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USG MATH 1113 Emporium: Insights from an Online Precalculus Course

Nathan W. Moon Dr.

Georgia Institute of Technology - Main Campus, nathan.moon@cacp.gatech.edu

Kris Biesinger Dr.

University of Georgia, krisb@uga.edu

Chuck Kutal Dr.

University of Georgia, ckutal@uga.edu

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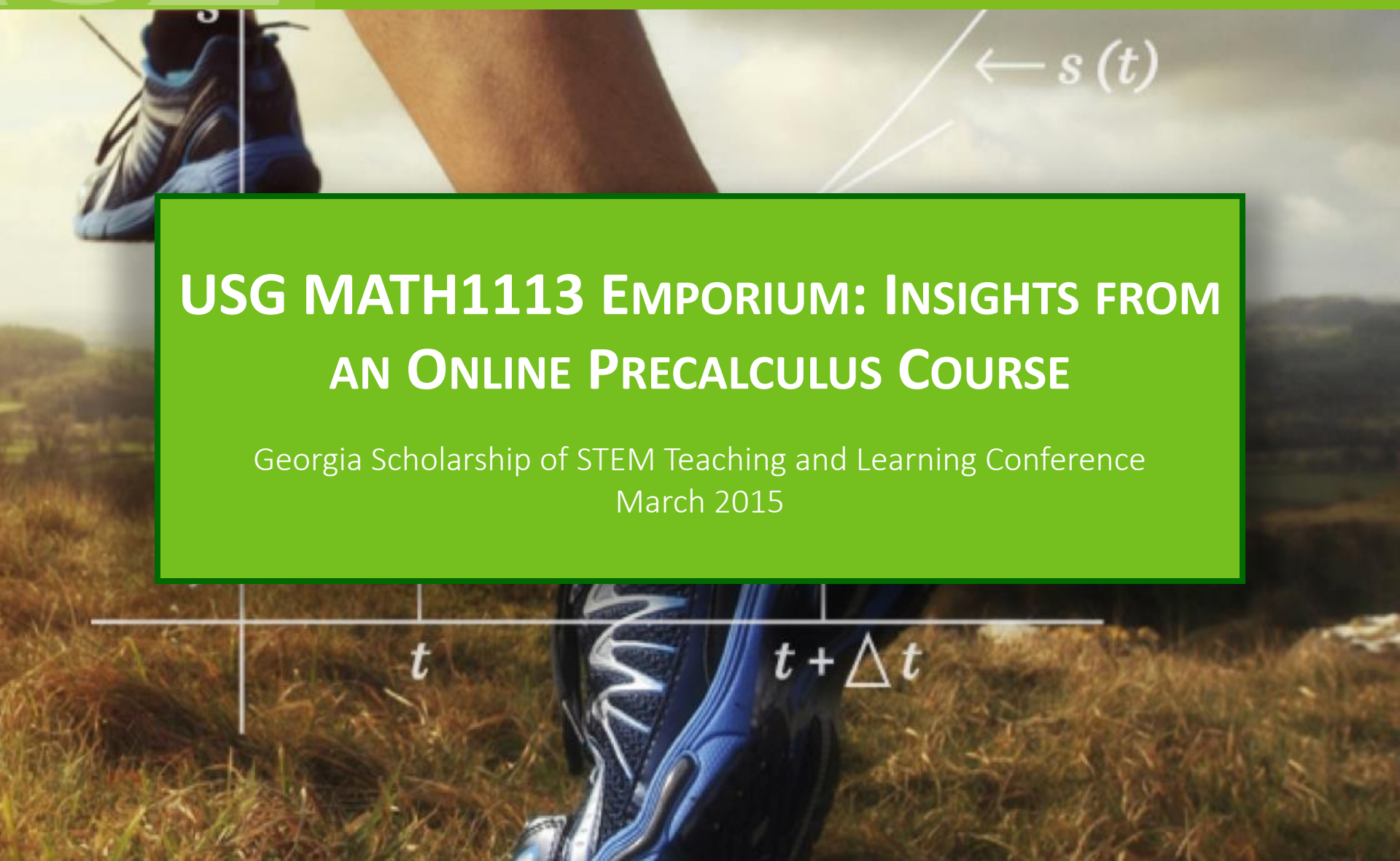
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PRECALCULUS EMPORIUM



