# Institutional Effectiveness Report

## Assessment Summary

**Administrative Unit: Mathematics and Computer Science**

**Degree Program: B.A. in Mathematics**

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**Assessment Cycle** (academic or calendar year): AY 2005, AY 2006, AY 2007

**Mission** (related to VSU mission): The Mathematics program at Valdosta State University will provide mathematics content knowledge, exposure to current technology, and development of essential reasoning skills to enable graduates to pursue graduate work or enter the professional workforce.

**Assessment History** (discuss here how and when the unit developed its current assessment program, what it used prior to starting that program to assess its effectiveness, etc.):

Prior to AY 2007, upper-level mathematics courses were populated mostly by BSED majors who planned to teach math in secondary school . These students were not required take MATH 4980 which is the BA Math capstone course. There were very few BA Math majors and there were not enough students to offer MATH 4980. MATH 4910, Mathematical Modeling, served as a capstone course for this degree during this time and was used for assessment of the program. In AY 2007, the BSED was eliminated state-wide and students interested in secondary math teaching now choose a BA or BS degree in mathematics. In AY 2007 MATH 4980 was offered for the first time and used in the assessment of the BA in mathematics.

The university administers an exit poll to graduating students and the department reviews the results for degree/department specific questions.

Samples of students' work from various senior level classes were collected in 2007-2008 for review. Finally, our department likes to keep informal tabs with our former students and their professional endeavors.

Course offerings are monitored to insure that a sufficient number and variety of upper level courses are regularly offered.

### Goals for Unit:

The following are the current education outcomes for the BA in mathematics:

1. Students will explain and produce mathematical proofs in set theory, algebra, and analysis to indicate that they have acquired the necessary logical reasoning, reading and writing skills.
2. Students will prove statements, produce examples, and apply the appropriate theoretical results to a given problem to show understanding of various algebraic structures, including, but not limited to, groups, fields, rings, and vector spaces.
3. Students will prove statements, produce examples, and apply the appropriate theoretical results to a given problem to demonstrate understanding of the analytic structure necessary for the classical (real-valued function) calculus and its generalization.
4. Students will synthesize the results and techniques of the various major branches of mathematics, demonstrated by presentation of mathematics in written and oral form.

**Assessments** (include when and to whom these are administered, and align goals with specific assessments):

1. Prior to AY 2007, at the end of each spring semester, MATH 4910 (Mathematical Modeling) students prepared and presented a final report on a research article they have read. The department faculty was invited to attend and complete an evaluation form for each student's presentation. Beginning AY 2007, MATH 4980 (Senior Seminar) replaced MATH 4910 as a capstone for BA majors. Similarly students present a final project with a faculty audience and survey mechanism. These directly assess outcomes (1) and (4) and typically (2) and/or (3).

2. Graduating students receive complete an exit survey administered by the university. Degree specific questions/responses are reviewed.

3. Starting in AY 2007samples of students' work from upper -level courses were reviewed to assess outcomes (2) and (3) specifically as well as (1) and (4).

## 2005-2006 (or 2005)

- Assessment Results (submit an electronic file of the data collected):

The spring semester presentations and final reports from MATH 4910 were rated by attending faculty. All of the faculty who completed the rating form rated oral presentations in all areas as acceptable, good or excellent and all of the participating faculty rated their final reports in all areas as acceptable, good or excellent, with one exception: only 33% of the faculty who completed the rating form rated final reports in the area of bibliography as acceptable, good or excellent. The final average grade for MATH 4910 was 86.1%.

Graduation Exit Poll: Data were not sufficient to make any valid conclusions.

The Department Head observed that there was no upper-level sequence required in the program. It was observed that MATH 4300 had not been offered for many years .

- Discussion/Dissemination of Results:

The Department discussed the feasibility of requiring students to take an upper-level sequence. The consensus was there were not enough majors to support this but perhaps that would change in the future as the number of majors is expected to increase. The assessment from the project/report in MATH 4910 indicated the need for more emphasis on bibliography skills. We decided to begin emphasizing bibliography skills at the junior level courses.

The department discussed the need for BA majors to learn the rudiments of complex analysis and agreed that MATH 4300 be offered more frequently.

- Modifications Made:

Students in Math 3600 are expected to include a bibliography in their reports and projects.

Math 4300 (Complex Variables) is to be offered every other year.

## 2006-2007 (or 2006)

- Assessment Results (submit an electronic file of the data collected):

The Spring semester presentations and final reports form MATH 4910 were rated by attending faculty. All of the faculty who completed the rating form rated oral presentations in all areas as acceptable or excellent and all of the participating faculty rated their oral presentations in the area of knowledge of subject matter as acceptable. All of the faculty rated their final reports in all areas as acceptable or good, except in one area: 43% of the faculty who completed the rating form rated final reports in the area of bibliography as acceptable, good or excellent. The final average grade for MATH 4910 was 71.4%.

