Academic Advisory Committee on Mathematical Subjects (ACMS)

Meeting of March 5-6, 2015

Mathematics Building Auditorium,

Middle Georgia State College.

100 College Station Drive, Macon, GA 31206

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AGENDA

Academic Advisory Committee on Mathematical Subjects (ACMS)

Meeting of March 5-6, 2015

Mathematics Building Auditorium, Middle Georgia State College.

100 College Station Drive, Macon, GA 31206

Thursday, March 5th

1:00-1:15: Arrival & registration

1:15-1:20: Welcome

1:20-2:45: (Discussion; votes taken as needed on Friday)

- *Charting the Course – MPI*
  - Barbara Brown, Assistant Vice Chancellor for Transitional and General Education, USG
  - Leslie Caldwell, Research and Policy Analysis, USG
- *Affordable Learning Georgia - Open Educational Resources*
  - Merryll Penson, Executive Director of Library Services, USG
- ALG Math initiatives throughout the USG.
  - German Vargas, College of Coastal Georgia
- Revision of MATH 1113 Precalculus
  - Common course – credits?
- Structure of subcommittees

2:45-3:00: Break

3:00-4:00: Continued Discussions

4:00-5:00: Subcommittee meetings

Friday, March 8th

8:00-8:30: Light breakfast

8:30-10:00: Old business

Minutes of February 2014

Subcommittee reports

10:00-10:15: Break

10:15-12:00: New business

- Math Placement Index
- Current progress of LS implementations at individual institutions
- Math 1113 – Proposed changes
- Possible system wide OER initiative.
- Survey of software usage.
  - Possibility of system wide licensing.
- Executive Committee for 2015-16
- Location 2016 Meeting

12:00: Adjourn

ACMS Membership 2014-2015

Institution	Representative	Contact Information
Abraham Baldwin Agricultural College	Melanie Partlow	mpartlow@abac.edu
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Minutes of the Academic Advisory Committee on Mathematical Subjects (ACMS)

Meeting of February 27-28, 2014

Savannah State University, 3219 College St., Savannah, GA. 31404

Attendees

Institution	Representative
Abraham Baldwin Agricultural College	Melanie Partlow
Albany State University	Seyed Roosta
Armstrong Atlantic State University	James Brawner
Atlanta Metropolitan College	Gyuheui Choi
Bainbridge College	Wesley Whitehead
BOR University System Office Liaison	Leslie Caldwell
Clayton State University	Anthony Giovannitti
College of Coastal Georgia	German Vargas
Columbus State University	
Dalton State College	
Darton College	Anthony Smith
East Georgia College	John Blackburn
Fort Valley State University	
Georgia College & State University	
Georgia Gwinnett College	Alvina Atkinson
Georgia Highlands College	Brent Griffin
Georgia Institute of Technology	Doron Lubinsky
Georgia Perimeter College	Robby Williams
Georgia Regents University	Sam Robinson
Georgia Southern University	Sharon Taylor
Georgia Southwestern State University	
Georgia State University	Valerie Miller
Gordon State College	Allen Fuller
Kennesaw State University	
Middle Georgia State College	Mary Wolfe
Savannah State University	Mulatu Lemma
South Georgia State College	
Southern Polytechnic State University	Sarah Holliday
University of Georgia	Malcolm Adams
University of North Georgia	Danny Lau
University of West Georgia	
Valdosta State University	Ashok Kumar

The meeting convened at 1:00 pm on Thursday February 27, 2014 at the King Frazier Student Center, Savannah State University.

After welcoming remarks and introductions of the ACMS Members, we began the evaluation and discussion of a proposed 4th year high school course (SREB Math readiness course). After evaluating the content, the consensus indicated:

- Inquiry base format of the class provides sufficient preparation for 1001 and 1101.
- The course may be sufficient for 1111 if taken together with a support course.
    - Further discussion suggested that even though the material does not cover all college algebra, it does sufficiently prepare a student to start college algebra.
- It was made clear that the intended audience would be students that would have a low probability of success in college algebra or Precalculus.

The committee proceeded to the discussion of area A courses:

- MATH 1001
    - Changes to the name and description of the course were discussed.
    - The balance between Review Topics, Uniform Requirements, and Optional Topics was discussed.
        - (*See approved amendments at the end of this document*.)
- MATH 1101
    - No changes were proposed for this course.
- MATH 1111
    - A new catalog description for the course was presented and discussed.
        - (*See approved amendments at the end of this document*.)
- MATH 1112
    - A proposal to make course a common course number in the USG was discussed.
- MATH 1113
    - A new catalog description for the course was presented and discussed.

After the area A discussion, the *Transforming College Mathematics Implementation Plan* was presented by German Vargas. (Discussion and endorsement to take place the next day).

