 145 | 136 | 19 | 114 | 148 | 39 | 148 | 136 | 23 | 121 |
| 1110 | 60 | 25 | 98 | 56 | 14 | 88 | 33 | | 17 | 16 | | | | | |
| 1112 | 114 | | 151 | 169 | 16 | 154 | 116 | 43 | 172 | 135 | 41 | 181 | 182 | 26 | 198 |
| 1113 | 13 | | | 12 | | | 18 | | | 19 | | | 17 | | |
| 1115 | 36 | | 37 | 31 | | 31 | 35 | | 54 | 37 | | 48 | 39 | | 49 |
| 1170 | 8 | | 19 | 12 | | 6 | 8 | | 13 | 8 | | 14 | 8 | | 18 |
| 1185 | | | 41 | 21 | | 30 | 11 | | 34 | 22 | 3 | 37 | 23 | | 37 |
| 1186 | 13 | | | 19 | | | 10 | | | 15 | | | 16 | 3 | |
| 1190 | 13 | | 19 | 23 | | 39 | 9 | | 40 | 19 | | 37 | 10 | | 37 |
| 2000 | 23 | | | 13 | | | 18 | | | 18 | | | 26 | | |
| 2210 | 67 | 16 | 34 | 72 | 10 | 36 | 34 | 9 | 18 | 23 | | 18 | | | |
| 2216 | | | 18 | | | 22 | | | 22 | | | 23 | | | 23 |
| 2251 | | | | | | | | | | | | 16 | | | 31 |
| 2252 | | | | | | | | | | | | | 28 | | |
| 3323 | 44 | 25 | 41 | 34 | 24 | 40 | 28 | 16 | 24 | 20 | | 25 | 19 | | |
| 3353 | | | | | | | | | | | | | | | 10 |
| 4431 | | | 12 | | | 13 | | | 4 | | | 6 | | | 5 |
| Total | 687 | 105 | 766 | 725 | 108 | 732 | 572 | 87 | 618 | 573 | 83 | 638 | 582 | 58 | 668 |

APPENDIX IV

| Cumulative Success Rates for Service Courses Fall, 2003 through Fall 2008 | | | |
|---|---|---|---|
| **Math Course** | **Number of A, B or C Grades** | **Number of Students Enrolled** | **Success Rate** |
| 1101 Tech Math I | 573 | 1030 | 55.6 % |
| 1102 Tech Math II | 374 | 510 | 73.3 % |
| 1107 Fundamental Concepts | 2140 | 3150 | 67.9 % |
| 1112 College Algebra | 1588 | 2883 | 55.1 % |
| 1113 Applied Statistics | 65 | 101 | 64.4 % |
| 1115 Trig and Elem. Functions | 305 | 593 | 51.4 % |
| 1170 Intro. To Analysis | 92 | 183 | 50.3 % |
| 1185 Applied Calculus I | 246 | 334 | 73.6 % |
| 1186 Applied Calculus II | 68 | 82 | 82.9 % |
| 2251 Structure of Real Numbers | 39 | 48 | 81.3 % |
| 2252 Data Analysis and Geometry | 28 | 30 | 93.3 % |
| 3353 Math Methods for Elem. Teachers | 10 | 10 | 100.0 % |
| 4431 Methods and Materials for Teaching mathematics | 47 | 50 | 94.0 % |
| Total | 5575 | 9004 | 61.9 % |

APPENDIX V

Upper Division Offerings Since Last Review

Courses marked with E are electives for the BS in mathematics. Others are required. Courses marked with I were taught on an independent study basis.

| MATH Course Number | Course Title | Enrollment |
|---|---|---|
| | Spring 2004 | |
| 3315 | Calculus II | 33 |
| 3335 | Probability and Statistics | 18 |
| 3361 | Abstract Algebra | 9 |
| 3391 E | Real Analysis | 8 |
| | **Total** | **68** |
| | Spring 2005 | |
| 3315 | Calculus II | 19 |
| 3335 | Probability and Statistics | 12 |
| 3361 | Abstract Algebra | 5 |
| 3391 E | Topology | 6 |
| 4401 E | Differential Equations | 6 |
| | **Total** | **48** |
| | Spring 2006 | |
| 3315 | Calculus II | 40 |
| 3335 | Probability and Statistics | 12 |
| 3361 | Abstract Algebra | 6 |
| 3391 E | Real Analysis | 4 |
| | **Total** | **62** |

| MATH Course Number | Course Title | Enrollment |
|---|---|---|
| | Fall 2004 | |
| 3316 | Calculus III | 18 |
| 3362 | Linear Algebra | 12 |
| 3372 E | Modern Geometry | 11 |
| 4431 E | Methods/Materials for Teaching Mathematics | 13 |
| | **Total** | **54** |
| | Fall 2005 | |
| 3316 | Calculus III | 4 |
| 3342 E | Numerical Analysis | 8 |
| 3362 | Linear Algebra | 14 |
| 4431 E | Methods/Materials for Teaching Mathematics | 13 |
| | | |
| | **Total** | **39** |
| | Fall 2006 | |
| 3316 | Calculus III | 15 |
| 3362 | Linear Algebra | 8 |
| 3372 E | Modern Geometry | 11 |
| 4431 E | Methods/Materials for Teaching Mathematics | 5 |
| | **Total** | **39** |

