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Scholarship, Research, and Creative Work at Bryn Mawr College

Blended Learning in the Liberal Arts Conference

2016 Conference Archives

May 18th, 3:30 PM - 4:45 PM

Numbers Rock Our World: Classroom Viewpoint

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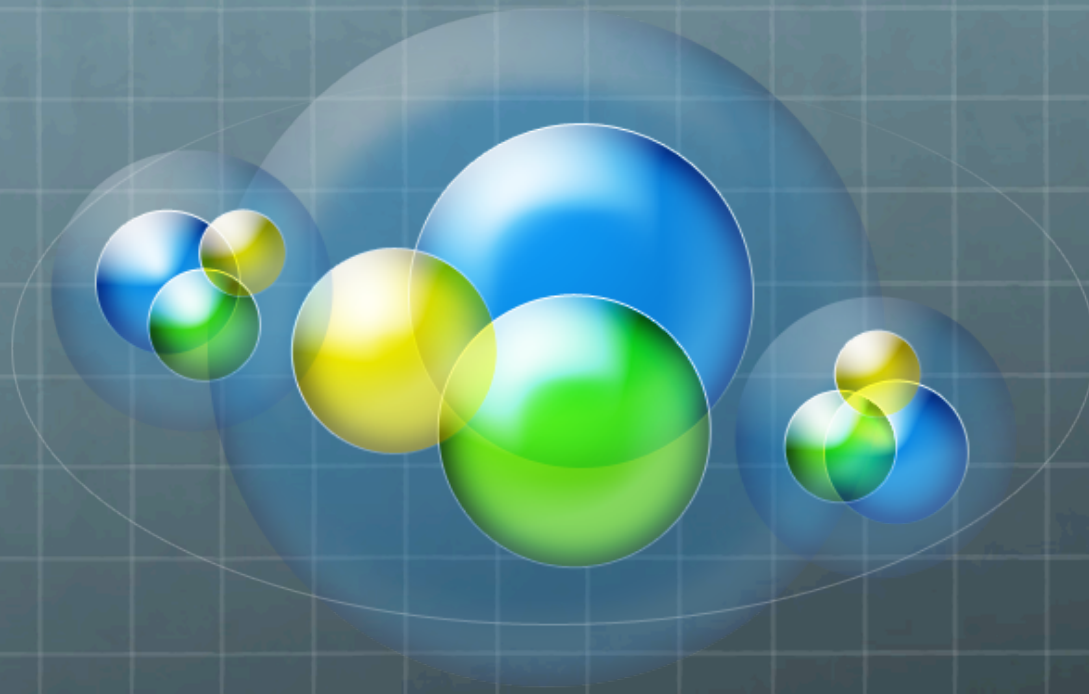
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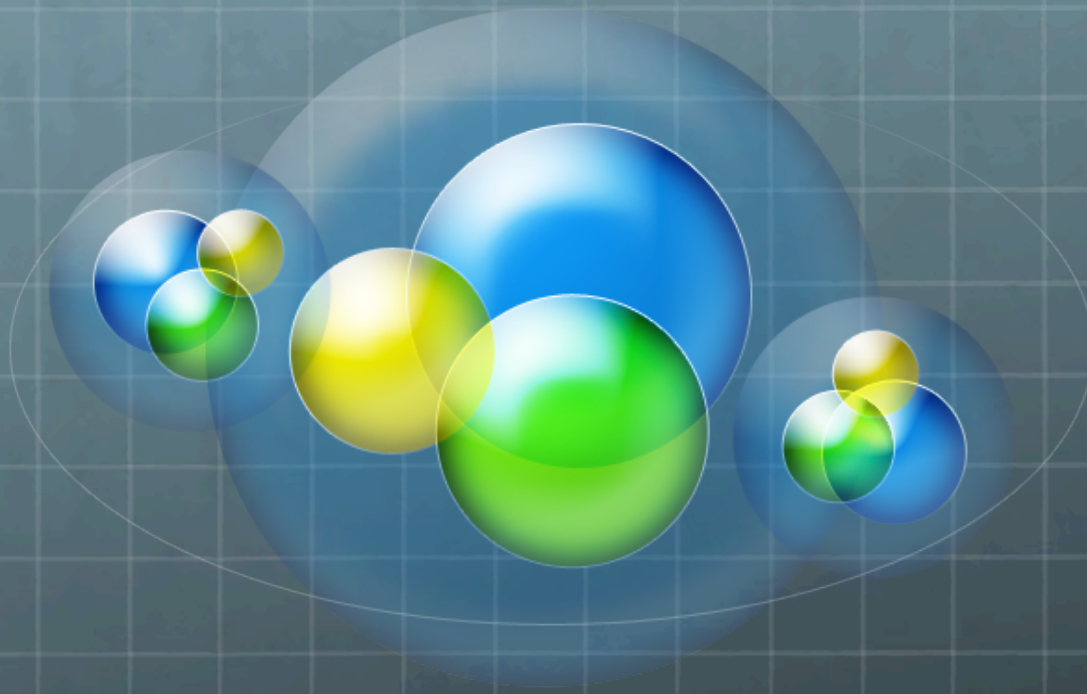
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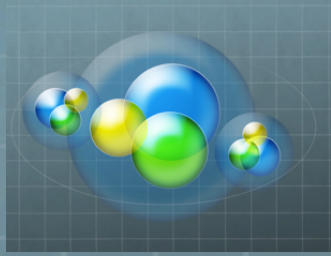
Paula Grajdeanu

