MATH 170-Fall Quarter 2008

Foundations of Elementary Mathematics I

Daily 9:00-9:50 am, Section: A SMT 222

**INSTRUCTOR:** David Nelson **OFFICE:** SMT 329

**OFFICE HOUR:** 10:00 am - 10:50 am, or by appt. **PHONE:** 833-9111 x 4226

**EMAIL:** dnelson@greenriver.edu

**MY WEBSITE:** http://www.instruction.greenriver.edu/dnelson

**TEACHING WEBSITES:** www.projectteach.org and www.k12.wa.us

**TEXT:** Mathematics for Elementary Teachers: A Contemporary Approach, 7th Edition, by Musser, Burger, Peterson. **OPTIONAL TEXTS:** Student Activity Manual, and Student’s Solutions Manual accompany the textbook

**CALCULATOR:** A scientific calculator is required for this course. A calculator with statistical capability is required for Math 172, if you are taking that also.

**COURSE DESCRIPTION:** This course will acquaint prospective elementary schools teachers with problem solving techniques and number theory related to topics taught at the K-8 level. Topics will include problem solving, set theory, number theory, geometry, measurement, and the use of technology. Satisfies Science/Math distribution and Quantitative Skills requirement for an A.A. degree.

**PREREQUISITE:** MATH 97 with a grade of 2.0 or higher, or appropriate Compass score, or instructor permission.

**STUDENTS SUBJECT TO PROVISIONS OF AMERICANS WITH DISABILITIES ACT:** If you believe you qualify for course adaptations or special accommodations under the Americans With Disabilities Act, it is your responsibility to contact the Disability Support Services Coordinator, in the LSC and provide the appropriate documentation. If you have already documented a disability or other condition which would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone or schedule an office appointment during my posted office hours or at another mutually determined time and place. If you use an alternative medium for communicating, let me know well in advance of the meeting (at least one week) so that appropriate accommodations can be arranged. Disability Support Services is located in LSC 126 and may be contacted at: (253)833-9111 x 2631 or TDD at (253) 288-3359.

**CAMPUS-WIDE OUTCOMES:** Green River Community College has identified ability areas that we believe encompass knowledge and are the most important skills, behaviors, attitudes, and values that students will need in order to be successful after leaving the college. Among these ability areas, this class will address Responsibility, Quantitative/Symbolic Reasoning, Critical Thinking, and Written & Oral Communications. You will be assessed on these outcomes through classroom participation, homework, tests, projects and activities.

**Washington’s K-8 Mathematics Standards:** These documents track the development of mathematical ideas and skills across the K-8 curriculum. In particular, this course will look at the content strands for Numbers, Operations, Algebra, and Processes. Math 171 will further explore these, along with Geometry. Math 172 will address the Data Analysis, Statistics and Probability strand.

**LEARNING OBJECTIVES:** Students in Math 170 will:

1. use problem-solving models and apply them to concepts introduced throughout the course.
2. understand the structure of the Real Number system and how this structure relates to learning mathematics.
3. use various algorithms, mental computations, and electronic computing techniques for solving problems dealing with whole numbers, and fractions.
4. understand the changing role of technology as it relates to learning and teaching mathematics and be able to demonstrate concepts using calculators and computers.

5. implement strategies for helping K-8 students learn each of the above mathematical concepts. I will ask you to investigate how YOU learn mathematics and to think about how this will impact your TEACHING of mathematics.

6. be familiarized with the NCTM Standards document and the Washington’s K-8 Mathematics Standards.

**CLASS FORMAT:** Much of this class will be taught through the use of small groups. While lectures will be given, student interactions through discussions, presentations and various activities will also be used. These types of activities are often similar to those found in real world settings and ones that are advised when you begin teaching. I view my role as one who will facilitate your learning of mathematics. One of the primary goals for this class will be to investigate how YOU learn mathematics and to think about how this will impact your TEACHING of mathematics. Class activities and assignments are centered on this goal.

* Attendance is very important!
* "Over the phone" work sessions or outside work sessions are encouraged.
* Plan on getting together with your group on a regular basis!
* Don't hesitate to ask me for suggestions or to inquire about your progress.

**DECIMAL GRADING:** Numerical grades are assigned with 95% and above being a 4.0, 85% is a 3.0, 75% is a 2.0, 65% is a 1.0, 55% and below is a 0.0. Other decimal grades distributed evenly between these values. Non-decimal grades are also available. Consult the catalog and quarterly schedule for information about these grades and deadlines for requesting such grades. A grade of "I" (incomplete) will only be given if at least 75% of the work is complete and under extraordinary circumstances. If you wish to take the class Pass/No Credit, you need to contact registration on or before August 1st. A decimal grade of 1.5 is required to get a Pass grade, and a Pass grade does not meet the prerequisite for the next class. Colleges of education may require that you obtain a particular grade in this class in order to satisfy their requirements.

