

MATH 105: INTRODUCTION TO CONTEMPORARY MATHEMATICS

Research Project General Directions and Assessment Information

KEY TO PROJECT SUCCESS

Every team member should work together. Every team member must work equally on your Math 105 Research Project

WRITTEN PAPER (turn in one hard copy per team)

Required Resources / Reference Materials

Approved section from *The Heart of Mathematics*

Book related to topic from library or other approved source (at least one)

Internet Site: History Index (see Research Project webpage for link)

Internet Site: At least one approved other than the History Index

Paper Overview

Your paper should address each of the following. You may choose different section titles and numbers (and you may choose to not number or title the components of your paper), but each of the required components should be clearly addressed.

I. Topic

Mathematical topic general description and introduction: include overview materials/ideas a reader will need to follow the rest of your paper and include an explanation of why this topic is beautiful, appealing and important to know about.

II. Mathematical Examples

At least three worked out mathematical examples from this topic, at least two of which are worked out and explained examples or mindscapes from the text

III. Historical Relevance of Topic

Brief description of the historical relevance of the mathematical topic, perhaps including very brief information about a famous mathematician known for their work in this field.

IV. Complete Bibliography (sample bibliography and quoting format☺)

Quote:

"The example of counting daisies is an illustration of discovering numerical patterns in nature through direct observation" (Burger and Starbird, page 49)

Corresponding Item in Bibliography

E Burger and M Starbird, "The Heart of Mathematics: An Invitation to Effective Thinking, 2nd edition," Key Press, 2003

Formatting

Typed: Arial, Font 14, not bold. 1 inch margins on all sides, double spaced.

You may carefully write or sketch in, by hand, mathematical equations and sketches.

Include a cover sheet with your paper title and your team names (first and last).

Length

Three – six pages: Written materials including worked out mathematical examples, approximately 1000 – 1500 words.

The length and exposition word count do not include the cover page and bibliography.

POSTER

Beautiful standard size poster for display containing various “snapshots” of your paper that you will explain during your presentation. Your poster should be a guide for your presentation. This may be all hand drawn and written or may include typed or other computer generated images. Please do not laminate.

PRESENTATION

15 minute team presentation of your mathematical topic

Your presentation must help the other students understand what your topic is, see the beauty of this topic and see some of the mathematics from this topic.

May be

- ✓ Demonstrative (bouncing balls for example)
- ✓ Interactive
- ✓ Dramatic (song, skit, or ?)
- ✓ Technologically fancy (powerpoint, video clips, or ??)
- ✓ Combination of any of these or ???

Must

- ✓ Refer to and explain your team poster as a presentation reference

Not allowed

- ✓ 15 minute lecture

All members of the team must participate in the 15 minute presentation

See Burton for any needed materials for your presentation. The Mathematics Department has a surprising array of materials for class work.

RESEARCH PROJECT ASSESSMENT

Written Paper will be read for

- ✓ Clarity of Exposition (including grammar)
- ✓ Mathematical Correctness
- ✓ Use of and quoting of required resources. *Heart of Mathematics* must be quoted at least twice (not counting math examples and mindscapes). Your found library book, the History Topic Index and your found Internet site must be quoted at least once each.
- ✓ Creativity and originality of exposition. Don't copy from the book and your resources.
- ✓ Spell Check! More than two spelling errors, 5% deduction / spelling error (over first two errors)

Poster will be looked at for

- ✓ Effectiveness of creating snapshot of your topic
- ✓ Effectiveness of creating a guide for your presentation
- ✓ Quality (beauty, neatness)

Presentation will be assessed for

- ✓ Effectiveness of creating snapshot of your topic
- ✓ Effectiveness of presenting ideas from your topic in an understandable way
- ✓ Effectiveness of sharing mathematical ideas with the rest of the class
- ✓ Effectiveness of using poster to share ideas with the rest of the class
- ✓ Creativity and originality of presentation
- ✓ Polish of presentation (your team must PRACTICE!)
- ✓ Length of time: Presentation should run for about 15 minutes. Presentations that exceed 15 minutes may be stopped (and will be marked down).
- ✓ Equal sharing of presentation by each team member

INDIVIDUAL STATEMENT AND TEAM ASSESSMENT

Individual description about your experience working with your team.

Include time spent on project. KEEP TRACK!

Assess self and other team members on a 1 – 5 assessment scale provided on “Research Project Individual Statement and Assessments” template

Provide brief explanations of rankings of self and team.

Provide a short exposition about your experience working with your team.

Results of Individual Statements & Assessments

All members of team must agree that each team member has fully and equally participated in the team Research Project.

Individual grades will reflect team assessments.

EXAMPLES

Rankings				Average Ranking	Project Score	Final Individual Project Score
5	5	5	5	5	20 points	$20 \times 100\% = 20$ points
4	3	3	4	3.5	20 points	$20 \times 70\% = 14$ points

RESEARCH PROJECT TURN IN COMPONENTS AND DUE DATES

Item	Details	Due	Who?
Project Outline	Must be typed on template linked to course homework and Research Project pages. Includes book and internet site references for approval.	T, 7/3	One per team
Project Paper Draft	Typed, per format requirements in this document. Draft can be outlined form of paper without specific details filled in.	T, 7/10	One per team
Project Poster Plan	Very simple sketch with notes (on standard paper or poster sheet) outlining poster plan	T, 7/10	One per team
Final Project Paper	Typed, per format requirements in this document	R, 7/19	One per team
Final Project Poster	Per requirements in this document	R, 7/19	One per team
Individual Statement & Team Assessment	Must be typed on template linked to course homework and Research Project pages.	R, 7/19	One per person