| Spring 2007 | | |
|---|---|---|
| 3315 | Calculus II | 23 |
| 3335 | Probability and Statistics | 14 |
| 3361 | Abstract Algebra | 11 |
| 3391 E | Topology | 10 |
| 4401 E | Differential Equations | 9 |
| 1199 E, I | ST: App. Of Group Theory | 1 |
| 1199 E, I | ST: Statistical Analysis | 2 |
| 4400 E, I | Seminar: Ring Theory | 1 |
| | **Total** | **71** |
| Spring 2008 | | |
| 3315 | Calculus II | 25 |
| 3335 | Probability and Statistics | 12 |
| 3361 | Abstract Algebra | 14 |
| 3391 E | Real Analysis | 5 |
| 1199 E,I | ST: Vector Calculus | 2 |
| | **Total** | **58** |
| | | |

| Fall 2007 | | |
|---|---|---|
| 3316 | Calculus III | 15 |
| 3362 | Linear Algebra | 18 |
| 4431 E | Methods/Materials for Teaching Mathematics | 6 |
| | **Total** | 39 |
| | | |
| | | |
| | | |
| | | |
| | | |
| Fall 2008 | | |
| 3316 | Calculus III | 18 |
| 3342 E | Numerical Analysis | 8 |
| 3362 | Linear Algebra | 7 |
| 3372 E | Modern Geometry | 10 |
| 4431 E | Methods/Materials for Teaching Mathematics | 5 |
| 4400 E, I | Seminar- Honors | 1 |
| | **Total** | **49** |

In addition to the upper division courses listed above, the department regular offers several 2200 level courses which are requirements or electives for the BS in mathematics or for the BA degree with mathematics comprehensive teaching field. Those courses are listed below with enrollments.

| Course Number and Title | 2003-04 | 2004-05 | | 2005-06 | | 2006-07 | | 2007-08 | | 2008-09 |
|---|---|---|---|---|---|---|---|---|---|---|
| | S | F | S | F | S | F | S | F | S | F |
| MATH 2200 Mathematical Logic | 27 | | 16 | | 21 | | 21 | | 26 | |
| MATH 2206 Intro. To Number Theory | | | | | | | 11 | | | |
| MATH 2212 Sets, Relations and Functions | | 23 | | 24 | | 15 | | 15 | | 9 |
| MATH 2216 Intro. To Discrete Mathematics | | 22 | | 27 | | 24 | | 27 | | 25 |
| **Totals** | **27** | **45** | **16** | **51** | **21** | **39** | **32** | **42** | **26** | **34** |

Appendix VI
Majors and Graduates

| Mathematics Degrees Awarded Compared to Baccalaureate Degrees Conferred | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Mathematics | | BA ED | BS | BSET | BSN | Total | Percent Math Degrees |
| | BS | BA ED | | | | | | |
| 2004 | 5 | 5 | 159 | 326 | 39 | 14 | 538 | 1.49% |
| 2005 | 4 | 2 | 148 | 363 | 39 | 13 | 563 | 1.60% |
| 2006 | 0 | 0 | 148 | 329 | 40 | 13 | 530 | .94% |
| 2007 | 4 | 2 | 130 | 411 | 29 | 15 | 585 | .68% |
| 2008 | 3 | 1 | 104 | 436 | 31 | 30 | 601 | .67% |
| Total | 16 | 10 | 689 | 1865 | 178 | 85 | 2817 | .92% |

| Current Majors and Minors | | | | | | |
|---|---|---|---|---|---|---|
| Student Level | BS in Math | BA ED 5-adult | BA ED 5-9 | Minor | MAT | Total |
| Freshman | 2 | 2 | 1 | 5 | | 10 |
| Sophomore | 2 | 3 | | 1 | | 6 |
| Junior | 1 | 3 | 5 | 6 | | 15 |
| Senior | 9 | 6 * | 3 | | | 18 |
| Graduate | | | | | 1 | 1 |
| Total | 14 | 14 | 9 | 12 | 1 | 50 |

* Note that all but two of the seniors and all others working toward the BA ED with 5-adult certification will complete the requirements for a BS in Math.

The numbers of majors and minors were obtained through a survey of students in math classes in Spring, 2009. The number of graduates with math degrees are from faculty records and the University numbers are from the records of the Office of Institutional Research.

