



JOHNSON COUNTY COMMUNITY COLLEGE

Math Department

Math as a Decision Making Tool

MATH 225-001

Summer 2009 Course Syllabus

INSTRUCTOR INFORMATION:

Name: Mr. Scott Keltner

Telephone: (913) 469-8500, ext. 3151 (JCCC voicemail)
(785) 865-8550 (cell)
(785) 542-3584 (home) NO CALLS AFTER 8:00 p.m. PLEASE!

E-mail: skeltne1@jccc.edu or scottkeltner@eudoraschools.org

Course Webpage: <http://www.eudoraschools.org/keltner> (will be updated as the course progresses)

Classroom: CLB 402

Meeting Dates and Time: Mondays & Wednesdays, 11:00 a.m. to 1:50 p.m.; June 1st through June 22nd, 2009

COURSE INFORMATION:

Course Type: Transfer Credit

Credit: 3 hours

Prerequisites: MATH 171 College Algebra
or
MATH 173 Precalculus
with a grade of "C" or higher
or appropriate score on the math assessment test (COMPASS test)

COURSE DESCRIPTION:

The focus of this course is to develop the quantitative skills and reasoning ability necessary to help students read critically and make decisions in our technical information society. A project tying this course to the student's own interest is a course requirement. Major topics include collecting and describing data, inferential statistics and probability, geometric similarity, geometric growth, symmetry and patterns. 3 hrs. lecture/wk.

TEXTBOOK:

Excursions in Modern Mathematics, 6th Edition (2007), by Peter Tannenbaum. ISBN-10: 0-13-231913-6 or ISBN-13: 978-0-131-87363-6. Information and additional resources available at bookstore.jccc.edu.

ADDITIONAL SUPPLIES AND RESOURCES:

While one is not required for class, it is ***strongly recommended*** that students in this class have access to a graphing calculator. Recommended models include the Texas Instruments TI-83 or TI-84 series' of calculators, but can include others. It is also recommended that students ***not*** use or have access to either the TI-89 or TI-92 series' of calculators. Additional (out-of-pocket) expense considerations that students should expect in addition to course tuition, fees, and textbooks will range from \$10 to \$120.

The Math Resource Center is another resource available to students who would like either a place to study with others, by themselves, or just have questions they would like help with outside of class time. The Math Resource Center is located in room CLB 212. Any students wishing to take advantage of this resource should present their student ID before entering, which can be obtained from Billington Library if you do not already have one. One particular resource the MRC has available is access to graphing calculators. If you do not want to buy a graphing calculator, you may rent either a TI-83 or TI-84 for \$25 per semester. These calculators are also available for student use in the MRC for free but cannot be checked out unless you pay the rental fee. The MRC tutors circulate around the room, offering assistance to students as they become available to do so. Students may use a copy of a solutions manual while in the MRC, but must submit a JCCC ID card or car keys as some form of collateral.

As an initial incentive to become familiar with the Math Resource Center, I will offer **10 bonus points** for completing the MRC Tour before we take our first unit exam. Just complete the tour, filling out all questions on the form given to you, and return to me whenever you are finished.

CAVEATS:

1. The majority of mathematics courses are sequential. Students must earn a grade of C or higher in a prerequisite mathematics course to progress to its subsequent mathematics course.
2. In accordance with the assertion made on your billing statement, during the first two weeks of the semester, if a student is found not to have successfully fulfilled the prerequisite(s) for this course, the student will be dropped from the course. He/she will be allowed to enroll in the appropriate lower level math course on a space available basis with an even exchange of tuition. After the first two weeks, students who have not met the prerequisite(s) will be dropped from the course with no refund of tuition.

COURSE OBJECTIVES:

Upon successful completion of this course the student should be able to:

1. Determine appropriate methods of collecting data.
2. Describe and analyze data with the use of technology.
3. Utilize principles of probability to predict outcomes.
4. Recognize and describe patterns and symmetry found in nature.
5. Apply concepts of geometric similarity to analyze size.
6. Analyze mathematical models of population growth.
7. Demonstrate knowledge of mathematics applied to another discipline.

CONTENT OUTLINE AND COMPETENCIES:

I. Data collection

- A. Describe characteristics of populations and samples.
- B. Examine methods of sampling, explaining sources of bias in these methods.
- C. Examine methods of experimentation, identifying sources of confounding in experiments.