USG MATH1113 EMPORIUM: INSIGHTS FROM AN ONLINE PRECALCULUS COURSE

Georgia Scholarship of STEM Teaching and Learning Conference
March 2015



Presenters

KRIS BIESINGER

PROJECT MANAGER, ONLINE PRECALCULUS EMPORIUM
UNIVERSITY OF GEORGIA

CHARLES KUTAL

PROJECT LEAD
DIRECTOR, OFFICE OF STEM EDUCATION
ASSOCIATE DEAN & CHEMISTRY PROFESSOR
UNIVERSITY OF GEORGIA

NATHAN MOON

PROJECT EVALUATOR
ASSOCIATE DIRECTOR FOR RESEARCH
CENTER FOR ADVANCED COMMUNICATIONS POLICY
GEORGIA INSTITUTE OF TECHNOLOGY



AGENDA

WHY PRECALCULUS?

THE EMPORIUM MODEL

THE EVOLVING DESIGN

NEXT STEPS

STEM Challenges

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.



USG STEM Initiative



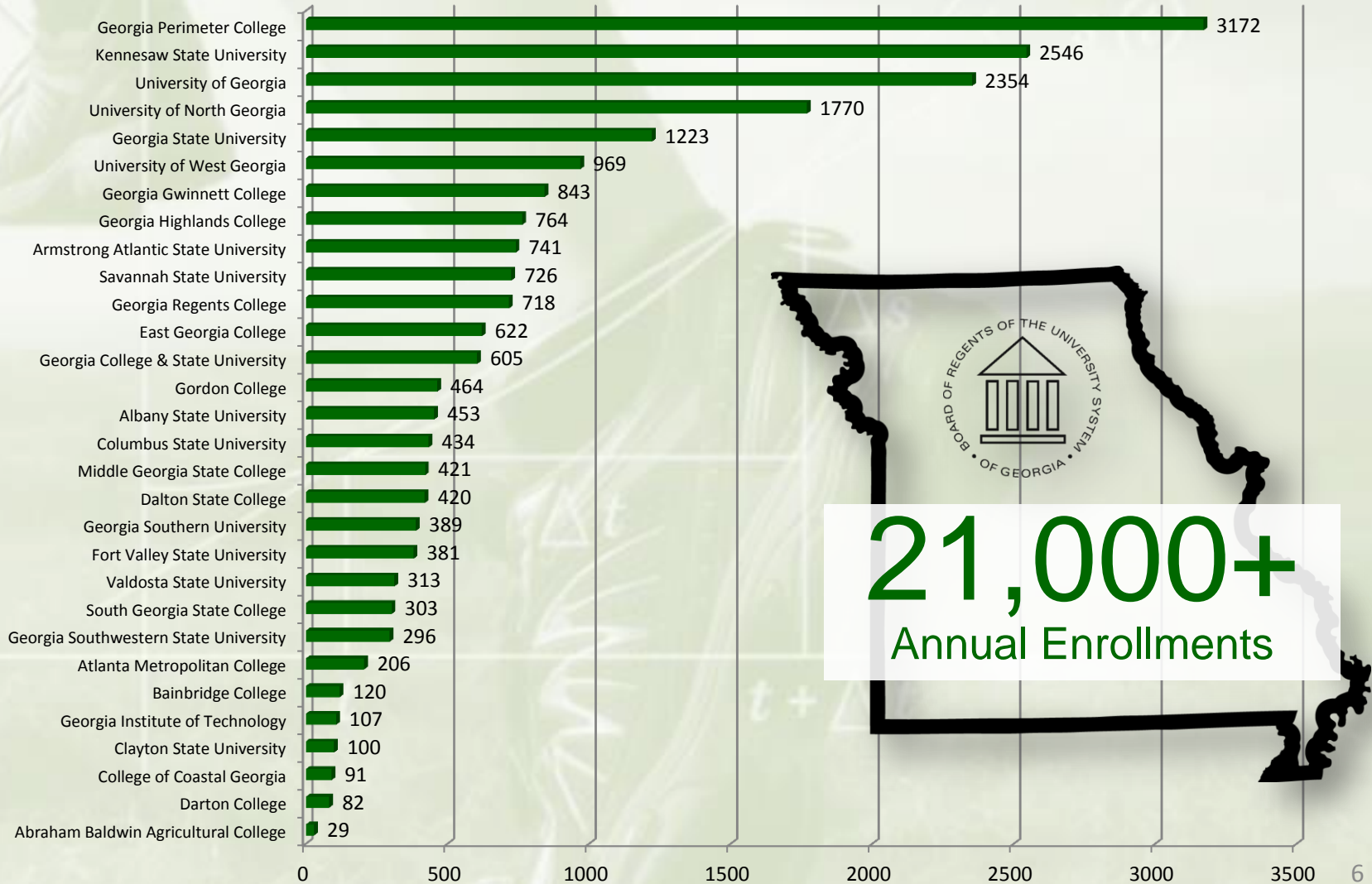
THE USG STEM INITIATIVE WORKS WITH USG INSTITUTIONS AND P-12 PARTNERS TO INCREASE:

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?





Why 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



Precalculus Emporium



THE EMPORIUM MODEL



Math Emporium



“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

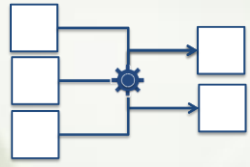
LIVE
STUDY
HALLS



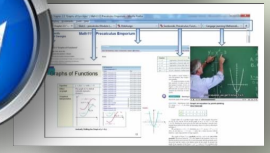
DISCUSSION
FORUMS



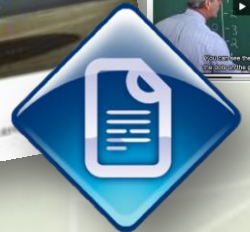
TUTORIALS
& TUTOR



GUIDED
PRACTICE



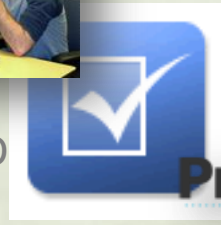
CONTEXT



CONTENT



PROCTORED
TESTING



ProctorU





Precalculus Emporium



EVOLVING DESIGN



Course Timeline

FA 2013

DESIGN

Discussion Forum
 Online Study Hall
 Homework
 Quizzes & Tests
 Online Proctoring



SP 2014

PILOT I

5 Institutions
212 Students
6 Instructors