Shenandoah University
Department of Mathematical Sciences



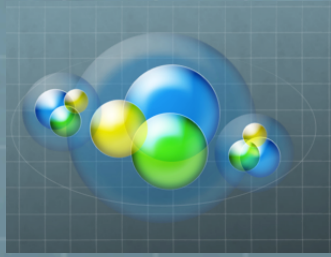
Numbers Rock the World:

Classroom Viewpoint



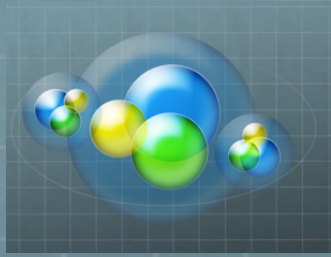
Numbers Rock the World: Classroom Viewpoint

Discuss **blended** learning **infused** into a liberal arts mathematics course for non-math majors that focuses on real-world applications of mathematics and mathematical reasoning.



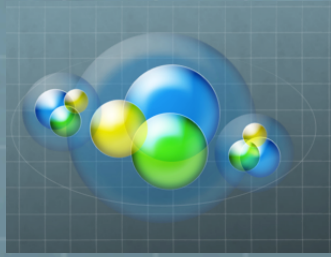
Numbers Rock the World: Classroom Viewpoint

Despite the general expectation of students to learn new math or learn how to solve more complicated equations, this course is not about acquiring new math skills, but rather to **understand how mathematics can actually be applied to everyday life.**



Numbers Rock the World: Classroom Viewpoint

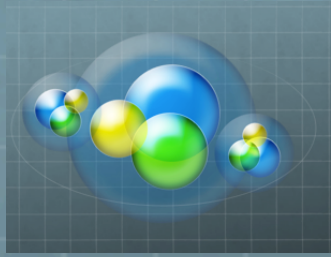
It is, in fact, as the catalog title says, a course in which students are challenged to **think mathematically**, to **analyze** everyday questions and **solve** everyday problems using mathematical tools.



Numbers Rock the World: Classroom Viewpoint

(Syllabus)

“The course is a combination of lectures, class discussions, and **active experiential learning**. This means that in addition to assigned readings, there will be numerous in-class and take-home **projects**, most of these involving **team work**”



Numbers Rock the World: **Classroom Viewpoint**

(Course Work/Assignments/Grading)

- [10%] Entry & Exit **Essays**
- [10%] In-class **Project Presentation**
- [80%] **Creative** Homework & Quizzes

Numbers Rock the World

Paula Grajdeanu: MATH100 Mathematical Thinking

apportionment



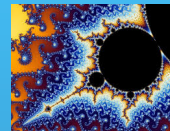
Get organized



Can we afford it all?



'This math too?!



Don't fight it!



Patrol that neighborhood



Beautiful? Math?



Most Power (Dance, Sport, Business, etc.)



America, the Beautiful



First Class Activity



A little bit of Critical Thinking goes a long way...

Find Something Math/Numbers Related In Your Life & Share With Us!

In-class Project Presentation

Renaissance Art; Futsal: Why Brazilians are skillful at soccer; Health Care; Al-Khwarizmi, and a flavor of Arabic Math; Cooking; Yoga; History of Mathematics; Voice; Origami; Rubik Cube; Sleep; Animation; The Golden Ratio in Music: Mozart; UPC codes; 3D printing; Brass Instrument Mouthpieces; Makeup; Epidemics; Math tricks, multiplication and more; Orchestral Setup; Shop Math; Creating Harmonizations; Mathematics in the Bible; Teaching Math to Children through Music; Math and Music Making; GPS's history; IndyCar; Quilts; Choreography; Pi Day; Military Training; The Optics of the Eye; Paychecks; Poetry; The making of a violin; How many colors do I need to paint a map? The Zodiac; Moneyball; Is it possible to shatter a glass using only your voice? Coffee; La Alhambra; Football; Skiing; Pointe; Graphics Design; How many candies in the jar?!; Between the Violin(ist) and Viola(ist); Shot Put; Sophie Germain & Germain primes; Dota 2

There is no math in my life!

