COURSE SYLLABUS: Math 387W-01, 3 credit hours, Spring 2008
PROBLEM SOLVING IN MIDDLE SCHOOL MATHEMATICS

CLASSROOM AND SCHEDULE: Tuesday/Thursday, 8:00 – 9:20 am, Room 424 LDB

INSTRUCTOR:
Dr. Beth Cory
Office: Room 439B, Lee Drain Building
Phone: 294-1573   Email: bcory@shsu.edu
FAX: 936-294-1882
Office Hours: Monday/Wednesday 9:45 – 10:45 am, 1:00– 2:00 pm
                    Tuesday/Thursday 1:30 – 2:30 pm
                    Additional hours by appointment

COURSE OBJECTIVES/COURSE DESCRIPTION:
        This course focuses on developing strong problem-solving skills for preservice mathematics teachers at grades 4 - 8. Students are expected to practice communications skills and participate in hands-on activities and projects, including the use of math manipulatives and technology. Topics will include National and Texas standards for teaching mathematics, the problem solving process in general, and applications of problem-solving strategies. The four main themes recommended by the NCTM Principles and Standards (problem solving, reasoning, communication, and connections) will be emphasized throughout this course. Students will also participate in class discussions and group work during this course.
Prerequisite: Math 285 with a grade of C or better. 3 semester hours.

COURSE OBJECTIVES:
Upon completion of this course, students will be able to:
-   Recognize that a mathematical problem can be solved in a variety of ways and select the appropriate strategy for a given problem.
-   Evaluate the reasonableness of a solution to a problem.
-   Apply content knowledge to develop a mathematical model of a real-world situation and analyze and evaluate how well the model represents the situation.
-   Demonstrate an understanding of estimation and evaluate its appropriate uses.
-   Use mathematics to model and solve problems in other disciplines, such as art, music, science, social science, and business.
-   Communicate mathematical ideas using a variety of representations (e.g., numeric, verbal, graphic, pictorial, symbolic, concrete).
-   Recognize and use multiple representations of a mathematical concept (e.g., a point and its coordinates, probability as a ratio of two areas).

REQUIRED TEXT AND MATERIALS:
Herr, T. and Johnson, K. (2001). Problem Solving Strategies: Crossing the River With Dogs, 2nd edition. Supplemental materials provided by instructor

SUPPLIES: To be prepared for action during each class, you will need to have:
- Colored pencils, pens, markers, or crayons
- A scientific or graphing calculator

ATTENDANCE POLICY Regular and punctual attendance is expected of every student. As a prospective teacher, you must demonstrate your reliability and conscientious attitude by your faithful attendance. Attendance will be taken every class. Any student who is more than 30 minutes late to class will be counted absent. Tardies will count against your attendance record (3 tardies -1 absence). Unless approved by the instructor, leaving class early will count as an absence. If absent or tardy, you are still responsible for all material covered in class, and you will need to check with a classmate about what was discussed. **If you have 3 or fewer absences,** your final

exam grade can be substituted for your lowest unit test grade in figuring your final course grade. **Note**: Some homework grades will come from in-class work--if you are absent, you lose that opportunity. Severe attendance problems may result in a letter grade drop at the discretion of the instructor.

In addition to attending class faithfully, students are expected to put forth their best effort in this class. If you do not participate appropriately in class discussions and activities, are sleeping in class, are doing other homework, are talking when I am talking or when a classmate is talking, etcetera (see the section Classroom Rules of Conduct below), you are not demonstrating the professional attitude required to be a teacher. Not only are you missing instruction when talking, but you are also preventing the learning of those students sitting near you. **For each class period during which you exhibit a lack of participation or a lack professionalism, you will counted as absent for the day.** Severe problems in the area of professionalism may result in a letter grade drop at the discretion of the instructor.

COURSE EVALUATION: Each student's grade will be based on:

3 Unit Tests (each 100 points)	300
Problem of the Week (each 10 points – best 6 of 8)	60
Course Project (40 points)	40
Final Exam (Comprehensive)	<u>100</u>
Total Points	500

PROBLEM OF THE WEEK (POW): The major focus for this course is on problem solving but it is also a writing-intensive course. Learning to communicate your complete solution process clearly, in detail, using correct mathematical vocabulary and symbolism is essential. To facilitate this process, a Problem (or Problems) of the Week will be assigned weekly and will be done using a provided problem-solving solutions form that emphasizes Polya's four-step process. POW's may come from assigned homework or from additional problems assigned by the instructor. These POW's will be collected **8** times over the course of the semester and will be **worth 10 points** each. Your **best 6 of 8** scores will be counted toward your final point total. Because you will drop your lowest 2 scores, **NO LATE WORK WILL BE ACCEPTED**.

In addition, students will be required to fully justify all answers and solutions in writing on tests, quizzes, and homework. Homework assignments should be accomplished in a thorough manner, regardless whether they are to be collected for a grade or not.

COURSE PROJECT: There will be a written project required in this course, and specific guidelines will be provided later in the course. This project will involve choosing a literature book appropriate for grades 4 – 8 and writing a series of related mathematics problems. Each problem will utilize a specific problem-solving strategy identified by the instructor. Problems and solutions will be graded in part on their mathematical richness and mathematical correctness. This project will be worth 40 points. Projects turned in after the deadline will result in a letter grade drop.

TESTS: There will be three exams during this semester, as well as a comprehensive final exam.

***Tentative* Test Dates:**
Check with instructor or look for announcements on blackboard to be sure test dates a sections covered have not changed.
Test 1: February 19
Test 2: March 27
Test 3: April 24

NO MAKE-UP TESTS WILL BE GIVEN unless the student has an Official University excused absence. Arrangements must be made in advance of the exam. If you miss a test without an official excuse, your final exam grade will count double. A missed final examination can be made up only by approval of the Dean of the College of Arts and Sciences or a higher administrative official.

Final Exam Date: Thursday, May 10, 8:00 – 10:00 am in LDB 424

GRADING SCALE:

A	450 - 500
B	400 - 449
C	350 - 399
D	300 - 349
F	Below 300

ACADEMIC DISHONESTY:
        All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

CLASSROOM RULES OF CONDUCT:
Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. **Cellular telephones and pagers must be turned off before class begins.** Students are prohibited from making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

FOOD AND DRINK POLICY:
Food, tobacco products, and drinks (other than water) are not allowed in the classroom.

VISITORS IN THE CLASSROOM:
Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom.

AMERICANS WITH DISABILITIES ACT:
        It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be

subjected to discrimination under any academic or Student Life program or activity. SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center [(936) 294-1720] and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. **NOTE:** No accommodation can be made until you register with the Counseling Center.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS POLICY:

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will provide the student with a written description of the deadline for the completion of missed assignments.