2 GTAs



SU 2014

REDESIGN



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

FA 2014

PILOT II

1 Institution
74 Students
1 Instructor
2 GTAs
2 Peer Mentors



SP 2015

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

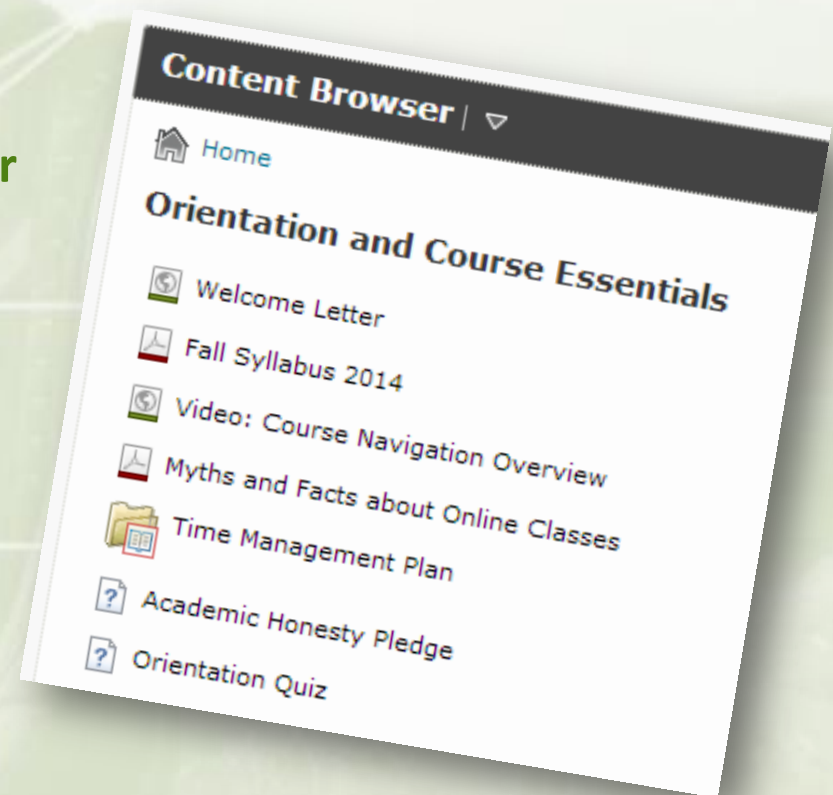
Key Findings

- 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

| Element | Grade % |
|---------------|--------------|
| Homework | 5% |
| Quizzes | 5% |
| Mod Tests (4) | 10% ea = 40% |
| Midterm Exam | 25% |
| Final Exam | 25% |
| TOTAL | 100% |

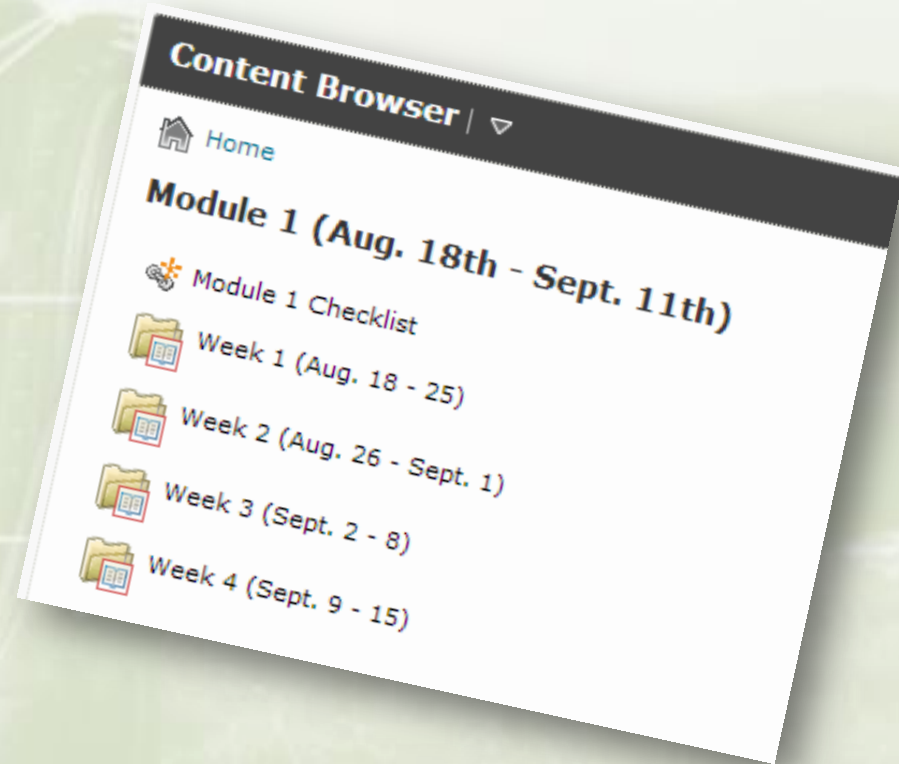
Fall 2014

| Element | Grade % |
|---------------|----------------|
| Homework | 12% |
| Quizzes | 12% |
| Mod Tests (4) | 12.5% ea = 50% |
| Final Exam | 25% |
| Participation | 1% |
| TOTAL | 100% |