The Graduation Exit Survey asks the prospective graduates to rate their major program of study in various categories. Of the categories that are applicable to the mathematics program, between 66 – 100% of the respondents rated all categories as excellent, good or fair.

- Discussion/Dissemination of Results:

  There were two questions on the Senior Exit Survey regarding advising and the ratings were acceptable. The Assessment Committee noted that this reflected only what graduating seniors thought. It was suggested that good advising for the freshmen and sophomore majors was critical to student success in the programs and that the department could improve advising for our majors.

  The bibliography continues to be a concern. Overall, the students in MATH 4910 are performing satisfactorily in their program.

- Modifications Made:

  In Spring 2006, the department assigned two faculty members to serve as dedicated advisors. These advisors volunteered for this service both think that good advising is extremely important. They handled almost all of the advising for the department. The Department Head advises about 20 majors.

**2007-2008 (or 2007)**

- Assessment Results (submit an electronic file of the data collected):

  This year in the spring the department offered MATH 4980, Senior Seminar, which is the capstone course for this degree. The final project in this course consisted of student presentations of journal articles. These presentations were open to departmental faculty who were invited to evaluate the presentations. The evaluation instrument was based on the guidelines used by the Southeastern Mathematical Association of America to award prizes in undergraduate research and is attached. A total of 100 points were assigned in a variety of ways. Five students were enrolled in MATH 4980 and the average scores for their presentations were 69.0, 70.4, 62.5, 81.0, and 73.0.

  Final exams from Math 4081, MATH 4260, and MATH 4980 were reviewed. The average of the exam scores were: MATH 4260 – 66.1, MATH 4081 – 73.4, Math 4980 - 80.4

  Although the BSED degree is being phased out for students seeking a high school teaching position in mathematics, we are pleased to announce that all of these students that took the GACE test this year passed. (The GACE exam includes a math content knowledge for state liscensure.)

  Graduation Exit Poll: Data not available.

- Discussion/Dissemination of Results:

  Review of the MATH 4081 and MATH 4260 Exams indicated that the BA Majors are performing satisfactorily in their program.

  MATH 4980: For the first half of the semester course material was presented solely by the students – some eight theorems/definitions/examples. The latter part of the course was a more traditional lecture format. The students' scores and work on the two hour examination showed good mathematical maturity, especially considering the amount and variety of material on the examination. The journal article presentations were well attended by faculty and the consensus was that the students had done a good job. We are encouraged to report that one student has accepted a teaching position, one transferred to an engineering program, and one is attending a prestigious law school.

- Modifications Made:

  Starting in AY 2008 samples of student work will be collected in Math 3040 ( this is a BA gateway course) and in MATH 4260 and compared in order to determine if majors have progressed satisfactorily.

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**Unit Director** **Date** **President/VP for Unit** **Date**

University of Western Kentucky SACS Accreditation Review Process (http://www.wku.edu/sacs/assessmentmanual.htm) ; and

Mrs. Marila D. Palmer, VP-Executive Affairs & Planning, LeTourneau University, Presentation to 2008 SACS-COC Institute

**MATH 4081 Final Exam Grades -- Fall 2007**

| Name | Final Exam Score |
|---|---|
| Student A | 95 |
| Student B | 81 |
| Student C | 86 |
| Student D | 77 |
| Student E | 86 |
| Student F | 79 |
| Student G | 79 |
| Student H | 78 |
| Student I | 76 |
| Student J | 84 |
| Student K | 69 |
| Student L | 79 |
| Student M | 71 |
| Student N | 65 |
| Student O | 53 |
| Student P | 37 |
| | |
| Average | 74.6875 |