II. Descriptive statistics

- A. Describe data with graphical methods including histograms, box plots, scatterplots and regression lines.
- B. Describe data with numerical methods including measures of central tendency and measures of spread.
- C. Analyze data using a statistical package on a graphics calculator or a computer.

III. Probability and inferential statistics

- A. Describe sample spaces for random experiments.
- B. Apply counting techniques to determine the number of possible outcomes of an experiment.
- C. Calculate the probability of a given event.
- D. Interpret features of the normal distribution including mean, standard deviation, and confidence intervals.

IV. Patterns and symmetry

- A. Use geometric similarity to assess and interpret the physical limitations of size.
- B. Identify scaling factors relating to geometrically similar objects.
- C. Convert between different units of measure in U.S. Customary and Metric system.
- D. Recognize the golden ratio in geometric applications.
- E. Identify types of rigid motion such as rotation, reflection, and translation.
- F. Identify terms of the Fibonacci sequence from patterns found in nature.
- G. Apply concepts of arithmetic and geometric growth to financial and biological population models.

COURSE REQUIREMENTS/TENTATIVE COURSE SCHEDULE:

Students will be given at least 4 unit exams, one comprehensive final exam, and daily assignments.

June | **1st** | Syllabus Review, Project Introduction, Chapter 9

| | | |
|-------------|------------------|---|
| | 3 rd | Chapters 9 & 10 |
| | 4 th | <i>Last day to drop classes for 100% refund or change classes</i> |
| | 8 th | Chapter 10, Review |
| | 10 th | Exam 1, Measurement Notes |
| | 11 th | <i>Last day to drop classes with no refund and no "W" on transcript</i> |
| | 15 th | Chapter 11 |
| | 17 th | Chapters 11 & 12 |
| | 22 nd | Chapter 12, Review |
| | 24 th | Exam 2, Chapter 13 |
| | 29 th | Chapters 13 & 14 |
| July | 1 st | Chapter 14, Review |
| | 6 th | Exam 3, Chapter 15 |
| | 8 th | Chapter 15 |
| | 9 th | <i>Last day to drop classes with "W" on transcript</i> |
| | 13 th | Chapter 16 |
| | 15 th | Chapter 16, Projects Due, Final Review |
| | 20 th | Final Review |
| | 22 nd | Final Exam |

EVALUATION AND GRADING SCALE:

Course Grade will be broken down into three subcategories: Exams/Summatives, Daily Work, and Projects/Activities. They will be weighted as follows and use the grading scale indicated:

| | | | |
|---------------------|------|---|--------------|
| Exams | 60% | A | 90-100% |
| Daily Work, Project | 20% | B | 80-89% |
| Final Exam | 20% | C | 70-79% |
| | 100% | D | 60-69% |
| | | F | 59 and below |

Daily work will be scored on selected items, not simply on completion. Typically, about five exercise problems will be selected at random from the assigned problems and scored for their accuracy. This will comprise 5 points of the total score for that assignment. The other 5 points will be based on the completion of the assignment in its entirety. Scores will be recorded out of 10 points, where the student's raw score will be rounded up to the next highest score. For instance, if a student scores the equivalent of 8.3 out of 10 on an assignment, the student's score will be recorded as a 9.

Late work is accepted, but highly discouraged due to the pace of the coursework, especially given that this is only an eight-week course. Please feel free to contact your instructor via email or by phone if you need additional clarification on a topic. Students should not feel as if the instructor is unavailable or impossible to find. If necessary, appointments can be made to work with the student's extra-curricular schedule. If contacting by phone, please keep in mind that 8:00 p.m. is bedtime for my two children, two year-old Hanna and four year-old Abby.

INFORMATION ON STUDENT ACCESS AND ACADEMIC DISHONESTY:

All JCCC students are expected to comply with the Student Code of Conduct as found in the on-line Course Catalog at http://www.jccc.net/home/depts/5101/site/stu_conduct. The Science, Health Care and Math Division Policies as well as the Math Department Policies will also be followed. It is your responsibility as a student to make sure you are familiar with the topics listed in the code. A grade penalty of zero will be assessed for incidences of academic dishonesty. Further actions may be taken based on the severity of the incident.

JCCC provides a range of services to allow persons with disabilities to participate in educational programs and activities. If you desire support services, contact the Student Access Center in GEB 138 or call (913) 469-8500 ext. 3521.