Course Elements

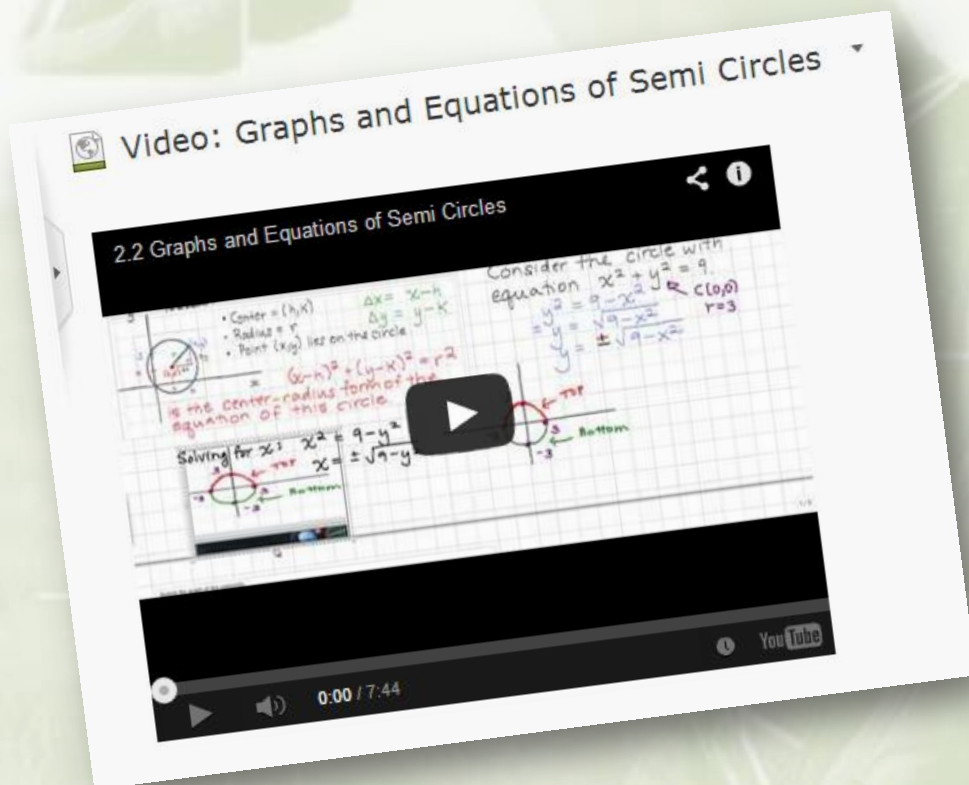
WEEKLY PACING & STRUCTURE

- 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

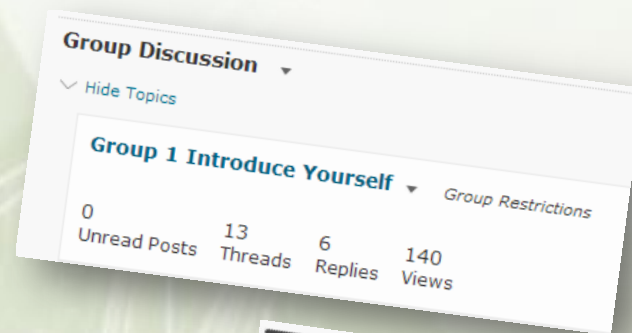


- 175 Instructor-made Videos
- 2 – 10 minutes in Length
- All Captioned
- Hosted on YouTube
- Embedded in GoVIEW
- <http://youtu.be/GMFtiOfkdIM>

Course Elements

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>



Course Elements

COURSE LAYOUT IMPROVEMENTS

The screenshot displays the course interface for MATH1113 Precalculus Emporium Spring 2015 CO. At the top, a green header contains the 'go' logo and the course title. Below this is a dark navigation bar with links for 'Course Home', 'Content', 'Admin', 'Assessments', 'Resources', 'COMMUNICATION', 'smarthinking', and 'WebAssign'. The main content area is divided into several sections:

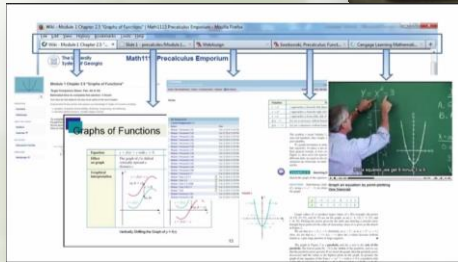
- News:** A post titled 'Welcome to MATH1113!' dated Nov 18, 2014, 4:23 PM. The text welcomes students and provides instructions on navigating the 'Orientation' folder in the Content Browser. It also mentions an 'Orientation Quiz' and a goal of scoring 100%.
- Content Browser:** A list of folders: 'Orientation', 'Course Essentials and FAQs', 'Module "0"', and 'Module 1 (Jan. 12th - Feb. 6th)'. It includes sub-sections for 'Bookmarks' and 'Recently Visited'.
- Digital Study Groups:** A section for 'Upcoming Sessions' listing 'Sunday Jan. 18th: 8 pm' and 'Monday Jan 19th: 6pm', with a link to 'Blackboard Collaborate LTI'.
- Updates:** A message stating 'There are no current updates for MATH1113 Precalculus Emporium Spring 2015 CO'.
- Weekly Message:** A 'Course Navigation Overview' video player.
- What's Due This Week?:** A section for 'Due January 19th:' listing 'Homeworks 2.2A; 2.2B; 2.2C'.
- Calendar:** A section for 'Thursday, November 20, 2014' with a link to 'Upcoming events'.
- Course Administration:** A sidebar section with sub-sections for 'Site Setup' (Navigation & Themes, Course Offering Information, Homepages, Widgets) and 'Site Resources' (Course Design Accelerator, Calendar, Content).