**EVALUATION:** Your grade will be based on the following activities and will be weighted as follows. Three Exams 40%

Homework 20%

Projects 15%

Reflections 5%

Final Exam 20%

**EXAMS:** There will be three exams. Exam #1 will cover Chapters 1 & 2. Exam #2 will cover Chapters 3 & 4. Exam # 3 will cover Chapter 5. 40% of grade

**FINAL EXAM:** The Final exam will be cumulative and will cover Chapters 1-6. 20% of grade

**HOMEWORK:** Your homework grade is composed of two components. Problems from the text and in-class assignments. 20% of grade

For the problems from the text, you must come to class prepared to discuss the homework assignment that is due. Most days I will ask 4 or 5 students to come to the board to work a problem from the previous week’s homework. You will earn up to 10 points for each problem you do. Points will be awarded for being prepared and volunteering, not on the accuracy of you answer. I expect every student will make at least 3 trips to the board during the quarter.

An assortment of group activities will be given during the quarter. You must be in class to participate and there will be no opportunity to make up missed points. However, to account for any emergencies, two of the in-class activity grades will be dropped.

**GROUP PROJECTS:** I will ask you to participate in two group project. The project will be worth 50 points. 15% of grade.

**REFLECTIONS:** Each week you are required to send me an email with your thoughts about the class. I want to know what you found exciting, challenging, profound etc. with the weeks material. This email is due prior to class every Tuesday. Please put MATH 170 REFLECTION in the subject line of your email. 5% of grade

\*NOTE: Attendance is very important because of the group structure of this course. I expect you to be here and to be on time each day in order for groups to function properly. Because of emergencies you may need to miss class once during the quarter, but beyond this I expect nearly perfect attendance. Please make a decision today as to whether you can fulfill this obligation.

**Reference Notebook/Portfolio:** I strongly encourage you to keep a Reference Notebook in this class or add materials to your existing Portfolio required for the APP degree in education. You will receive many useful handouts in this class that you should begin organizing for future reference. It will NOT be collected.

**EXPECTATIONS:** I expect that each student

1) Will behave appropriately for a college classroom, with proper respect for the other students and me.

2) Will come to class having already read the material to be discussed, having done the homework due that day, and ready to participate actively.

3) Will seek outside help from others or come to see me when having difficulty with homework problems. We will not spend large amounts of class time going over all homework problems. I strongly encourage the use of study groups and the use of tutors in the Math Learning Center.

4) Will not engage in cheating or plagiarism.

5) Will turn in work on time and take tests on time because I do not accept late work.

6) Will adapt to a teaching style that will include lecture, group work, discussion, and lab-type collaborative activities. My style will include all of these at different times.

7) Will need to spend about 2-3 hours outside of class for each hour spent in class.

**HOMEWORK ASSIGNMENTS**

1.1A: 1, 2, 12 1.1B: 2, 4, 5, 8, 13, 14, 15, 16, 18

1.2A: 6, 11, 12, 13, 14 1.2B: 1, 2, 5, 15,18a-c, 19 a &b, 20

2.1A: 2, 8, 10, 11, 18, 27, 29 2.1B: 1ac, 4, 7, 10, 13, 14, 18a, 32

2.2A: 1, 7ac, 8bd, 9bc, 10bd 2.2B: 1, 5, 12, 13 a-c, 17

2.3A: 1cf, 2ac, 4, 6, 11, 12, 13, 14a&d 2.3B: 5, 11, 13, 14, 18

2.4A: 1, 11a, 13ab, 18, 19, 21 2.4B: 6, 8, 9, 10, 11abc, 13, 15

3.1A: 1, 3a-c, 7, 8, 10, 14 3.1B: 4, 6, 11, 12, 13

3.2A: 1,2, 3, 4, 5abdg, 6, 12, 15 3.2B: 3, 7, 10, 14, 15,

3.3A: 1, 2, 3, 8, 12, 16 3.3B: 4, 5, 6, 7, 12

4.1A: 1, 4 4.1B: 1, 2, 9, 14, 32

4.2A: 3,4, 5, 8, 9, 11, 15, 17, 20 4.2B: 3, 4, 7b, 11, 15, 17, 23, 31

4.3A: 1, 5, 6, 9, 12 4.3B: 1, 3, 4

5.1A: 2, 3, 4, 7, 9, 13, 30 5.1B: 4, 6, 7, 11, 18, 33A

5.2A: 2, 4, 5, 7, 10, 12 5.2B: 4, 8, 17

6.1A: 1, 2, 3, 11, 13, 19 6.1B: 1, 10, 12, 13, 17, 18

6.2A: 1, 3, 5, 8, 10, 16 6.2B: 3, 4, 17, 19, 21

6.3A: 2, 3, 5, 7, 10, 21 6.3B: 4, 6, 7, 13, 21, 23, 25, 27