Appendix VII

# Available Technology

**Calculators**

| | |
|---|---|
| TI-15 | Classroom set of 20 |
| TI-30 | Classroom set of 26 |
| TI-34 | Classroom set of 30 |
| TI-73 | Classroom set of 30 |
| TI-81 | Classroom set of 30 |
| TI-83 | Classroom set of 30 |
| TI-84 plus silver | Classroom set of 32 |
| TI-85 | Classroom set of 30 |
| TI-86 | Classroom set of 30 |

**TI Auxiliary Equipment and Software**

TI Navigator with 32 stations
TI View screens/presenter for the 73,83,84,85
TI Smart View software (2)
TI Graph Link

**AV Equipment**

DVD Recorder
DVD Player
Video Projectors
VCR
Overhead Projectors (2)

**Computers**

Laptop Computers (15)
Desktop Computer (1 in student study room and 1 in each faculty office)
Computer labs (3 in library, 1 in Hunt Haught Hall, several in dorms)

**Software**

Minitab
Geometer's Sketchpad
MathCad

Appendix VIII

# Results of ETS Majors Exam

**Fairmont State University**

| Year | Number of students who took exam/Number of students eligible to take the exam | Mean | Standard Deviation |
|---|---|---|---|
| 2003 | 3/5 | 149 | 13 |
| 2004 | 6/8 | 145.3 | 9.3 |
| 2005 | 3/3 | 155 | 6.5 |
| 2006 | 2/2 | 149 | 9 |
| 2007 | 4/5 | 164 | 22.1 |
| 2008 | 3/3 | 151 | 7.8 |
| Total | 18/21 | | |

Institutional mean at Fairmont State from 2004 to 2008: 152.20
Standard Deviation 8.33

**Statistics from the Educational Testing Service (ETS):**

Mean of individual scores of 6290 students who took the exam
from February, 2004, to June, 2008. 155.9
Standard Deviation 17.9

## Fairmont State Pass Rates on Praxis Exam

based on test takers, not tests taken

| Year | 5-adult Certification in mathematics | Number of test takers | 5-9 specialization in mathematics | Number of test takers |
|---|---|---|---|---|
| 2003 | 100% | 5 | 80% | 5 |
| 2004 | 100% | 2 | 100% | 5 |
| 2005 | 100% | 2 | 83% | 6 |
| 2006 | 100% | 1 | 100% | 5 |
| 2007 | 67% | 3 | 75% | 4 |
| 2008 | 100% | 1 | 100% | 3 |

In all, 39 of 42 students passed the PRAXIS.

*Mathematics Department*

1201 Locust Avenue

Fairmont, WV 26554

304 3674307

sgoodwin@fairmontstate.edu

October 28, 2008

Dear Graduate:

As part of a state-mandated periodic review of our Bachelor of Science degree program in mathematics, we are conducting a survey of all graduates in the last five years from any of the mathematics degree programs (BS in Math, BA Ed. with 5-12 mathematics comprehensive teaching field, 5-9 mathematics specialization for teaching middle school mathematics). Please help us to ensure that our programs will continue to meet the needs of our students by completing and returning the enclosed forms. We would appreciate having your responses by November 10, 2008.

We are requesting that you complete the following on-line survey. The department survey is an effort to find out what further schooling you have had, what degrees you have pursued and what kinds of jobs you have had. We look forward to your comments on any strengths and/or weaknesses you perceived in your mathematics preparation. In addition, please use this opportunity to tell us how you're doing. Be sure to include your employer's name, mailing address, and email address since we also need to send them an employer survey. I will enjoy perusing the departmental surveys which, of course, I will share with the rest of the math faculty. The link to the survey follows:

http://www.surveymonkey.com/s.aspx?sm=2_2bz3NhgEjmWDPepMQaigvQ_3d_3d

I look forward to hearing from each and every one of you. The information you provide will be valuable to the department and to current and future mathematics students.

Sincerely,

Susan L. Goodwin

Professor of Mathematics

Graduate Survey

1. Please list your name and address.

2. State your Primary Undergraduate Degree.

3. State your major.

4. State your minor.

5. If you are a teacher, state your field.

6. Give the name and address of your current employer.

7. What was your starting salary of your first position upon graduation/completion from Fairmont State?

8. State your current job title.

9. State your current job responsibilities.

10. Please rate how you perceive the mathematics education you received at Fairmont State prepared you for employment?

11. In terms of employment preparation, please indicate the Fairmont State's Mathematics Program strengths; weaknesses.

12. Please rate how you perceive the mathematics education you received at Fairmont State prepared you for employment as compared to your colleagues?

13. Have you attended graduate school or do you plan to pursue a graduate degree?

14. Please rate how you perceive the mathematics education you received at Fairmont State prepared you for graduate school or further academic studies?

15. In terms of preparation for graduate study, please indicate the Fairmont State's Mathematics program strengths; weaknesses.

16. If you sat for a graduate school admitting exam, please indicate the name of the exam and your score.

17. Please rate how you perceive the mathematics education you received at Fairmont State prepared you for graduate studies as compared to your colleagues?

