

INSTRUCTOR: MING FANG

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OFFICE: B181 BROWN MEMORIAL HALL

PHONE: 823-8867

CLASS MEETING: 08:00AM - 09:00AM Monday, Wednesday, Friday, A101 Brown Memorial Hall

OFFICE HOURS: 9:00-11:00AM MONDAY, WEDNESDAY AND FRIDAY, 11:00-12:30PM TUESDAY, 11:00-11:30AM THURSDAY

PREREQUISITES:

Completion of MTH 105 with a minimum grade of “C” or demonstrated competency per the Placement Test.

COURSE DESCRIPTION:

Study of basic algebra stressing fundamental concepts and reasoning used in mathematics and the sciences. Students are expected to bring to the course knowledge of the essentials of elementary and intermediate algebra. Emphasis is placed on those skills necessary for the calculus sequences.

COURSE RATIONALE:

This is an introductory course that provides the foundation for science and engineering applications and preparation for the calculus sequence and other courses in mathematics.

COURSE GOALS / MEASURABLE INTENDED STUDENT LEARNING OUTCOMES

Upon completion of this course, students should be able to perform the following competencies at a 70% or better mastery level:

1. Solve linear equations in one variable.
2. Solve equations involving fractional expressions.
3. Write an algebraic equation for the variable model.
4. Write a mathematical model and solve word problems.
5. Solve and check quadratic equations.
6. Perform operations with complex numbers and write the result in standard form.
7. Solve polynomial equations of higher degree.
8. Solve equations involving radicals.
9. Solve equations involving rational exponents.
10. Solve the linear and absolute value inequalities and sketch the solution on the real number line.
11. The use of distance and midpoint formulas.
12. Sketch the graph of an equation.
13. Find the x- and y- intercepts of the graph and use as sketching aid.
14. Find the slope of a line passing through two points.
15. Find the equation of a line in point-slope form and slope-intercept form.
16. To evaluate the function at the specified value of the independent variable.
17. To find the domain and the range of the function.
18. Sketching a graph using a horizontal and vertical shifts and reflection properties.
19. Evaluate an arithmetic combinations of functions and form the composition of functions.
20. To find the inverse of a function.
21. Sketch the graph of the quadratic functions and identify the vertex and intercepts.
22. To find all the real zeros of a polynomial function.
23. Perform the polynomial divisions using synthetic division process.
24. Solve the systems of equations involving two or three variables.

COURSE MATERIALS / REQUIRED TEXT / SUPPLEMENTARY READINGS:

Text: Lial, Hornsby, and Schneider. College Algebra and Trigonometry, Third Edition. Houghton Mifflin. ISBN #0-321-22763-8

Additional Material(s) Required: Students are required to have an Access Account to use the “MyMath Lab” website (<http://students.pearsoned.com>) for assignments, practice tests and lab-tests. They are also required to use a Graphing Calculator; TI-83 is recommended.

Supplementary Material Available:

MyMathLab is accessible via internet at the official website of Addison-Wesley Publishing at <http://www.coursecompass.com>. MyMathLab “is a dynamic, interactive online teaching and learning environment that provides instructors and students with access to rich online course materials complementing Pearson Higher Learning textbooks.” It includes video lectures for the entire course, audio clips, animations, 24 hour on-line tutoring, and practice tests. Additional resources are also available on the NSU Web-Site at <http://sst.nsu.edu/>.

PRIMARY METHODS OF INSTRUCTION:

The primary methods of instruction include lectures, class discussion, group discussion, computer assisted homework assignments, tutoring and online tests.

COURSE OUTLINE:

- (I). **Prerequisites**
 - Chapter R: Review of Basic Concepts Sections R.3 ~ R.7
 - a. Polynomials
 - b. Factoring Polynomial
 - c. Rational Expressions
 - d. Rational Exponents
 - e. Radical Expressions

- 1. **Equations and Inequalities**
 - Chapter 1: Sections 1.1 ~ 1.8
 - a. Linear Equations
 - b. Applications and Modeling with Linear Equations
 - c. Complex Numbers
 - d. Quadratic Equations
 - e. Applications and Modeling with Quadratic Equations
 - f. Other Types of Equations
 - g. Inequalities
 - h. Absolute value Equations and Inequalities

- 2. **Graphs and Functions**
 - Chapter 2: Sections 2.2, 2.5 ~ 2.7 and 4.1
 - a. Functions
 - b. Graphs of Basic Functions
 - c. Graphing Techniques
 - d. Function Operations and Composition
 - e. Inverse Functions, Section 4.1

