

SPRINGFIELD COLLEGE IN ILLINOIS

SYLLABUS - MAT 106 – NUMERACY

Session C begins on May 9, 2005

Place/Time: Thursday, 6:00-10:00, Dawson 225

INSTRUCTOR: Larry Sweatman

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SCI Math. Dept.

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Course Description:

From the Springfield College in Illinois catalog: "A course for students whose major field of study is not in engineering or the sciences; emphasizes understanding of mathematical aspects of modern real-world applications. An in-depth study of three or four topics from the following: geometry, counting techniques and probability, graph theory, logic/set theory, mathematical modeling, elementary consumer mathematics, game theory, linear programming and statistics in integrating the use of technology and the use of polynomial functions in the interpretation and solution of problems. Prerequisite: one and one half years of high school algebra or MAT-099 and one year of plane geometry." (SCI 2003-2004 Academic Catalog, 93-94) The number of hours for this course is three.

Textbook and Material:

text for this course is The Nature of Mathematics, tenth edition, by: Karl J. Smith. This text is published by Brooks/Cole. This book was copyrighted in 2004.

Sections covered in MAT - 106-Numeracy

Preparation for first session:

Read pages 39-46 and study examples.

Do odd numbered problems 7-43 on pages 46-47.

Chapter 5 Pages 215-272 Chapter 11 Pages 551 -572

Chapter 6 Pages 295-326 Chapter 12 Pages 607-643

Chapter 7 Pages 351-370 Chapter 13 Pages 665-703

Chapter 10 Pages 497-526

A tentative schedule will be given to students the first night of class listing each class period, topic, and assigned problems.

NUMERACY

Goals and objectives of the course:

In this course, we would like to be able to expand your skills of problem solving by introducing you to varying topics in math. These topics include number systems, geometry, financial mathematics, probability and statistics. By learning these skills this should expand your view and skills of mathematics both in the real world and in your own field of study There is no value to mathematics unless you can see its use in your own life.

Teaching Methods:

Teaching methods used will vary depending on the material presented. Each class period will start off with solving problems that have caused problems for the students. This will require your participation. After this is complete, new material will be presented in a brief introduction and problem solving exercise. Then the students will be asked to attempt a portion of their homework assignment in order to make sure that understanding is successful.

Course requirements:

Attendance Policy: An attendance sheet will be provided for you to sign in when attending class. This is a method for me to know who is there and who needs that day's work. I have found that there is a direct correlation between class attendance and success in all courses. I will expect you to attend class.

Homework: The student will need to turn in the homework for each testing section on the test day. Assignments will be discussed in class so that questions can be answered. In this type of course, much of the homework will be completed in class so that the student can experience the problem solving.

Chapter Tests: Chapter tests will be given as seen on the first class schedule. A review sheet will be provided to the test in order for the student to know what topics will be included on the test. For each chapter, there will be one take-home test (50 points) and one in-class test (50 points).

Final Exam: The final exam may be comprehensive and will be discussed with the class The exam will be given during finals week and date and time will set at a later date.

Means of evaluation: Here is the grading scale and basis of overall course grade:

Grading Scale:	100% to 90%	A
	89% to 80%	B
	79% to 70%	C
	69% to 60%	D
	Below 60%	E

Quizzes 35% of total grade.

Homework 10% of total grade.

Chapter tests 35% of total grade.

Final exam 20% of total grade.

If you anticipate that you will be unable to attend a test, please discuss this situation with me so that we can make arrangements to take the test. If you have an unanticipated emergency, please contact me within 24 hours of the test date in order to arrange make-up. In the testing process, I prefer to hand back tests the next class period after the test is taken. It is best for students to receive immediate feedback in order to learn from their mistakes and succeed in the course. Additionally, problem areas can be addressed at this time so that the student can address these problem areas and achieve overall class success. If a student has not taken the test, the tests cannot be handed back. Be conscientious of the other students in the class and plan ahead.

Topical course outline:

Topics included are: Set theory, basic math, property of numbers, geometry, algebra, probability and statistics. A document with projected homework is included.