# Math 4910 - Mathematical Models

## 2007-2008

| Name | T-1 | T-2 | T-3 | Proj 1 | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | T-Q | Total Pts | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Xxxxxxx, XXXXXxx | 51 | 43 | 73 | 90 | | 17.00 | 13.00 | 20.00 | 4.00 | 16.00 | 20.00 | 17.00 | 76.43 | 333.43 | D |
| Xxxxxxx, XXXXXxx | w | w | w | w | 3.00 | 5.00 | w | w | w | w | w | w | w | w | A |
| Xxxxxxx, XXXXXxx | 89 | 37 | 76 | 92 | 19.00 | 17.00 | 13.00 | 20.00 | 19.00 | 17.00 | | 18.00 | 87.86 | 381.86 | C |
| Xxxxxxx, XXXXXxx | 85 | 81 | 83 | 93 | 10.00 | 17.00 | 14.00 | 20.00 | 17.00 | | 12.00 | 20.00 | 78.57 | 420.57 | B |
| Xxxxxxx, XXXXXxx | 76 | 0 | 0 | 0 | 5.00 | 15.00 | 16.00 | 20.00 | 0.00 | 0.00 | 0.00 | 0.00 | 40.00 | 116.00 | F |
| Xxxxxxx, XXXXXxx | 82 | 61 | 51 | 92 | 20.00 | 15.00 | 15.00 | 20.00 | 18.00 | | 14.00 | 19.00 | 86.43 | 372.43 | C |
| Xxxxxxx, XXXXXxx | 79 | 81 | 87 | 93 | 20.00 | 17.00 | 14.00 | 20.00 | | 17.00 | 20.00 | 20.00 | 91.43 | 431.43 | B |
| Xxxxxxx, XXXXXxx | 70 | 72 | 79 | 96 | 10.00 | 17.00 | 17.00 | 20.00 | 11.00 | | 20.00 | 20.00 | 82.14 | 399.14 | C |
| Xxxxxxx, XXXXXxx | 93 | 64 | 78 | 82 | 20.00 | 15.00 | 15.00 | 20.00 | 17.00 | 7.00 | | 20.00 | 81.43 | 398.43 | C |

Class Final Grade Average(2007-2008)= 71.33%

## 2006-2007

| Name | T-1 | T-2 | T-3 | Proj 1 | H1 | H2 | H3 | H4 | H5 | H6 | H7 | T-HW | Total Pts | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Xxxxxxx, XXXXXxx | 80 | 85 | 90 | 95 | 18.00 | 18.50 | 17.00 | 16.00 | 20.00 | 17.50 | 13.00 | 85.71 | 435.71 | B |
| Xxxxxxx, XXXXXxx | 87 | 80 | 80 | 96 | 19.00 | 19.00 | 18.75 | 12.75 | 20.00 | 16.50 | 19.25 | 89.46 | 432.46 | B |
| Xxxxxxx, XXXXXxx | 36 | 47 | 88 | 90 | 17.75 | 12.00 | 9.00 | 17.25 | 20.00 | 12.00 | 18.75 | 76.25 | 337.25 | D |
| Xxxxxxx, XXXXXxx | w | w | w | w | 17.00 | 10.00 | w | w | w | w | w | w | w | w |
| Xxxxxxx, XXXXXxx | w | w | w | w | w | w | w | w | w | w | w | w | w | w |
| Xxxxxxx, XXXXXxx | 52 | 61 | 80 | 80 | 7.50 | 8.00 | 15.50 | 11.50 | 20.00 | 14.00 | 16.00 | 66.07 | 339.07 | D |
| Xxxxxxx, XXXXXxx | 65 | 85 | 97 | 95 | 19.50 | 19.50 | 18.00 | 14.00 | 20.00 | 17.75 | 19.25 | 91.43 | 433.43 | B |
| Xxxxxxx, XXXXXxx | 42 | 54 | 61 | 84 | 10.00 | 7.00 | 10.50 | 8.75 | 20.00 | 6.00 | 13.00 | 53.75 | 294.75 | F |
| Xxxxxxx, XXXXXxx | 75 | | | | 17.00 | 19.00 | 16.75 | | | | | 37.68 | 112.68 | F |
| Xxxxxxx, XXXXXxx | 97 | 95 | 87 | 97 | 19.50 | 20.00 | 19.50 | 17.00 | 20.00 | 19.50 | 19.75 | 96.61 | 472.61 | A |

Class Final Grade Average(2006-2007)= 71.45%

## 2005-2006

| Name | T-1 | T-2 | T-3 | Proj 1 | H1 | H2 | H3 | H4 | H5 | H6 | H7 | T-HW | Total Pts | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Xxxxxxx, XXXXXxx | 93 | 100 | 97 | 98 | 19 | 15 | 20 | 16 | 20 | 20 | 20 | 93 | 481 | A |
| Xxxxxxx, XXXXXxx | 75 | 74 | 81 | 95 | 20 | 17 | 20 | 0 | 20 | 20 | 20 | 84 | 409 | B |
| Xxxxxxx, XXXXXxx | 76 | 65 | 78 | 94 | 19 | 15 | 20 | 15 | 20 | 20 | 18 | 90 | 403 | B |
| Xxxxxxx, XXXXXxx | 69 | 69 | 80 | 74 | 0 | 14 | 20 | 12 | 20 | 19 | 17 | 73 | 365 | C |
| Xxxxxxx, XXXXXxx | 83 | 88 | 99 | 97 | 20 | 18 | 20 | 17 | 20 | 20 | 20 | 95 | 463 | A |
| Xxxxxxx, XXXXXxx | 90 | 95 | 88 | 92 | 19 | 20 | 20 | 17 | 20 | 19 | 20 | 96 | 462 | A |

Class Final Grade Average(2005-2006)= 86.11%