18. What suggestions do you have about how Fairmont State and the Math Department could have improved your preparation?

19. Would you be willing to communicate with current students who are interested in the type of work you do?

20. We like to hear about you. Please tell us about your families, your hobbies, your job, etc.

## Summary Results of Likert Scale Perception questions from the Graduate Survey

Thirty-four of the sixty-six eligible graduates responded to the survey as of January 14, 2009.

Questions 1-9,13, 16, 19 and 20 of the Graduate Survey (page 39) are census information and the results are not included in the following summary. Comments in response to questions 11, 15 and 18 have been included in the narrative.

| Question | 1-very well | 2 | 3 | 4 Ave. | 5 | 6 | 7 Not at all |
|---|---|---|---|---|---|---|---|
| 10. Please rate how you perceive the mathematics education you received at FSU prepared you for employment. | 38.7 % | 45.2% | 6.5 % | 6.5 % | 0 % | 0 % | 3.2 % |
| 12. Please rate how you perceive the mathematics education you received at FSU prepared you for employment as compared to your colleagues. | 30.0 % | 26.7% | 26.7% | 16.7 % | 0 % | 0 % | 0 % |
| 14. Please rate how you perceive the mathematics education you received at FSU prepared you for graduate school or further academic studies. | 41.7 % | 25.0% | 12.5% | 20.8 % | 0 % | 0 % | 0 % |
| 17. Please rate how you perceive the mathematics education you received at FSU prepared you for graduate studies as compared to your colleagues. | 18.2 % | 31.8% | 18.2% | 27.3 % | 4.5% | 0 % | 0 % |

Employer Survey

1. **Employer Name**

**2. Name of Fairmont State Graduate**

**3. Supervisor of Fairmont State graduate**

**4. Using the rating scale presented concerning *Student Outcome: Demonstrated ability to communicate effectively.***
The graduate is able to prepare and write professional reports.
The graduate can verbally communicate his/her ideas.
The graduate is able to present material effectively.

5. **To be a more effective communicator, he/she would have to:**

**6. Using the rating scale presented concerning *Student Outcome: Demonstrated ability to apply one's knowledge.***
The graduate has the knowledge base needed for the job.
The graduate has demonstrated an ability to apply his/her knowledge and skills in the workplace.
The graduate is able to conceptualize problems related to field of expertise.

**7. To be more effective in applying one's knowledge, he/she would have to:**

APPENDIX IX

# Summary Results of Employer Survey

Seven of the twenty-two eligible employers responded as of February 3, 2009.
Questions 1-3 of the Employer Survey (page 41) are census information and responses are not included in the following.

| **4. Using the rating scale presented concerning *Student Outcome: Demonstrated ability to communicate effectively.*** | Strongly Agree | Agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| The graduate is able to prepare and write professional reports. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| The graduate can verbally communicate his/her ideas. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| The graduate is able to present material effectively. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| 5. **To be a more effective communicator, he/she would have to:** | | | | |

**Employer comments:**
1. (The student would have to) gain experience in public speaking, presenting through FSU's curriculum or via Toastmasters International.
2. Outstanding Employee.

| **6. Using the rating scale presented concerning *Student Outcome: Demonstrated ability to apply one's knowledge.*** | Strongly Agree | Agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| The graduate has the knowledge base needed for the job. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| The graduate has demonstrated an ability to apply his/her knowledge and skills in the workplace. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| The graduate is able to conceptualize problems related to field of expertise. | 71.4 % | 14.3 % | 0.0 % | 14.3 % |
| **7. To be more effective in applying one's knowledge, he/she would have to:** | | | | |

**Employer comments**:
1. (The student) is a success story. She effectively leverages her analytical/mathematical background within the scope of her career as a cyber-crime analyst. She has adapted rapidly to cyber-forensic methods and is an asset to the (organization).
2. (The student) has exceptional skills and I can see he has had excellent training from FSU. You have a very good program.

APPENDIX X

## Mission Statement

**The mission of the mathematics degree programs is to equip students with analytic and problem solving skills for careers and graduate work.**

- Classes develop student abilities and aptitudes to apply mathematical methods and ideas not only to problems in mathematics and related fields such as the sciences, computer science, actuarial science, or statistics, but also to virtually any area of inquiry.
- Students learn to communicate ideas effectively and to digest new information and concepts independently.
- Students are encouraged to develop intellectually and to become involved with professional organizations.
- The department cooperates fully with the School of Education in meeting its mission for candidates for an BA degree in education with mathematics teaching specialization for either the 5-8 or the 5-12 grade levels.

