MTH 111: College Algebra

Catalog Description: Polynomial equations and inequalities, polynomial functions and graphs, inverse functions, exponential and logarithmic functions, elementary mathematical modeling and applications.

Credits: 4

Terms Offered: F, W, S, Su

Enforced Prerequisites: MTH 095 or MTH 103 with C- or better, or ALEKS math placement test: 46%, or math placement test: 17, or instructor permission.

Meetings: Two 50-minute lectures and two 50-minute recitations

Course Content:

1. Polynomial equations and inequalities
2. Polynomial functions and graphs
3. Inverse functions
4. Exponential and logarithmic functions
5. Elementary mathematical modeling and applications.

MTH 111 Measurable Student Learning Outcomes: A successful student in MTH 111 will be able to:

- Solve linear, absolute value, quadratic, polynomial, radical, rational, exponential and logarithmic equations; and solve linear, polynomial, rational and absolute value inequalities.
- When given a symbolic relation between 2 quantities, formulate the correct equation or inequality based on the language of the question, solve the equation or inequality and then decide if the result from that process is a reasonable answer to the initial question.
- Correctly interpret and use symbolic/numeric/graphic representations of relations
- Apply the concepts of domain, range, translations, reflections, and inverses to given functions.
- Recognize and correctly state symbolically functions whose graphs are given and that are related through translations and/or reflections
- Investigate connections between roots, factors, graphs and symbolic representations of polynomial functions, and be able to create polynomial functions when given information about the functions roots and/or factors and/or graph.
- Develop, recognize and extract correct information from the standard forms for equations of circles, lines, and parabolas
- Find and list symbolically the vertical, horizontal, inclined asymptotes of rational functions expressed symbolically, graphically and numerically.
- Translate the language of direct and inverse relations into algebraic relationships, and then answer questions based on that relationship.
- Develop and use models from linear, exponential and quadratic data or graphs.

Baccalaureate Core Learning Outcomes:

1. Identify situations that can be modeled mathematically.
2. Calculate and/or estimate the relevant variables and relations in a mathematical setting.
3. Critique the applicability of a mathematical approach or the validity of a mathematical conclusion.

Evaluation of Student Performance: Your grade and measurement of your progress on the course outcomes will be based on: daily in-class activities (such as clicker problems and small-group written problem solving), written quizzes, and online homework, along with two written midterms and final exam. The midterm and final exams will be closed book.

| Activities & Participation | 10% |
| Quizzes | 10% |
| Online Homework | 10% |
| Two Midterms | 40% |
| Final Exam | 30% |
Learning Resources: The required text is *Algebra and Trigonometry with Modeling and Visualization*, by Gary K. Rockswold (2010, Fourth Custom Edition for Oregon State University) with MyMathLab access code, or other similar text selected by department. TurningPoint clicker, graphing calculator.

Selected portions of the text will be covered as follows.

Chapter 1: 1.3, 1.4
Chapter 2: 2.4, 2.5
Chapter 3: 3.1, 3.2, 3.4, 3.5
Chapter 4: 4.1, 4.2, 4.6, 4.7, 4.8
Chapter 5: 5.1, 5.2, 5.3, 5.4, 5.5, 5.6

Students With Disabilities: Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Academic Honesty and Student Conduct: Students are expected to be familiar with the Homework and Exam policies stated in this syllabus, as well as Oregon State University's Student Conduct Code. http://oregonstate.edu/studentconduct/code/index.php.