CASPER COLLEGE COURSE SYLLABUS

Course: Math 1000-04 Problem Solving

Semester: Fall 2015

Lecture Hours: 3 **Lab Hours:** 0 **Credit Hours:** 3

Class Time: MWF 11:00 – 11:50 **Room:** PS 216

Instructor: Kendall Jacobs **Office:** PS 338

Office Phone: 268-2043 **Email:** kjacobs@caspercollege.edu

Office Hours:

TTH 8:00-8:50 TTH11:00-11:50 MWF 1:00-1:50

If the above times don't work for you, please feel free to make an appointment - or just drop by!

Course Description: Focuses on the strategies of problem solving. Topics in the course are taken from financial mathematics, set theory, logic, probability, statistics and discrete mathematics and "just in time" algebra topics, such as exponents that are necessary to students in their success in this class and in their major. (From Casper College Course Catalog).

Prerequisites: A grade of "C" or better in MATH 0900; or an ACT Math score of 19 or better; or a COMPASS placement score in the Pre-Algebra domain of 45-100 and Algebra domain of 0-39 within the past year, or final cumulative high school GPA of 3.7 or better.

Goal: The purpose of this course is to help the student develop problem solving skills while studying many fundamental branches of mathematics.

Outcomes: Students who successfully complete this course should

1. Improve their problem solving abilities
2. Be able to make mathematical observations and conjectures.
3. Be able to identify number patterns and model physical phenomenon using arithmetic and geometric models.
4. Be able to use geometry and unit analysis to solve problems.
5. Be able to solve problems involving compound interest, annuities and amortizations
6. Be able to use the empirical, experimental and subjective definitions of probability to do probability problems involving one event.
7. Be able to describe a data set using basic sample statistics and graphics.
8. Be able to construct an interval estimate from the normal distribution and understand it has a specified certainty of being correct.
9. Read and understand mathematics, think critically, and express mathematical concepts precisely in language and writing.
10. Transfer and apply knowledge gained to other situations and disciplines.

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Materials Needed:

Text: *ThinkingMathematically* 6nd edition Blitzer (2015). You may also purchase access to the multimedia text (you don't have to have a hard copy) via My Math Lab (cost is around $95). My Math Lab is not required. The online portion of the homework will be submitted via Moodle or WebWork.

Calculator: You will need a calculator – For those that have them, I will be providing resources for TI graphing calculators – however, they will not be required.

Computer/Internet: You will be required to have access to the Internet and Moodle. You may access the Internet via the Casper College Computer Labs. There will be some assignments that use spreadsheets – Excel/Works/etc. Please let the instructor know if you need help gaining access to these tools.

Methodology:
The focus of this course is on developing problem solving and critical thinking skills. We will use an active learning approach - as Paul Halmos stated "The only way to learn mathematics is to do mathematics". You need to come to class prepared to think and to problem solve. You will be expected to spend 3-6 hours outside of class working assigned readings and videos as well as completing the webwork exercises.

Evaluation Criteria: Your letter grade will be based on your performance on the following:

> **Preparedness (approx. 20%):** You will be assigned a daily reading/video along with a 2-5 question Moodle/WebWork assignment that will help prepare you for our problem solving sessions. In order to get an A or B in the class, you must have at least an 80% average on these assignments.
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> **Problem Solving Notebook and Explorations (40%):** You will be required to keep a problem solving notebook which will be submitted several times during the semester for a grade (see notebook rubric). You will also be required to submit/present 5-8 exploration problems over the course of the semester
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> **Engagement in Problem Solving (30%):** This is more than just class attendance. You will be expected to be fully engaged in problem solving during class – among other things, this means asking questions, making conjectures, exploring the mathematics and working together. There is almost a century of research showing that academic achievement, productivity, and self-esteem improve dramatically when students work together in groups. You should not be texting, visiting, or daydreaming. You will also be evaluated on some of the informal presentations you do in class.
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> **Quizzes (10%) :** You can expect at least one quiz each week.
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> **Grading Scale:** You are guaranteed a traditional grading scale of 90% + A, 80-89% B, 70-79% C, 60-69% D, 59%-F. However, in order to obtain an A or B you must score at least 70% on the three exams. I reserve the right to lower the cut off values without notice if I deem it necessary.

Role of the instructor: There will be less "lecturing" in class than usual, with many questions "answered" by another question to help you work through your own questions and difficulties. You are expected to learn problem solving through active involvement - reading, writing, and explaining to others what you are thinking and doing. This may require some adjustment in the way you think about teaching and learning. Initially, you may wish for more direct information and answers, but your patience and effort will be rewarded with a deeper understanding and increasing independence in problem solving, as well as confidence in your ability to tackle new problems.

Student Rights and Responsibilities:
Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty: (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

ADA Accommodations Policy: If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu . The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Last Day to Change to Audit or Withdraw: November 12, 2015 will be the last day to drop/audit this class. If you are thinking about changing your course status, please see me BEFORE this date. You will not be allowed to audit unless you have been attending class on a regular basis.

Help: I recommend you keep up with the class. If you need help, then get it . . . FAST! I will be available to help individuals during my office hours or by appointment. If you see that I'm online, feel free to invite me to the course chat room. PLEASE don't hesitate to stop by or give me a call. I want you to succeed! The Math Lab (PS 104) is also a great place to go for assistance. I will also offer an occasional Skype if there is an interest.

IF YOU ARE HAVING TROUBLE IN THIS CLASS, PLEASE CONTACT ME AS SOON AS POSSIBLE!!!

Math 1000-04 FALL2015
TENTATIVE SCHEDULE

WEEK	TOPICS
WEEK ONE Aug 24-28	Course Introduction Nature of Mathematics Inductive and Deductive Reasoning Arithmetic and Geometric Patterns and Models
WEEK TWO Aug 31-Sept 4	Nature of Mathematics Inductive and Deductive Reasoning Arithmetic and Geometric Patterns and Models Numeration
WEEK THREE Sept 7 – Sept 11	Arithmetic and Geometric Patterns and Models Algebraic Thinking – Problem Patterns – Solution Patterns Polynomial Models **Sept 7 Labor Day – No Class**
WEEK FOUR Sept 14-Sept 18	Algebraic Thinking – Problem Patterns – Solution Patterns Polynomial Models
WEEK FIVE Sept 21-Sept 25	Numeration, Calculation, Mental Arithmetic
WEEK SIX Sept 28-Oct 1	Numeration, Calculation, Mental Arithmetic
WEEK SEVEN Oct 5 – Oct 9	Units Measurement and Geometry
WEEK EIGHT Oct 12-Oct 16	Units Measurement and Geometry
WEEK NINE Oct 19-Oct 23	Financial Mathematics
WEEK TEN Oct 26-Oct 30	Financial Mathematics
WEEK ELEVEN Nov 2-Nov 6	Probability Theoretical – Simulation – Multistage – Geometric **Nov 6 – Advising Day**
WEEK TWELVE Nov 9 – Nov 13	Probability Theoretical – Simulation – Multistage – Geometric **Nov 12- Withdrawal Deadline**
WEEK THIRTEEN Nov 16-Nov 20	Probability Theoretical – Simulation – Multistage – Geometric
WEEK FOURTEEN Nov 23-Nov 26	Descriptive and Inferential Statistics **Nov 25 – 27 Thanksgiving Holiday – No Class**
WEEK FIFTEEN Nov 30-Dec 4	Descriptive and Inferential Statistics
WEEK SIXTEEN Dec 7 – Dec 10	Descriptive and Inferential Statistics
Dec 14-Dec 18	**Finals Week: Problem Presentations**