

# The Mathematics Seminar at Central College

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# An Overview of Central College

- residential, liberal-arts college in Pella, IA
- enrollment  $\approx 1750$
- combined Mathematics/Comp. Sci. Department
- $\approx 9$  mathematics graduates per year

## Mathematics Seminar Goals

- to enhance student ability to communicate mathematics
- to enhance student ability to read/listen to mathematics for comprehension
- to give an effective mathematics (technical) presentation
- to build a departmental community of scholars

## Overall Seminar Structure

- junior seminar (2 s.h.) – MW, 12-12:50pm
- senior seminar (1 s.h.) – W, 12-12:50pm
  
- a letter-graded course
  
- the first third of the semester ... no presentations
  
- the remainder of the semester ... lots of presentations!!

## Aspects of Junior Seminar

- enhancing mathematical speaking/listening/reading skills
- learning researching skills in physical library and online
- producing and giving a public (group) presentation
- learning to summarize and discuss mathematics and to critique technical presentations

## Aspects of Senior Seminar

- enhancing mathematical speaking/writing skills
- utilizing researching skills in physical library and online
- producing and giving a public (individual) presentation
- producing a technical paper on their topic

## Where Does the Growth Occur?

- $\left\{ \begin{array}{l} \text{junior seminar} - \text{participating in mathematics discussions} \\ \text{senior seminar} - \text{responsible for mathematics discussion} \end{array} \right.$
- $\left\{ \begin{array}{l} \text{junior seminar} - \text{learning research skills} \\ \text{senior seminar} - \text{implementing research skills} \end{array} \right.$
- $\left\{ \begin{array}{l} \text{junior seminar} - \text{“rite-of-passage” presentation} \\ \text{senior seminar} - \text{“culmination” presentation} \end{array} \right.$

## Past Seminar Presentations

- “Cryptology: From Caesar Ciphers to Public-key Cryptosystems”
- “Three Ways to Sum a Series”
- “A Practical Application of Linear Algebra using GPS”
- “The Congestion of Graphs”
- “Map Coloring: The Four-Color Theorem”
- “Overtime in the NFL: A Markov Chain Analysis”
- “Rotational Symmetries of Polyhedra”

# A Sampling of Resources

1. “How to Give a Good Talk”, by Joe Gallian in April 1998 *Math Horizons*.
2. “How to Read Mathematics” by Shai Simonson and Fernando Gouvea
  - [http://www.stonehill.edu/compsci/History\\_Math/math-read.htm](http://www.stonehill.edu/compsci/History_Math/math-read.htm)
3. The Mathematics Student Handbook @ Trent University
  - [http://xaravve.trentu.ca/mascot/handbook/SEC\\_read.pdf](http://xaravve.trentu.ca/mascot/handbook/SEC_read.pdf)
  - [http://xaravve.trentu.ca/mascot/handbook/SEC\\_write.pdf](http://xaravve.trentu.ca/mascot/handbook/SEC_write.pdf)
4. “Reading Mathematics” by John Hubbard @ Cornell University
  - <http://www.math.cornell.edu/~hubbard/readingmath.pdf>
5. “Helping Undergraduates Learn to Read Mathematics”, by Ashley Reiter @  
Maine School of Science and Mathematics