Exit Essay:

"Math is not that scary!"

"I never knew that math could have more to it than just numbers!"

"It all makes much more sense now!"

"Those real life applications were really funny!"

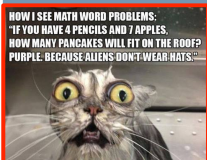
"The project presentations were a fantastic idea and one of my favorite parts of the class. It was really interesting to see the different views that my peers had about math. In addition, I learned that math can relate to almost anything, and we are surrounded by it every day."

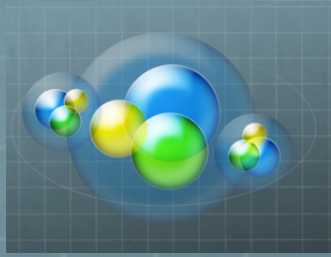
"Why do we need to learn this?!"

"When are we ever going to use it?"

Entry Essay:

"Math was never my thing!", "I hate math!", "Why do we need to learn this?", "I need this class, I'll give you a chance"





Numbers Rock the World: **Classroom Viewpoint**

- **First class: Present the modules/Vote**
- **Entry Essay**
- **In-class Project Presentations**
- **‘Rainy/Snow Day’ News Assignment**
- **Creative/Adaptive Homework/Quizzes**
- **Exit Essay**



Numbers Rock the World: Classroom Viewpoint

- **First class: Present the modules/Vote**

Part I: Social Choices (C)

Ch01: Mathematics of Voting (how elections are decided)

Ch02: Mathematics of Power (power of voting blocks)

Ch03: Mathematics of Sharing (resolve claims fair & equal)

Ch04: Mathematics of Apportionment (House of Representative seats)

Part II: Management Science (M)

Ch05: Mathematics of Getting Around (parade routes)

Ch06: Mathematics of Touring (least expansive route)

Ch07: Mathematics of Networks (optimal network)

Ch08: Mathematics of Scheduling

Part III: Shape, Growth and Form (A)

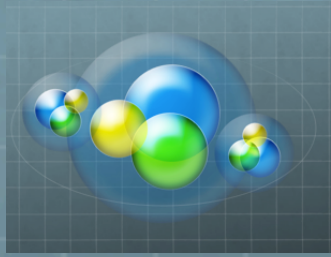
Ch09: Mathematics of Spiral Growth (mechanisms that govern growth)

Ch10: Mathematics of Money (how time affects the value of money)

Ch11: Mathematics of Symmetry (patterns)

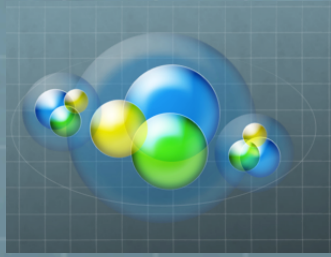
Ch12: Mathematics of Fractal Shapes (geometric shapes and nature)

Part IV: Statistics (S)



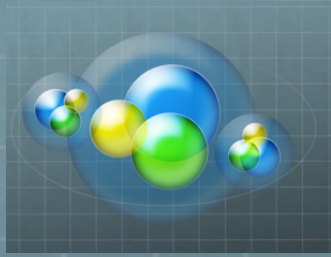
Numbers Rock the World: Classroom Viewpoint

- **First class: Present the modules/Rank the modules in the order of preference / Decide final ranking – Voting methods**
 - (C) Social Choices
 - (M) Management Science
 - (A) Shape, Growth and Form
 - (S) Statistics
- Google Forms, Google Sheets, Excel, PollEverywhere



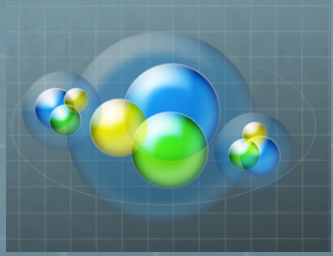
Numbers Rock the World: Classroom Viewpoint