| Program Outcome | Direct assessment measure | Satisfactory performance standard |
|---|---|---|
| Upon successful completion of this program, 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. Demonstrate basic manipulative skills in algebra, geometry, trigonometry and beginning calculus. | Final grade in Calculus I. | 95% of majors receive a grade of C or better |
| 2. Apply the underlying unifying structures of mathematics (i.e., sets, relations and functions, logical structure) and the relationships among them. | Math 2212 - Proof on exam that an image or inverse image of a partition is a partition under certain conditions. Assess using problem solving rubric. (Note 4.)<br>Math 3361 – Proof on exam requiring use of the fact that a set of cosets is a partition under a certain equivalence relation. Assess using problem solving rubric. (Note 4.) | 70 % of majors will receive a score of 11 or better on the problem-solving rubric in each course (note 4) |
| 3. Demonstrate proficiency in writing proofs. | Math 2212 - Proof on exam that an image or inverse image of a partition is a partition under certain conditions. Assess using proof rubric. (Note 1.)<br>Math 3361 – Proof on exam requiring use of the fact that a set of cosets is a partition under a certain equivalence relation. Assess using proof rubric. (Note 1.) | 70 % of majors will receive a score of 9 or better on the proof rubric in each course (note 1) |
| 4. Communicate mathematical ideas both orally and in writing. | Math 3361 – Paper about a particular group, its subgroups, its normal subgroups and a quotient group. Assess using writing rubric. (Note 2.)<br>In class presentations of work with one from each of Math 2212, Math 3361 and Math (3375 or 3391). Assess using presentation rubric. (Note 3.) | 70 % of majors will receive a score of 4 or better on the writing rubric (note 2)<br>70 % of majors will receive an average score of 12 or better on the presentation rubric (note 3) |
| 5. 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. | Math 1190 - Problem requiring student to find the dimensions of a geometric solid with fixed the surface area that maximize the volume. Assess with problem solving rubric. (Note 4.)<br>Math 3315 Problem requiring student to determine work. Assess with problem solving rubric. (Note 4.)<br>Math 3316 Problem requiring student to approximate the value of a function to within a given accuracy using Taylor polynomials. Assess using problem solving rubric. (Note 4.)<br>Math 3335 Problem requiring student to use simulated data to approximate the probability mass function for daily demand (number of requests) and then use the pmf to determine the number of items to be stocked in order to maximize the expected profit from the sale of the items. Assess using problem solving rubric. (Note 4.)<br>Math 3362 Problem requiring student to solve completely a system of simultaneous equations using linear algebra techniques. Assess using problem solving rubric. (Note 4.) | 70 % of majors will receive an average score of 10 or better on the problem-solving rubric (note 4). |
| 6. Investigate and solve unfamiliar problems. | Math 2212 - Problem on exam requiring student to analyze an unfamiliar partition of a set. Assess using problem solving rubric. (Note 4.)<br>Math 3361 - In the student paper on groups, problem requiring student to find an example of a normal subgroup and the quotient group and prove their results. Each student is given a unique group. Assess using problem solving rubric. (Note 4.)<br>Math 3375 - Given the definition of a compact space, student is required to find an example, a counterexample and to prove their results. Assess using problem solving rubric. (Note 4.)Math 3391 - Given the definition of a uniformly continuous function, student is required to find an example and a counterexample and to prove their results. Assess using problem solving rubric. (Note 4.) | 70 % of majors will receive an average score of 10 or better on the problem-solving rubric (note 4) |

Note 1. **Rubric for Evaluating Proofs**

| | | |
|---|---|---|
| **Logic/Reasoning** | | |
| | 0 | Proof shows no logic or too incomplete to evaluate. |
| | 1 | Proof reflects a "one step" solution - no middle argument. |
| | 2 | Individual steps are logically correct for the most part, but overall argument lacks logical order or steps are unsupported. |
| | 3 | Proof has good logic and overall reasoning, but either several small steps or one big step is wrong or missing. |
| | 4 | Proof is logical and complete but has at least one small mistake or omission. |
| | 5 | Proof is correct, efficient and shows proper detail in all parts. |
| **Understanding/Terminology** | | |
| | 0 | No understanding or improper use of terminology. |
| | 1 | Misused terminology or definitions. |
| | 2 | Proper terminology but incomplete understanding/missing essence. |
| | 3 | Shows understanding but uses natural or imprecise language. |
| | 4 | Shows understanding and uses proper terminology , but misses some finer points. |
| | 5 | Shows understanding of all parts and uses terminology properly. |
| **Communication** | | |
| | 0 | No structure or unreadable. |
| | 1 | Follows proper basic structure for type of proof. |
| | 2 | And provides proper support or reasons for important steps. |
| | 3 | And has proper use of notation. |
| | 4 | And uses complete sentences and makes no spelling or grammatical errors. |
| | 5 | And has good flow. |
| **Total** | | |