3. **Polynomial and Rational Functions**
 Chapter 3: Sections 3.1 ~ 3.6
 - a. Quadratic Functions and Models
 - b. Synthetic Division
 - c. Zeroes of Polynomial Functions
 - d. Polynomial Functions: Graphs, Applications, and Models
 - e. Rational Functions: Graphs, Applications, and Models
 - f. Variation

4. **Systems of Equations**
 Chapter 9: Sections 9.1, 9.2, 9.5
 - a. Solving Systems of Equations
 - b. Two-Variable Linear Systems
 - c. Multivariable Linear Systems
 - d. Nonlinear Systems of Equations

RELATED UNIVERSITY-WIDE AND COURSE- SPECIFIC REQUIREMENTS

- **Information Technology Literacy:** The student will explore various websites to gain a better understanding of math concepts and problems. The student is also required to do math labs on line. Students are encouraged to communicate (outside of class) with the professor or classmates through electronic means.
- **Quantitative Reasoning:** Most of the math concepts have applications that require quantitative reasoning.
- **Scientific Reasoning:** Most of the math applications require the use of scientific reasoning.
- **Oral Communication:** The student demonstrates this through classroom discussions and explanations at the board.
- **Critical Thinking:** Most of the math concepts and applications require critical thinking.
- **Other Requirements:** The student is required to do the Math Lab assignments project for the course.

EVALUATION AND GRADING STANDARDS

Final grades will be determined as follows:

		<u>Grades Assigned:</u>
4 midterm Tests	50%	A: 90 and above
Lab Assignments (Min 70% Passing Score)	15%	B: 80 – 89
Quizzes / Homework	15%	C: 70 – 79
Departmental Final Exam	<u>20%</u>	D: 60 – 69
	100%	F: 59 and below

Note: Alternatively, the Lab Test score will be considered the equivalent of a midterm exam and the lowest of the five exams will be dropped. Then the remaining four together with the final examination score will be used to assign a letter grade.

Note: If you miss a test and the absence was not approved by the instructor, he reserves the right not to replace one of the three tests with the homework equivalent.

Final Examination Date and Time: 8:00 - 10:00, May 2, Tuesday, 2006

Requirements for the Student:

1. The student should pre-study (read) all new topics before they are presented in class. You are expected to complete daily homework assignments by the time class meets the first time following discussion of lesson material in the classroom. The instructor will ascertain the daily progress in accomplishing homework exercises and will devote a portion of classroom activities to the solution of any troublesome exercises”.
2. Separate notebooks should be maintained for classroom discussion notes and homework exercises.
3. Carefully complete all homework assignments. A minimum of two hours outside the class preparing for each hour of class is necessary for learning and proper understanding of the material.
4. Students are strongly encouraged to participate in classroom discussions.
5. Tests will be administered during the course; also the student can expect random quizzes; a departmental final examination will also be given.
6. All cell phones, pages, etc. must be turned off before entering the classroom.

ACADEMIC INTEGRITY POLICIES / ATTENDANCE POLICY

Students are expected to attend all class sessions. Missing 20% or more of such sessions may result in an automatic failing grade. Those individuals who choose not to show up for class by the end of the third week will be deleted from the roster. Further information regarding academic or academically related misconducts, and disciplinary procedures and sanctions regarding such conducts, may be obtained by consulting the **NSU Student Handbook**. Also, **see attachment** for additional information regarding this class.

Attendance will be taken daily. Students are expected to attend all class sessions. Any student not attending class for the first 3-weeks of the semester will be officially dropped from the roster, as having never attended class. Missing 20% or more of such sessions may result in an automatic failing grade.