Reducing Costs

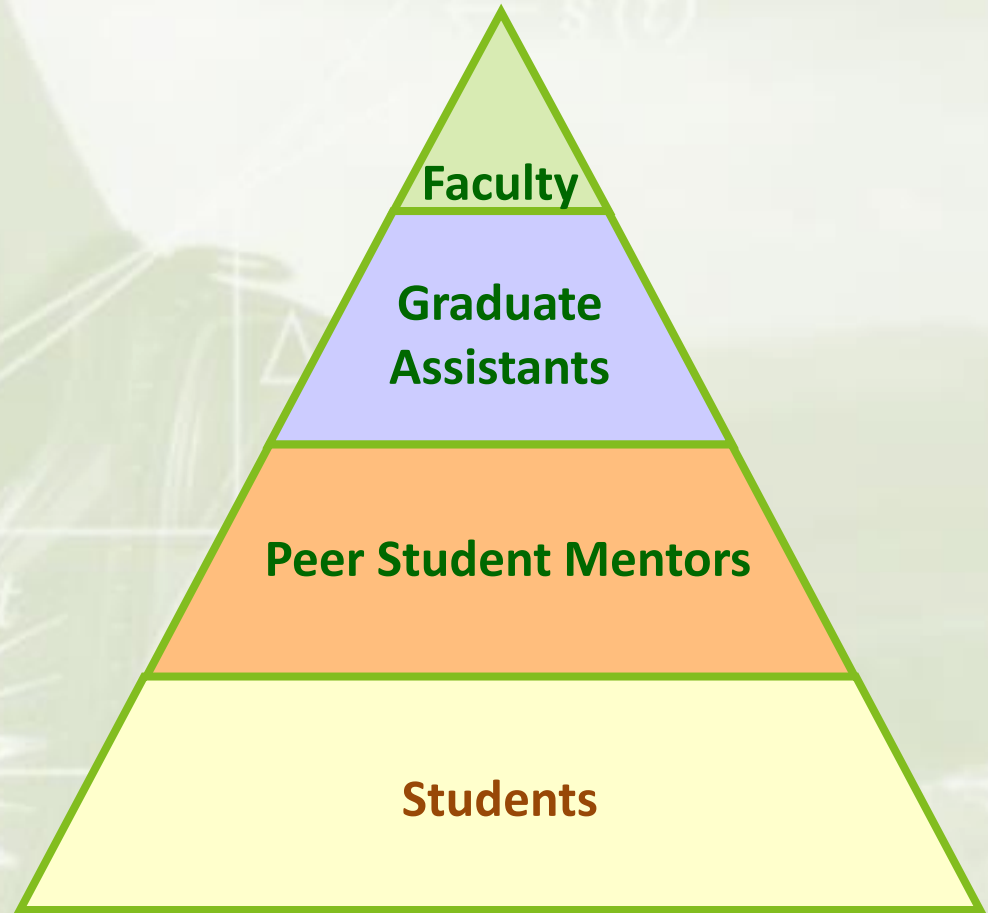
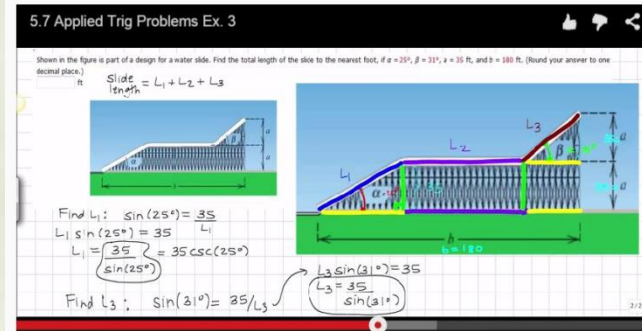
CENGAGE Learning



Assign



Video: "Applied Trig Problems Ex. 3"



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...