The Mathematics Pathways document was presented:

- The purpose of this document is to help inform institutions and departments within institutions of the available gateway paths in mathematics so that informed decisions can be made about major requirements and advisement for their students.

Area F guidelines were discussed and a statement on "The Value of a Degree in Mathematics" was presented.

Subcommittee meetings were held from 4:00pm to 5:00pm

The meeting reconvened on Friday February 28 at 8:30am with the approval of the 2013 ACMS meeting minutes, and the following subcommittee reports:

- Course and Textbook Information
    - Update of the textbook list was distributed
- Placement/LS

    - It was suggested to have the MPI calculations implemented in banner by the system office.
- Computer Science Liaison
    - There was a discussion of whether the CS/Mathematics liaison was necessary.
        - A motion to change the CS liaison subcommittee to interdisciplinary liaison subcommittee was presented and approved
    - There was a suggestion to include Statistics departments as part of the ACMS.
- Other subcommittees
    - No new business to report

The committee continued the discussion of the proposed 4th year high school course, and the course was approved by majority. There were still concerns of the level of rigor of the course, so the approval was presented with some further recommendations.

The amendments to MATH 1001 were approved: course name, description and list of topics and requirement. (*See approved amendments at the end of this document*.)

The amendments to the course description for MATH 1111 were approved. (See approved amendments at the end of this document.) A motion was made to change the course name to Precalculus Algebra, but after further discussion a motion was made to table the name change and defer the discussion to next year's meeting after further research is done regarding the implications of such change. The motion to table the discussion was approved.

The proposal to make MATH 1112 a common course number throughout the USG was approved, and a committee was created to work on the details of the description, list of topics, and student learning outcomes. The appointed members were Melany Partlow, Sharon Taylor, Ashok Kumar, Mary Wolf (chair). This committee will work by April 15 to submit the changes to go to the Gen Ed council in August 1st.

The proposed changes to the course description MATH 1113 were approved. A topics list will be developed for MATH 1113, as part of the curriculum subcommittee by fall 2014 to be approved for fall 2015.

Following a discussion of the *Transforming College Mathematics Implementation Plan*, the ACMS proceeds to endorse the implementation plan.

The Mathematics Pathways document is discussed and approved (pending some editorial revisions).

At 11:00am the statement on *"The Value of a Degree in Mathematics"* was approved unanimously.

The executive committee for 2014-2015 is appointed: Robby Williams (Past Chair), German Vargas (Chair), Alvina Atkinson (Chair Elect), James Brawner (State University representative), Sharon Taylor (Comprehensive University representative), Doron Lubinski (Research University representative)

The 2015 ACMS Meeting is planned to be hosted by Middle Georgia State College.

The meeting adjourned at 11:30.

Addendum: The ACMS approved the topic list for Math 1112 by email. The proposals for Math 1001, 1111, 1112, and 1113 were all approved by the Council on General Education.

MATH 1001 Quantitative Reasoning

Course Description: This course emphasizes quantitative reasoning skills needed for informed citizens to understand the world around them. Topics include logic, basic probability, data analysis, and modeling from data.

A. Review Topics: Upon entering Quantitative reasoning, the student is expected to possess an understanding of Introductory and Intermediate Algebra. At most 20% of class time will be spent reviewing the following topics in order to reinforce the students' understanding of them:

1. Sets and Set Operations
2. Geometry (Calculating Lengths, Areas, Perimeters, and Volumes)
3. Ratio and Proportion
4. Approximation (Round-off error, significance and accuracy)
5. Percentages
6. Relative Value
7. Computations with Formulae

B. Uniform Requirements: Between 50% and 90% of class time will be spent covering the following topics:

1. Logic
   - Negations, Quantifiers, Conditional Statements, Converses
   - Inductive and Deductive Reasoning, Valid Arguments
2. Basic Probability
3. Data Analysis
   - Basic Descriptive Statistics (Mean, Median, Mode, Standard Deviation)
   - Correlation, Causality, and Inferences
   - Interpreting Graphical Displays
   - Sampling and Randomness
4. Modeling from Data
   - Function Concepts (Definition, Notation)
   - Scatter Plots
   - Linear Models and Regression Lines
   - Quadratic Models
   - Exponential Models

C. Optional Topics: 10% to 30 % of the course will cover topics from:

1. Mathematics and the Arts (Symmetry, perspective, tessellations, and/or fractals)
2. Mathematics and Politics (Voting methods and/or apportionment)
3. Mathematics and Business (Graph theory, networks, and/or linear programming)
4. Mathematics of Finance (Compound interest, annuities, and/or loan payments)

For suitable textbooks, please consult the texts spreadsheet on the ACMS website

Date: February, 2014

Math 1101 Introduction to Mathematical Modeling

DESCRIPTION: This course is an introduction to mathematical modeling using graphical, numerical, symbolic, and verbal techniques to describe and explore real-world data and phenomena. Emphasis is on the use of elementary functions to investigate and analyze applied problems and questions, supported by the use of appropriate technology, and on effective communication of quantitative concepts and results.

