

Math 320 – Computer Methods in the Mathematical Sciences I.

TERM PAPER

Timeline.

Proposal Deadline:	Friday, October 28.
First Draft Deadline:	Friday, November 25.
Presentations will take place in class on	December 7, 9, and 12.
Final Draft Deadline:	Thursday, December 15

Groups. The term paper may be written as individuals or in teams of two. Please describe the contributions of each team member to the project in your submission.

Sample Topics.

- (1) Exposition on a computational tool in mathematics not discussed in class. For example:
 - (a) What is a Gröbner basis?
 - (b) What is a tensor? How can we do linear algebra in higher dimensions?
 - (c) Principal components analysis (PCA).
 - (d) Discrete Fourier Transform and Image Analysis.
 - (e) The simplex method.
- (2) Take an applied problem in your area of interest. Use the theory we developed in class to analyze the problem.
- (3) Pick a software package in your field of interest. Perform experiments with it. Analyze its primary functionalities from a mathematical perspective. Discuss ways to improve or expand it.