**Note 2. Writing Projects Grading Rubric**

| | | |
|---|---|---|
| **Logic and Mathematics** | | |
| | 3 | Arguments are correct, complete and without inappropriate material |
| | 2 | Arguments have one minor error, omission or inappropriate inclusion. |
| | 1 | Arguments have two minor errors, omissions or inappropriate inclusions. |
| | 0 | Arguments are seriously flawed. |
| **Use of Terminology and Notation** | | |
| | 3 | All technical terms, concepts and notation are used correctly. |
| | 2 | Arguments have one lapse in terminology and /or notation. |
| | 1 | There are minor problems with terminology or concepts. |
| | 0 | There are major problems with terminology or concepts. |
| **Written Presentation** | | |
| | 2 | Follows citation requirements and all other writing guidelines. |
| | 1 | Follows almost all of the guidelines with only one or two minor lapses. |
| | 0 | Has more lapses in following the guidelines. |
| Total | | |

Note 3 Student Presentation Rubric

| | | |
|---|---|---|
| | **Organization** | |
| | 4 | Student presents information in logical, interesting sequence which audience can follow. |
| | 3 | Student presents information in logical sequence which audience can follow. |
| | 2 | Audience has difficulty following presentation because student jumps around. |
| | 1 | Audience cannot understand presentation because there is no sequence of information. |
| | **Subject Knowledge** | |
| | 4 | Student demonstrates full knowledge (more than required) by answering all class questions with explanations and elaboration |
| | 3 | Student is at ease with expected answers to all questions, but fails to elaborate. |
| | 2 | Student is uncomfortable with information and is able to answer only rudimentary questions. |
| | 1 | Student does not have grasp of information; student cannot answer questions about subject. |
| | **Graphics** | |
| | 4 | Student's graphics explain and reinforce screen text and presentation. |
| | 3 | Student's graphics relate to text and presentation, |
| | 2 | Student occasionally uses graphics that rarely support text and presentation. |
| | 1 | Student uses superfluous graphics or no graphics |
| | **Mechanics** | |
| | 4 | Presentation has no misspellings or grammatical errors. |
| | 3 | Presentation has no more than two misspellings and/or grammatical errors. |
| | 2 | Presentation has three misspellings and/or grammatical errors. |
| | 1 | Student's presentation has four or more spelling errors and/or grammatical errors. |
| | **Eye Contact** | |
| | 4 | Student maintains eye contact with audience, seldom returning to notes. |
| | 3 | Student maintains eye contact most of the time but frequently returns to notes. |
| | 2 | Student occasionally uses eye contact, but still reads most of report. |
| | 1 | Student reads all of report with no eye contact. |
| | **Elocution** | |
| | 4 | Student uses clear voice and correct, precise pronunciation of terms so all audience members can hear presentation. |
| | 3 | Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation. |
| | 2 | Student's voice is low. Student incorrectly pronounces terms. Audience members have difficulty hearing presentation |
| | 1 | Student mumbles, pronounces terms incorrectly, and speaks too quietly for students in the back of class to hear. |

*Note 4*

**Problem Solving Rubric**

| | | |
|---|---|---|
| **Conceptual Understanding** - *Does the student's interpretation of the problem using mathematical representations and procedures accurately reflect the important mathematics in the problem?* | | |
| | 3 | **Proficient** - Appropriate choice of mathematical representations of problem, used all relevant information, procedures would lead to correct solution, terminology used correctly. |
| | 2 | **Developing** - Inefficient/inaccurate choice of representation, some but not all relevant information used, procedures used would lead to partially correct solution, terminology imprecisely used. |
| | 1 | **Emerging** - Incorrect representations of problem , wrong information used in trying to solve the problem, procedures used would not lead to a correct solution, terminology incorrectly used. |
| **Strategies and Reasoning** - *Did student proceed from a plan, apply appropriate strategies, and follow a logical and verifiable process toward a solution?* | | |
| | 3 | **Proficient** - Appropriate, efficient strategies chosen, each step justified, representation(s) fit task, logic of solution was apparent, process would lead to complete, correct solution. |
| | 2 | **Developing** - Oversimplified approach, little or no explanation of strategies, some representations accurately depicted aspects of problem, some leaps in logic, process led to partially complete solution. |
| | 1 | **Emerging** - Strategies not appropriate, reasoning did not support work, representations not connected to task, no apparent logic to solution, approach to the problem would not lead to correct solution. |
| **Computation & Execution** - *Given student's approach, is solution performed in accurate/ complete manner?* | | |
| | 3 | **Proficient** - Computations essentially accurate, all visual representations complete and accurate, solution essentially correct, work clearly supported solution. |
| | 2 | **Developing** - Minor computational errors, representations essentially correct but not accurately or completely labeled, inefficient choice of procedures impeded success, evidence for solution was inconsistent or unclear. |
| | 1 | **Emerging** - Errors in computation serious enough to flaw solution, mathematical representations inaccurate, diagrams labeled incorrectly, solution incorrect, no work shown for finding answer. |
| **Communication** - *Was the student's thinking apparent?* | | |
| | 3 | **Proficient** - Explanation was clear, concise, precise and was well organized and easy to follow, and mathematical representations helped clarify solution. |
| | 2 | **Developing** - Solution somewhat difficult to follow, some important details omitted, explanation sometimes redundant, mathematical representations somewhat helpful in clarifying your thinking. |
| | 1 | **Emerging** - Difficult to follow reasoning, explanation seemed to ramble or no explanation for work, no apparent sense of what audience needed to know, representations did not help clarify your thinking, |
| **Insights** - *Does the student grasp the deeper structure of the problem and see how the process used to solve this problem connects it to other problems or "real- world" applications?* | | |
| | 3 | **Proficient** - Recognized important patterns/relationships in problem, found multiple solutions using different interpretations of problem, connected solution process to other problems, areas of mathematics or applications, |
| | 2 | **Developing** - Recognized some patterns and relationships, found multiple solutions but not all were correct, solution hinted at a connection to an application or another area of mathematics. |