THEMES: Throughout the course it is expected that content will be presented using multiple approaches—numerical, graphical, symbolic, and verbal. The concept of a function should be approached all four ways. In addition, both discrete and continuous data should be used.

A. Review Topics. Upon entering Introduction to Mathematical Modeling, the student is expected to possess an understanding of Elementary and Intermediate Algebra. At MOST 20% of class time will be spent reviewing the following topics in order to reinforce the students' understanding of them.
   1. Sets and Set Operations
   2. Special Products and Factoring
   3. Fundamental Operations with Polynomial and Rational Expressions
   4. Integral and Rational Exponents and Radicals
   5. Linear Equations in One Unknown with Applications
   6. Linear Inequalities in One Unknown
   7. Quadratic Equations in One Unknown
   8. Rectangular Coordinates and Graphs of First- and Second- Degree Equations
   9. System of Two Linear Equations in Two Unknowns
   10. Ratio and Proportion

B. Uniform Requirements. Between 50% and 70% of class time will be spent on the following topics:
   1. Functions
   2. Linear Models of Real-World Phenomena
   3. Quadratic Models of Real-World Phenomena
   4. Polynomial Models of Real-World Phenomena
   5. Exponential Models of Real-World Phenomena
   6. Logarithmic Models of Real-World Phenomena

C. Additional Topics. Even though each of the following areas is appropriately placed under the title "Introduction to Mathematical Modeling", it would be unrealistic to expect that they would be covered in a minimum level Introduction to Mathematical Modeling course. However, between 10% and 50% of class time will be spent covering three or more of these areas:
   1. Piecewise-Defined Models of Real-World Phenomena
   2. Inverse of a Function
   3. Composition of Functions
   4. Matrices
   5. Systems of Linear Equations
   6. Trigonometric Models of Real-World Phenomena
   7. Counting Principles
   8. Linear Programming
   9. Variation
   10. Basic Probability Concepts
   11. Basic Statistical Concepts

For suitable textbooks, please consult the texts spreadsheet on the ACMS website.

Date: February, 2014

Math 1111 College Algebra

COURSE DESCRIPTION: This course provides an in-depth study of the properties of algebraic, exponential and logarithmic functions as needed for calculus. Emphasis is on using algebraic and graphical techniques for solving problems involving linear, quadratic, piece-wise defined, rational, polynomial, exponential, and logarithmic functions.

A. Review Topics. Upon entering College Algebra, the student is expected to possess an understanding of Elementary and Intermediate Algebra. At MOST 20% of class time will be spent reviewing the following topics in order to reinforce the students' understanding of them.

1. Sets and Set Operations
2. Special Products and Factoring
3. Fundamental Operations with Polynomial and Rational Expressions
4. Integral and Rational Exponents and Radicals
5. Linear Equations in One Unknown with Applications
6. Linear Inequalities in One Unknown
7. Quadratic Equations in One Unknown
8. Rectangular Coordinates and Graphs of First- and Second- Degree Equations
9. System of Two Linear Equations in Two Unknowns
10. Ratio and Proportion

B. Uniform Requirements. Between 50% and 70% of class time will be spent covering the following topics:

1. Relations, Functions, and their Graphs
2. Quadratic and Rational Inequalities
3. Linear Functions of a Single Variable with Applications
4. Quadratic Functions of a Single Variable with Applications
5. Systems of Equations with Applications
6. Polynomial Functions of a Single Variable (including Graphs, Remainder and Factor Theorem, etc.)
7. Exponential and Logarithmic Functions with Applications

C. Additional Topics. Even though each of the following areas is appropriately placed under the title "College Algebra," it would be unrealistic to expect that they would be covered in a minimum level College Algebra course. However, between 10% and 50% of class time will be spent covering one or more of these areas:

1. Absolute Value Equations and Inequalities
2. Fundamental Operations with Complex Numbers
3. Matrices and their Applications
4. Arithmetic and Geometric Sequences and Series with Applications
5. Mathematical Induction and the Binomial Theorem
6. Variation with Applications
7. Permutations, Combinations and Probability
8. Linear Programming
9. Conic Sections

For suitable textbooks, please consult the texts spreadsheet on the ACMS website.
Date: February, 2014

USG Revised Description of Math 1113 and USG Topic List for Math 1112

- **Math 1113 Precalculus**

Catalog Description: This course is an intensive study of the basic functions needed for the study of calculus. Topics include algebraic, functional, and graphical techniques for solving problems with algebraic, exponential, logarithmic, and trigonometric functions and their inverses.

