

## **MATH 595: FINAL PROJECT ASSIGNMENT**

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Design a lesson unit; that includes a detailed lesson plan, a set of three or four activity-based worksheets including a graphing calculator (or other technologically based) activity for middle school or lower level high school students that explore approved topics *related* to what we have covered in class this term (see below).

Write complete solutions to the activities and worksheets.

Your lesson unit plan and activity based worksheets should be discovery based and practical for use in a real classroom. Your student activities / worksheets / projects should be fun and they should lead your students to work on some real math in a non skill & drill atmosphere.

Kids must be able to write on most of the pages in your worksheets. Having students work on activities you describe in your lesson plan is good but cannot be the only focus of your project. Your activity-based worksheets should be FUN! These are for children after all. Colors, pictures, fun and creative ideas should all be included as you design your activity based worksheets.

Keep the mathematics basic, but be accurate. This is your chance to apply knowledge that you have learned in this course. Use appropriate terminology (basic and correct).

### **TOPIC CHOICE CATEGORIES**

1. Basic functions: examples, representations, graphs, modeling real-life events with functions
2. Lines, slopes, and linear modeling
3. Optimization problems in the context of problem solving (graphing, not derivatives for solutions)
4. Physical applications or measurement applications

### **FINAL PROJECT PROCEDURES**

1. **TOPIC CHOICES / PROPOSALS**  
Choose your lesson module category and submit a brief written proposal as detailed in the attached proposal outline. Due 2/25
2. **WRITE PROJECT**  
Design and write your lesson plan, activities/worksheets (including your calculator activity), solution set, and assessment plan.
3. **PREPARE PRESENTATION**  
Prepare a presentation of your ideas for an interactive 25 minute session during our last day of class, Thursday March 13th. Your presentation format is entirely up to you, but having the class do some of your activity is entirely appropriate.
4. **PROJECT TURN IN**  
Turn in your completed project on Tuesday, March 18th by 5 p.m.

## **GENERAL LESSON PLAN OUTLINE**

Here are some general ideas you should include, not necessarily in this order, not necessarily in this outline format, in your written lesson plan paper.

### **Purpose**

Identify the purpose of the various parts of the lesson: What do you want the children to learn?

### **Materials**

List the materials needed to teach the lessons, topics, ideas and activities

### **Prerequisites**

Describe what you expect the students to know prior to the lesson ideas

### **Describe Teaching the Lesson**

Describe how you will teach the lessons

- How will you start?
- How will you interact with the class?
- How will the children be working, etc.?
- Be sure to connect your ideas to the NCTM standards recommendations (start at [www.nctm.org/standards](http://www.nctm.org/standards))
- How will you end the lesson?

### **Assessment**

Describe assessment techniques you will use to assess the effectiveness of your lesson ideas.

### ***Other resources?***

Feel free to investigate ideas in journals such as The NCTM's *Mathematics Teaching in the Middle School*, lessons from the NCTM Illuminations website or the NCTM's Navigation series. If you use someone else's ideas, be sure to give them credit and include a clear reference (see grading criteria).

## **LENGTH**

The written part of you lesson project should be about three to five typed (font 12, 1 inch margins, 1.5 line spacing) pages. Each of the activity based worksheets (including the calculator or other technological exploration) should be one to two pages. To be very clear: you should have 3-4 activity based sets of worksheets and each worksheet should be 1-2 pages. At least one of your worksheets should involve use of technology.

## **ASSESSMENT / GRADING**

Your lesson plan / activities / worksheet set cover the topic(s) assigned and that you have chosen (unless an exception is approved). A technology component is mandatory.

Your lesson plan / activities / worksheet set must be mathematically correct, clear, reasonable, easy to follow and they must LEAD the students through the materials (skill & drill does not lead). You are encouraged to adapt materials endorsed by NCTM, as long as you acknowledge this in your project.

Your lesson plans must be clear, easy to read, reasonable to follow and deal specifically with your activities / worksheet set and how you will accomplish having the students do these activities / worksheets in the classroom.

Your activities / worksheet set should be creative and show careful thought, time and energy spent on your part. All materials must be neat, tidy and pleasingly presented. Typed materials are preferred. Some things will clearly need to be drawn in or written by hand.

Your activities / worksheet set solutions must be clearly written and correct.