APPENDIX X

| Cumulative Success Rates for Majors Courses Fall, 2003 through Fall 2008 | | | |
|---|---|---|---|
| **Math Course** | **Number of A, B or C Grades** | **Number of Students Enrolled** | **Success Rate** |
| 1190 Calculus I | 226 | 343 | 65.9 % |
| 2000 Mathematical Logic | 73 | 110 | 66.4 % |
| 2006 Number Theory | 9 | 11 | 81.8 % |
| 2212 Sets, Relations and Functions | 57 | 97 | 58.8 % |
| 2216 Discrete Mathematics | 106 | 149 | 71.1 % |
| 3315 Calculus II | 114 | 140 | 81.4 % |
| 3316 Calculus III | 68 | 83 | 81.9 % |
| 3335 Probability and Statistics | 34 | 68 | 50.0 % |
| 3342 Numerical Analysis | 12 | 16 | 75.0 % |
| 3361 Abstract Algebra | 36 | 45 | 80.0 % |
| 3362 Linear Algebra | 50 | 71 | 70.4 % |
| 3372 Modern Geometry | 27 | 32 | 84.4 % |
| 3375 Topology | 12 | 16 | 75.0 % |
| 3391 Real Analysis | 15 | 17 | 88.2 % |
| 4401 Differential Equations | 11 | 15 | 73.3% |
| **Total** | **850** | **1213** | **70.1%** |

APPENDIX XI
Tentative Schedule of Math Courses for Future

| **FALL 2009** | | **SPRING 2010** | |
|---|---|---|---|
| 1170 Intr Math Anal | 3316 Calculus III | 1113 Applied Stats | 2206 Num Theory |
| 1185(2) Appl Calc I | 3342 Num Anal | 1170 Intr math Anal | 3315 Calculus II |
| 1190 (2) Calculus I | 3362 Linear Alg | 1185 Appl Calc I | 3335 Prob & Stats |
| 2212 Sets, Relations and Functions | 4431 Math Methods | 1186 Appl Calc II | 3361 Abstract Alg |
| 2216 Discrete Math | | 1190 Calculus I | 3391 Real Analysis |
| | | 2200 Logic | |

| **FALL 2010** | | **SPRING 2011** | |
|---|---|---|---|
| 1170 Intr Math Anal | 3316 Calculus III | 1113 Applied Stats | 3315 Calculus II |
| 1185(2) Appl Calc I | 3362 Linear Alg | 1170 Intr math Anal | 3335 Prob & Stats |
| 1190 (2) Calculus I | 3372 Modern Geom. | 1185 Appl Calc I | 3361 Abstract Alg |
| 2212 Sets, Relations and Functions | 4431 Math Methods | 1186 Appl Calc II | 3375 Topology |
| 2216 Discrete Math | | 1190 Calculus I | 4401 Diff Eqs |
| | | 2200 Logic | |

| **FALL 2011** | | **SPRING 2012** | |
|---|---|---|---|
| 1170 Intr Math Anal | 3316 Calculus III | 1113 Applied Stats | 2206 Num Theory |
| 1185(2) Appl Calc I | 3342 Num Anal | 1170 Intr math Anal | 3315 Calculus II |
| 1190 (2) Calculus I | 3362 Linear Alg | 1185 Appl Calc I | 3335 Prob & Stats |
| 2212 Sets, Relations and Functions | 4431 Math Methods | 1186 Appl Calc II | 3361 Abstract Alg |
| 2216 Discrete Math | | 1190 Calculus I | 3391 Real Analysis |
| | | 2200 Logic | |

| **FALL 2012** | | **SPRING 2013** | |
|---|---|---|---|
| 1170 Intr Math Anal | 3316 Calculus III | 1113 Applied Stats | 3315 Calculus II |
| 1185(2) Appl Calc I | 3362 Linear Alg | 1170 Intr math Anal | 3335 Prob & Stats |
| 1190 (2) Calculus I | 3372 Modern Geom. | 1185 Appl Calc I | 3361 Abstract Alg |
| 2212 Sets, Relations and Functions | 4431 Math Methods | 1186 Appl Calc II | 3375 Topology |
| 2216 Discrete Math | | 1190 Calculus I | 4401 Diff Eqs |
| | | 2200 Logic | |