Topic List to be developed by the Regents Advisory Committee on Mathematical Subjects during 2014-15

- **MATH 1112 College Trigonometry (3 credit hours)**

Catalog Description: This course is an in-depth study of the properties of trigonometric functions and their inverses. Topics include circular functions, special angles, solutions of triangles, trigonometric identities and equations, graphs of trigonometric functions, inverse trigonometric functions and their graphs, Law of Sines, Law of Cosines, and vectors.

A. Review Topics: Upon entering Trigonometry a student should have complete understanding and mastery of College Algebra. No review topics.

B. Uniform Requirements: 80% to 90% of the class time will be spent on these topics.

1. Degree and radian measures
2. Right triangle trigonometry
3. Unit Circle trigonometry
4. Graphs of Trigonometric functions (period, amplitude, etc.)
5. Inverse trigonometric functions
6. Identities including Sum and Difference, double and half angle; proving identities
7. Solving trigonometric equations
8. Applications
    - Law of Sines/Cosines
    - Vectors

C. Additional Topics: 10% to 20% of the time in this class may be spent on the following topics.

1. Conic Sections
2. Non-linear systems of equations
3. Rational Functions
4. Polar Coordinates / DeMoivre's Theorem

Tentative Committee List 2014-2015

Committee	Representative (Chair listed first)	Institution
Assessment of the Major	Minh Nguyen	Columbus State University
	Dawit Aberra	Fort Valley State University
	Matt Baker	Georgia Institute of Technology
	Neal Smith	Georgia Regents University
Curriculum and Transfer of Credit	Robby Williams	Georgia Perimeter College
	Sharon Taylor	Georgia Southern University
	Malcolm R. Adams	University of Georgia
	Alvina Atkinson	Georgia Gwinnett College
	Seyed Roosta	Albany State University
	Bruce Landman	University of West Georgia
	Mulatu Lemma	Savannah State University
Distance Learning	Mary Wolfe	Middle Georgia State College
	Anthony Giovannitti	Clayton State University
	John Blackburn	East Georgia State College
	Zephyrinus Okonkwo	Albany State University
Faculty Dev/Math Awareness	James Brawner	Armstrong State University
	Nolan McMurray	Gordon State College
	Guantao Chen	Georgia State University
	John Stroyls	Georgia Southwestern State University
Course and Textbook Information	Brent Griffin	Georgia Highlands College
	Melanie Partlow	Abraham Baldwin Agricultural College
	Anthony P Smith	Darton State College
	Lisa Howell	South Georgia State College
Placement/LS	German Vargas	College of Coastal Georgia
	Gyuheui Choi	Atlanta Metropolitan State College
	Wesley Whitehead	Bainbridge State College
	Leslie Caldwell	BOR University System Office Liaison
	Javad H. Zadeh	Dalton State College
Computer Science Liaison (Possible restructure)	John Cruthirds	University of North Georgia
	Greg Harrell	Valdosta State University
	Joe DeMaio	Kennesaw State University
	Robert A. Blumenthal	Georgia College & State University

TEMPORARY PARKING PERMIT

Middle Georgia State College

VALID DATE:	**March 5-6, 2015**

USG Academic Committee on Mathematical Subjects

CONTINUING EDUCATION DEPARTMENT

DO NOT PARK IN FACULTY/STAFF PARKING AREAS.
DISPLAY PERMIT IN REAR WINDOW

Dining

At 6:00pm you are all welcome to the Taki Japanese Steak House for a Japanese Sushi & Hibachi experience.

http://www.takijapanesesteakhouse.com
6255 Zebulon Rd
Macon, GA
(478) 475-1888

Lodging options

Motels at exit 9 of I-475 near Taki Restaurant (Middle GA at exit 3)

1). Sleep Inn

140 Plantation Inn Dr., I-475 Exit 9, At Zebulon Rd., Macon, GA 31210-2075

http://www.tripadvisor.com/Hotel_Review-g60920-d89823-Reviews-Sleep_Inn-Macon_Georgia.html

2). Comfort Suites 120 Plantation Inn Drive, Macon, GA, US, 31210

3). Fairfield Inn

http://www.marriott.com/hotels/fact-sheet/travel/mcnfw-fairfield-inn-macon-west/

110 Plantation Inn Drive

Macon, Georgia 31210 USA

Other options are the motels at exit 3 of I-475 near the Middle GA campus. These are all older motels.

Quality Inn

4630 Chambers Rd., Macon, GA, US, 31206

http://www.qualityinn.com/hotel-macon-georgia-GA725#listpos1