USG MATH 1113 Emporium: Insights from an Online Precalculus Course

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USG MATH1113 Emporium: Insights from an Online Precalculus Course

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Presenters

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AGENDA

Why Precalculus?

The Emporium Model

The Evolving Design

Next Steps
48 percent of bachelor’s degree students and 69 percent of associate’s degree students who entered STEM fields between 2003 and 2009 had left these fields by spring 2009.
The USG STEM Initiative works with USG institutions and P-12 partners to increase:

1. The number of P-12 students who prepare for and are interested in majoring in STEM in college,

2. The success rates (retention, progression, and graduation) and number of students in college who pursue the STEM disciplines, and

3. The number of teachers who are prepared in science and mathematics.
Why Precalculus?

Annual Enrollments

21,000+

Georgia Perimeter College
Kennesaw State University
University of Georgia
University of North Georgia
Georgia State University
University of West Georgia
Georgia Gwinnett College
Georgia Highlands College
Armstrong Atlantic State University
Savannah State University
Georgia Regents College
East Georgia College
Georgia College & State University
Gordon College
Albany State University
Columbus State University
Middle Georgia State College
Dalton State College
Georgia Southern University
Fort Valley State University
Valdosta State University
South Georgia State College
Georgia Southwestern State University
Atlanta Metropolitan College
Bainbridge College
Georgia Institute of Technology
Clayton State University
College of Coastal Georgia
Darton College
Abraham Baldwin Agricultural College
Why Precalculus?

According to the graph, the highest number of students enrolled in Precalculus at Georgia Perimeter College, with 3172 students. The lowest number of students enrolled is at Abraham Baldwin Agricultural College, with 29 students.

Approximately 37.7% of students do not succeed in Precalculus.
Complete College Georgia

- Mandate to increase postsecondary attainment to 60% by 2025
- Precalculus as Area A and Area D requirements
- Efforts at “Transforming Remediation”
- New Learning Models (NLM) Initiative
Goals

Access

High Quality

Affordability

Performance
THE EMPORIUM MODEL
“The Emporium Model is as close to a silver bullet as one can get in the complex world of teaching and learning.”

(The Math Emporium: Higher Education’s Silver Bullet, Twigg, 2011)
Online Emporium

- Content
- Context
- Guided Practice
- Proctored Testing
- Discussion Forums
- Tutorials & Tutors
- Live Study Halls

Icons of various educational tools and resources are shown, including WebAssign, brightspace by D2L, ProctorU, and smartthinking.
Course Timeline

**Design**
- Discussion Forum
- Online Study Hall
- Homework
- Quizzes & Tests
- Online Proctoring

**Pilot I**
- 5 Institutions
- 212 Students
- 6 Instructors
- 2 GTAs

**Redesign**
- Orientation Module
- Gated Progress
- Module Balancing
- Weekly Pacing
- New Videos
- Adjusted Scoring
- Practice Tests
- 3 Proctored Tests
- Group Engagement

**Pilot II**
- 1 Institution
- 74 Students
- 1 Instructor
- 2 GTAs
- 2 Peer Mentors

**Pilot III**
- 3 Institutions
- 150 Students
- 3 Instructors
- 2 GTAs
- 6 Peer Mentors

Supplemental Instruction
Study Groups
Evaluation and Evolution

Project Evaluation Activities
• Course Performance Data
• Module and End-of Term Surveys
• Analysis of Student Demographic and Participation Data
• Faculty Interviews to Inform Refinement

Key Findings
• Variations in Institutional Performance
• Challenges of Withdrawal and Non-Participation
• Use/Non-Use of Instructional Materials and Pedagogical Elements
• Correlation between Experiential Elements (Homework, Quizzes) and Overall Course Performance
• Issues of Student Engagement and Involvement
Course Elements

NEW ORIENTATION MODULE

1. Welcome Letter from the Instructor
2. Fall Syllabus 2014 Clarifications
3. Course Nav Overview Video
4. Myths and Facts
5. Time Management Plan – Activity
6. Academic Honesty etc. – Activity
7. Orientation Quiz – Gatekeeper
Course Elements

Module Balancing

New Module 1: Chapters 2.2 – 2.5, Test September 11-12 (Proctored)
New Module 2: Chapters 2.6 – 4.5, Test October 8-9
New Module 3: Chapters 4.6 – 5.6, Test November 5-6 (Proctored)
New Module 4: Chapters 5.7 – 6.6, Test December 4-5
Chapters 7.1 – 7.2, Final Exam Dec. 11-12 (Proctored)