## APPENDIX XII

### Prerequisites for Entry Level Mathematics Courses

| Course | Title | Prerequisites |
|---|---|---|
| Math 1101 | Applied Technical Math I | Math ACT 19 or Math SAT 460 or COMPASS 36 or Math 0095 Intro to Algebra |
| Math 1107 | Fundamental Concepts of Math | Math ACT 19 or Math SAT 460 or COMPASS 36 or Math 0095 Intro to Algebra |
| Math 1112 | College Algebra | Math ACT 21 or Math SAT 500 or COMPASS 49 or Math 1100 Intermediate Algebra |
| Math 1115 | Trig & Elem. Functions | Math ACT 23 or Math SAT 540 or COMPASS 63 or Math 1112 College Algebra |
| Math 1170 | Intro to Math Analysis | Math ACT 23 or Math SAT 540 or COMPASS 63 or Math 1115 Trig & Elem Functions |
| Math 1185 | Applied Calculus I | Math ACT 24 or Math SAT 560 or COMPASS 67 or Math 1115 Trig & Elem Functions or a "B" or better in Math 1102 Applied Tech Math II |
| Math 1190 | Calculus I | Math ACT 25 or Math SAT 570 or COMPASS 73 or Math 1115 Trig & Elem Functions or Math 1170 Intro to Math Analysis Or Math 1186 Applied Calculus II |

# Appendix XIII

## Summary of Results from the 2004 ETS Higher Education Assessment Program Self-Assessment Service Survey of Alumni

24 of 123 surveys were returned. Scale is 1- 4 with 1 = poor and 4 = excellent

| **Category** | **Mean** | **Standard Deviation** |
|---|---|---|
| 1. Environment for learning | 3.37 | .08 |
| 2. Scholarly Excellence | 3.30 | .09 |
| 3. Quality of Teaching | 3.24 | .09 |
| 4. Faculty Concern for Students | 3.42 | .10 |
| 5. Curriculum | 2.94 | .12 |
| 6. Departmental Procedures | 2.91 | .12 |
| 7. Available Resources | 2.83 | .11 |
| 8. Student Satisfaction with Program | 3.44 | .10 |
| 9. Internship, Fieldwork or Clinical Experiences | 3.38 | .13 |
| 10. Employment Assistance | 2.52 | .18 |

MATHEMATICS
FAIRMONT STATE COLLEGE
October 29 and 30, 2003 visit to campus
Report prepared by Barbara Faires

The Fairmont State College mathematics program and faculty responsible are jewels to be praised, enhanced, and advertised. Faculty are indeed mathematicians as well as educators, are interested in students learning as well as in mathematics, and are interested in modifications that will enhance the mathematics education of their students.

The mathematics program at FSC has evidently been very successful in preparing students for graduate school and for encouraging students to pursue this direction. This is to be commended; it reflects a historically strong curriculum and faculty in mathematics, both of which can support expansion in curriculum appropriate for students interested in other than graduate school or teaching. FSC appears to have remained focused on graduate school preparation in a time when many college and university mathematics programs are broadening to ensure that students "experience mathematics as an engaging field with contemporary open questions." Fairmont's own "Profile of a Mathematics Graduate" prepared in December 1998 as part of the Assessment Plan for the Mathematics Department indicates a focus beyond graduate school and teaching. Also, with courses such as probability and statistics in their required group of courses, students should see other possibilities for a BS degree in mathematics. Discussions during my visit at FSC lead me to believe there is interest in modifying the curriculum so that courses such as differential equations and numerical analysis can be offered with more regularity. It is essential that students work with two and three dimensional concepts (partial derivatives and multiple integrals, for example), differential equations, approximations, error analysis, and the various areas of discrete mathematics. Mathematical modeling is another rich area for the undergraduate, an area that can introduce a topic to students not as an end in itself, but as a part of a model to solve a real world problem. Referring again to the 1998 Assessment Document, one sees the goals include that graduates "gain exposure to a variety of areas of mathematics" and that they "gain experience investigating real world problems and learn how to apply mathematical ideas and models to those problems." It is the meeting of these goals which should be addressed.

Since it is not the position of a consultant to prescribe particulars, I hope the following will be taken as ideas for consideration, ideas in most cases that came from you.

- Should both MATH 2200 (Mathematical Logic) and MATH 2212 (Sets, Relations and Functions) be required courses?
- Should a discrete mathematics course be required of mathematics majors (the same course for mathematics and computer science majors) and required early in the mathematics curriculum so students see that mathematics has applications in the discrete world as well as the continuous?
- Should the offerings on the elective list (page 58 of the Catalog) be planned so that students can regularly take numerical analysis and differential equations?
- Should differential equations be a required course or at least an introduction to differential equations be included in a required course?
- Should the prerequisite structure of the program be modified so that mathematical maturity is developed over several courses?