Moving the Needle



Access



High Quality



Affordability



Performance





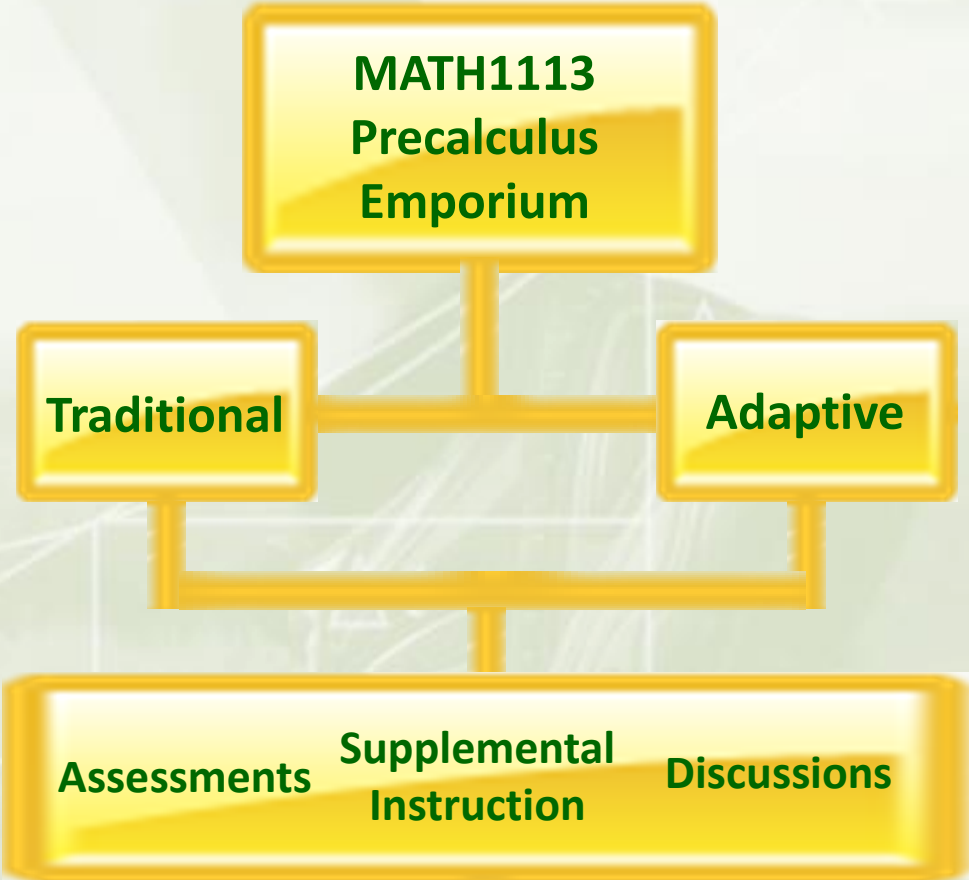
Next Steps



“YOU NEVER CHANGE THINGS BY FIGHTING THE EXISTING REALITY. TO CHANGE SOMETHING, BUILD A NEW MODEL THAT MAKES THE EXISTING MODEL OBSOLETE.”



Content Delivery



MATCHING STUDENT CHARACTERISTICS WITH FORMAT

Ongoing Improvements

- **Partnerships**
 - **Outside Review**
 - **Participating Institutions**
- **Challenges**
 - **Institutional Differences (schedules, academic policies, etc.)**
 - **Enrollment Procedures**
 - **Communication and Engagement**

Acknowledgements

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go

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

UNIVERSITY OF GEORGIA

GEORGIA STATE UNIVERSITY

GEORGIA PERIMETER COLLEGE

MIDDLE GEORGIA STATE COLLEGE

VALDOSTA STATE UNIVERSITY

KENNESAW STATE UNIVERSITY

UNIVERSITY OF NORTH GEORGIA

GEORGIA INSTITUTE OF
TECHNOLOGY



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