No Midterm – 3 Proctored Exams – Practice Test before Mod 1 Test

Spring 2014

<table>
<thead>
<tr>
<th>Element</th>
<th>Grade %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Mod Tests (4)</td>
<td>10% ea = 40%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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</tbody>
</table>

Fall 2014

<table>
<thead>
<tr>
<th>Element</th>
<th>Grade %</th>
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</thead>
<tbody>
<tr>
<td>Homework</td>
<td>12%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>12%</td>
</tr>
<tr>
<td>Mod Tests (4)</td>
<td>12.5% ea = 50%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Participation</td>
<td>1%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Course Elements

Weekly Pacing & Structure

- Content arranged by week
- Due Date every Monday night
- Time Management plan submitted during Orientation
- Progress monitoring and communication as needed
- Administrative Withdrawal
Course Elements

NEW CONTENT

- 175 Instructor-made Videos
- 2 – 10 minutes in Length
- All Captioned
- Hosted on YouTube
- Embedded in GoVIEW
GROUP ENGAGEMENT

• Fall 2014:
  • Small Discussion Groups
  • Monitored by Peer Mentors
  • Non-threatening environment
• Spring 2015
  • Supplemental Instruction via ‘Digital Study Groups’
  • Led by peer mentors on Blackboard Collaborate
  • [http://youtu.be/GYrcxrC1QbQ](http://youtu.be/GYrcxrC1QbQ)
Course Elements

COURSE LAYOUT IMPROVEMENTS

MATH1113 Precalculus Emporium Spring 2015 CO

Welcome to MATH1113!

Posted Nov 18, 2014 4:23 PM

We are glad to have you with us! Take a minute to look around, then get started by clicking on the ‘Orientation’ folder over in the Content Browser. You have a ton of resources at your disposal here in the MATH1113 Precalculus Emporium. It is important to spend a little time with the orientation materials to get your bearings. Plus, you’ll have to score a 100% on your ‘Orientation Quiz’ before additional information will become available.

Looking forward to a great semester,
The MATH1113 Precalculus Emporium Team

Content Browser

- Bookmarks
- Orientation
- Course Essentials and FAQs
- Module "0"
- Module 1 (Jan. 12th - Feb. 6th)

Weekly Message

What’s Due This Week?

Due January 19th:
Homeworks 2.2A; 2.2B; 2.2C

Calendar

Thursday, November 20, 2014
Upcoming events

Updates

There are no current updates for MATH1113 Precalculus Emporium Spring 2015 CO
Reducing Costs

- Faculty
- Graduate Assistants
- Peer Student Mentors
- Students

MATERIALS

INSTRUCTIONAL DELIVERY
Lessons Learned

- Higher ABC rates; lower DF rates
- Improvements to Course Navigation and Orientation have been important
- Continuing Challenges
  - Student Engagement
    - Non-Participation
    - Student Interaction and Community
    - Withdrawals
  - Pedagogy
    - Emphasizing experiential learning
    - Support for various learner types...
"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."

Buckminster Fuller
MATCHING STUDENT CHARACTERISTICS WITH FORMAT
Ongoing Improvements

• Partnerships
• Outside Review
• Participating Institutions

• Challenges
  • Institutional Differences (schedules, academic policies, etc.)
  • Enrollment Procedures
  • Communication and Engagement
The presenters acknowledge the support of the Office of Educational Access and Success (OEAS), University System of Georgia (UGS), including Myk Garn, Asst. Vice Chancellor for New Learning Models.

The presenters wish to acknowledgement support from the development and design team, including Cole Causey, Lisa Townsley, and Malcolm Adams, as well as support from institutional partners at UGA, GSU, MGSC, VSU, GPC, and KSU and all course instructors, TAs, and peer leaders, including Allison Arnold, Sharon Evans, Ana-Maria Croicu, Peggy Moch, Kevin Yeomans, Barry Monk, Sutandra Sarkar, and Andrea Hendricks.
Discussion
Feedback

“Thank you so much for your hard work in putting this class together and teaching everything clearly online! I am so glad to be taking this class with you.”

“I think the content videos are a perfect length you teach everything that we need to know in the short time period! I love them!!”

“I definitely think it is an effective way of teaching and definitely working for me! I have not made below a 97 on any assignment :) “
Design Team

“THE BEST WAY TO PREDICT THE FUTURE IS TO INVENT IT.”