American with Disabilities Act (ADA):

Springfield College in Illinois provides individuals with disabilities reasonable accommodations to participate in educational programs, activities and services. Students with disabilities requiring accommodations to participate in college-sponsored programs, activities and services or to meet course requirements should contact the Dean of Student Affairs as early as possible.

Student Outcome Statements: Upon successful completion of this course, the student will be able to:

1. Determine whether a number (or numbers) is a solution to a given equation.
2. Translate word phrases and sentences into algebraic expressions or equations.
3. Simplify algebraic expressions.
4. Solve linear equations in one variable.
5. Solve a formula for one of its variables.
6. Solve word problems utilizing linear equations in one variable.
7. Solve linear inequalities, including applications, expressing solution sets as an inequality, in interval notation, or graphically on a number line.
8. Interpret line and bar graphs.
9. Graph ordered pairs of real numbers in the rectangular coordinate system and write ordered pairs for points that have been graphed.
10. Graph linear functions.
11. Find the slope of a line given two points on the line or given the equation of the line.
12. Write the equation of a line given various conditions.
13. Determine whether a relation is a function.
14. Find the domain and range of a function and utilize function notation.
15. Solve systems of linear equations by graphing, substitution and addition.
16. Solve applications using systems of two equations and two unknowns.
17. Simplify expressions involving integer exponents using the properties and definitions of exponents.

18. Convert numbers from standard notation to scientific notation and vice versa.
19. Identify expressions that are polynomials and classify them by degree and by number of terms.
20. Add, subtract, multiply and divide polynomials.
21. Factor polynomials.
22. Solve polynomial equations and applications by factoring.
23. Define and simplify rational expressions.
24. Add, subtract, multiply and divide rational expressions.
25. Find statistical central numbers (mean, mode, median).
26. Interpret statistical tables and graphs.
27. Draw statistical graphs; circle graphs; bar graphs; line graphs; and pictographs.
28. Convert measurements of metric, American Units, time and temperature into their respective units.
29. Find perimeter, area and volume of geometrical shapes.
30. Find the lengths of any two sides of a right triangle.
31. Identify the structure of the set of real numbers.
32. Demonstrate the association of integers with real world problems.
33. Order real numbers on the real number line.
34. Add, subtract, multiply and divide positive and negative numbers.
35. Find absolute values of real numbers.
36. Evaluate algebraic expressions by substitution and by utilizing addition and multiplication properties.
37. Simplify algebraic expressions utilizing factoring and collecting like terms.
38. Translate verbal expressions to algebraic expressions.
39. Solve linear equations.
40. Convert whole numbers between standard notation and expanded notation.
41. Add, subtract, multiple and divide whole numbers without the use of a calculator.
42. Round a whole number or a decimal to a given place value.
43. Estimate the sum, difference, product or quotient of whole numbers.
44. Solve application problems involving whole numbers.
45. Evaluate exponential expressions.
46. Use the order of operations to evaluate whole number expressions.
47. Find factors of prime factors of composite numbers.
48. Reduce a fraction to lowest terms.
49. Multiply and divide fractions without the use of a calculator.
50. Find the LCM of two or more numbers.
51. Add and subtract fractions without the use of a calculator.
52. Convert between improper fractions and mixed numbers.
53. Add, subtract, multiply and divide mixed fractions without the use of a calculator.
54. Solve application problems involving fractions.
55. Convert numbers between decimal notation and word names.
56. Convert between decimal notation and fractional notation.
57. Add and subtract decimals without the use of a calculator.
58. Multiply and divide decimals without the use of a calculator.
59. Estimate the sum, difference, product or quotient of decimal numbers.
60. Solve application problems involving decimals.

61. Convert numbers between fraction notation and ratio notation.
62. Calculate a rate or unit price from an application problem.
63. Solve for the missing term in a proportion problem.
64. Solve application problems involving a proportion.
65. Solve a proportion problem involving similar figures.
66. Convert notation between percent, decimals and fractions.
67. Solve percent problems.

ASSESSMENT. Goals, objectives, and learning outcomes that will be assessed in the class are stated in this syllabus. I will use pre-tests, post-tests, three question surveys, and other Classroom Assessment Techniques as deemed necessary in order to provide continuous improvement of instruction. Students are required to take part in all assessment measures.