

SYLLABUS

MATH 219-01 Problem Solving Strategies for Middle School Teachers
TTh 1:40-2:55PM, AOC2 217

Spring 2018

INSTRUCTOR INFORMATION

Instructor: Dr. Tara Craig
Office: Smith 205B
Telephone: 843-349-4079
E-mail: tcraig@coastal.edu
Office Hours: M 1:00PM - 1:50PM; T: 9:30AM - 10:20AM (in SCI 205B);
F: 10:00AM-10:50AM (in AOC2 Cafe) *and by appointment*
Outreach MW 10:00AM-10:50AM in AOC2 Café

COURSE DESCRIPTION

Textbook: *The 5 Elements of Effective Thinking*, Edward B. Burger and Michael Starbird, Princeton University Press, 2012. **Required**

Moodle: I will be using Moodle (<http://moodle2018.coastal.edu/>) to post course related materials and your grades. Please check Moodle and Email daily.

Course Description: Methods of problem solving accessible to middle school students. Includes pattern recognition, diagrams, matrix logic, and the study of special cases. Major emphasis on explanation and reflection of the problem-solving process.

Course Objectives: This course will provide a thorough analysis of general problem-solving techniques and application of these strategies to a wide variety of open-ended problems, thus developing mathematical thinking through struggle, discussion, and reflection.

Grade Guidelines: Homework = 10%, Explorations = 20%, 2 Exams=20%, Project (Mid/Final)= 50%

Grade Scale:

A:	90–100	B+:	87–89	B:	80–86	C+:	77–79
C:	70–76	D+:	67–69	D:	60–66	F:	below 60

Explorations (20%): The majority of this course will be working individually and in groups to solve a variety of problems. Classwork will consist of graded explorations, written reflections, and engagement in discussions. Due to the nature of the classwork, these assignments can rarely be made up. If you have excused absences, please notify me immediately to determine how to make up missed classes.

Homework (10%): Homework will consist of solving a variety of problems, reading reflections, and discussion board posts. HW will be assigned and graded via Moodle on-line or turned in at the beginning of class. The homework assignments you turn in must be your work, you are welcome to come by my office and outreach for help or to ask questions. **No late homework will be accepted.**

Midterm Project (20%) and Final Project (30%): You will have two major projects assigned for this class. This midterm project is a detailed analysis of how people solve problems and the final project is a design-challenge. Details of these projects will be explained at a later time.

Exams (20%): There will be two exams in this course. If you know ahead of time that you must miss an exam, you must let me know in advance so we can make arrangements. If you miss an exam due to some unexpected reason and fail to let me know within as soon as possible, either via email, in person, or by phone, then you will not be allowed to make up the exam (except under very unexpected, serious circumstances).

Date	Due
February 23	Exam I
March 16	Midterm Project
April 16	Exam II
April 25	Final Project Presentation
April 27 (<i>by 3:30PM</i>)	Final Project Design Portfolio

Keep in mind that projects will account for 50% of your final grade.

Attendance: Students are obligated to attend class regularly. Being absent or leaving class early does not absolve you from responsibility of course materials. If you happen to miss a class, it is your responsibility to get any notes from another student in class and coordinate any make-up work with Dr. Craig. Many assignments will not be possible to make-up, therefore attendance is crucial for success in this course. Read the following for details of Coastal attendance policy: <http://www.coastal.edu/policies/pdf/acad-125classattendance.pdf>.

Important Dates:

Monday, January 15	Martin Luther King, Jr. Holiday
March 5-10	Spring Break
Tuesday, March 21	Last day to drop with grade of “W”
Friday, March 30	Student holiday
Wednesday, April 25	Last day of classes

Students with Disabilities: Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first week of class and provide appropriate documentation. All discussions will remain confidential.

Statement of Academic Integrity: Coastal Carolina University is an academic community that expects the highest standards of honesty, integrity and personal responsibility. Members of this community are accountable for their actions and reporting the inappropriate action of others and are committed to creating an atmosphere of mutual respect and trust. Please review the revised Code of Conduct that is available on the web at: <https://www.coastal.edu/conduct/>

Math 219 - Student Learning Outcomes

The successful student will demonstrate the ability to:

1. Identify appropriate problem-solving strategies and demonstrate competency in applying those strategies to topics listed in the NCTM standards for middle school students as well as those involving mathematics in other contexts.
2. Investigate open-ended problems and novel problems, identifying the confusing issues and determining methods to overcome these issues.
3. Compare and contrast problem-solving strategies and identify the most efficient strategy for a given problem.
4. Examine the process of resolving problems, clearly communicate this process orally and in writing, and evaluate the mathematical thinking strategies of others.
5. Formulate examples and generalizations of various problems to reinforce understanding of deeper concepts, building new mathematical knowledge through solving these problems.
6. Explore patterns in order to make and investigate conjectures, predictions, or generalizations.

Course Content

All of the following content will be learned through the context of solving mathematical problems from a variety of content domains.

- 5 Elements of Effective Thinking
- Grounding your thinking
- Initiating insights through mistakes
- Creating questions
- Seeing the flow of ideas
- Engaging change
- Growth mindset v. Fixed mindset
- Methods for overcoming struggle
- Reflective process for teaching and learning
- The Design Process
- Legacy Cycles
- Are your lights on?

The syllabus is for planning purpose only and is subject to change anytime.