- **Entry Essay**
- **Word, Google Forms, Canvas**
- **Online Submission**



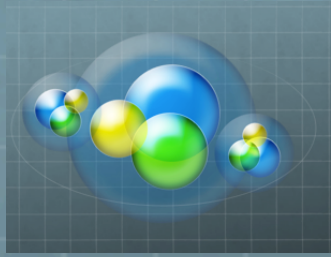
Numbers Rock the World: Classroom Viewpoint

- **In-class Project Presentations**
- Imovies, YouTube, PowerPoint, Prezi
- AirView/AirPlay
- Class/Panel Discussion
- Class Activity/Workshop (origami, tangrams, tessellations, brainy puzzles, paper airplanes, Mobius strip, etc)



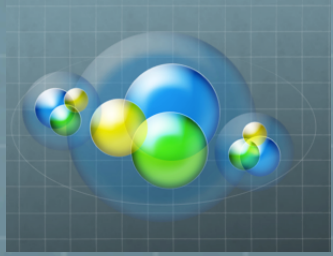
Numbers Rock the World: Classroom Viewpoint

- **‘Rainy/Snow Day’ News Assignment**
- Online resources, News Outlets, Blogs
- Google Forms, Canvas, Word



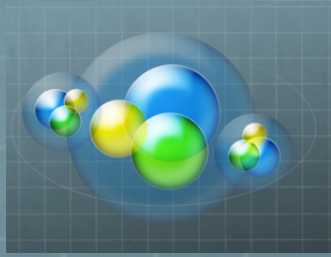
Numbers Rock the World: **Classroom Viewpoint**

- **Creative/Adaptive Homework/Quizzes**
- Google Sites, Google Forms, Word, Excel, PowerPoint, Prezi,
- Online maps, apps
- Team work, online chats/share
- Canvas, Online completion/submission



Numbers Rock the World: Classroom Viewpoint

- **Exit Essay**
- **Word, Google Forms, Canvas**
- **Online Submission**



Numbers Rock the World: **Classroom Viewpoint**

- Google Forms, Google Sheets, Excel
- Imovies, YouTube, PowerPoint, Prezi
- Online resources, News Outlets, Blogs
- Google Sites, Google Forms, Word, Excel, PowerPoint, Prezi, Online completion/submission, Team work
- Entry & Exit Essays

Numbers Rock the World

Paula Grajdeanu: MATH100 Mathematical Thinking

apportionment



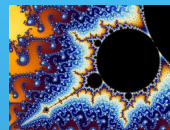
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America, the Beautiful



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Exit Essay:

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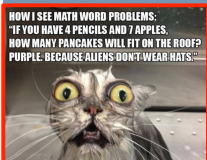
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Numbers Rock the World: Classroom Viewpoint

Discussion/What I've learned

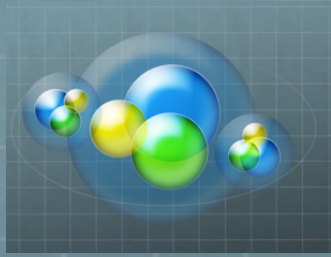
- **Entry Essays vs. Exit Essays**
- “The **Good**, the **Bad**, and the **Ugly**”
- **Next**



Numbers Rock the World: Classroom Viewpoint

“The **Good**, the Bad, and the Ugly”

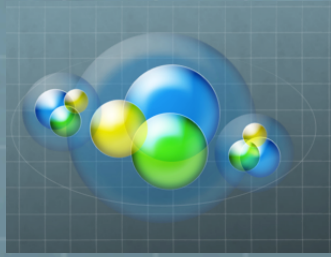
- Student participation/enthusiasm
- Academic success/Knowledge retention
- Improved efficiency/Self Assessment
- Personalized learning
- Collaborative learning experience /
team work / communication



Numbers Rock the World: Classroom Viewpoint

“The Good, the **Bad**, and the Ugly”

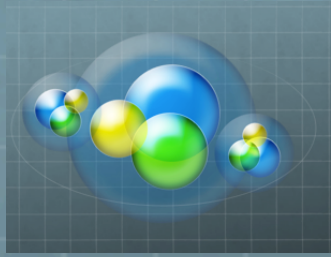
- Lack of IT knowledge/skills
- ‘Passive’ student
- Grading difficulties
- Meaningful use of internet resources



Numbers Rock the World: Classroom Viewpoint

“The Good, the Bad, and the Ugly”

- VERY TIME CONSUMING 😊



Numbers Rock the World: Classroom Viewpoint

Next steps:

- Panopto
- Omeka, Repository, Portfolio
- Digital Mapping
- Zoom (live discussions/competitions)
- **SUGGESTIONS ???**