AMERICANS WITH DISABILITIES ACT (ADA) STATEMENT

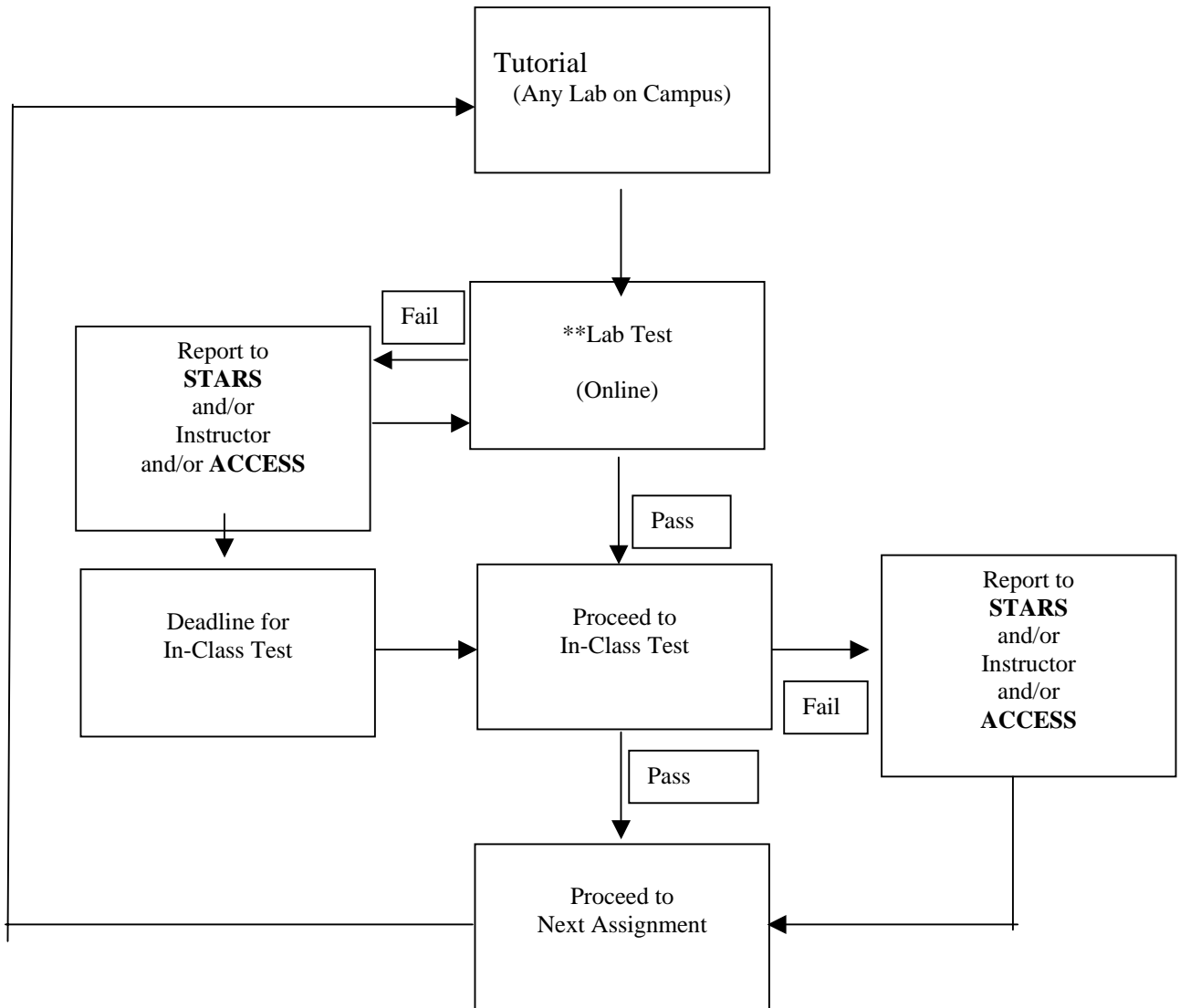
In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ADA) of 1990, if you have a disability or think you have a disability, contact Supporting Students through Disability Services (SSDS) for information regarding programs and services to enhance student success.

Location: 2nd floor, Lyman Beecher Brooks Library Room 240
Contact Person: Marian E. Shepherd, Disability Services Coordinator
Phone Number: 757-823-2014

UNIVERSITY ASSESSMENT STATEMENT

As part of NSU’s commitment to provide the environment and resources needed for success, students may be required to participate in a number of university-wide assessment activities. The activities may include tests, surveys, focus groups and interviews, and portfolio reviews. The primary purpose of the assessment activities is the determine the extent to which the university’s programs and services maintain a high level of quality and meet the needs of students. Students will not be identified in the analysis of results. Unless indicated otherwise by the instructor, results from university assessment activities will not be computed in student grades.

MTH 151
Flowchart



****No Credit awarded for Lab Tests not passed.
Lab Tests count for 15% of Final Grade**

**MATH-151 College Algebra
Laboratory Test Assessment Form (LTAF)**

Lab Test	Contents	Due Date	Student Signature with date	Completed (Instructor Signature/ Date)
1.	Polynomials, Factoring Polynomial	Week 1		
2.	Rational Expressions, Rational Exponents and Radical Expressions	Week 2		
3.	Linear Equations, Applications and Modeling with Linear Equations Complex Numbers	Week 3		
IN CLASS TEST # 1 Week 4				
4.	Quadratic Equations, Applications and Modeling with Quadratic Equations, Other Types of Equations	Week 5		
5.	Inequalities, Absolute Value Equations and Inequalities, Functions, Graphs of Basic Functions	Week 6		
6.	Graphing Techniques, Function Operations and Composition, Inverse Functions	Week 6		
IN CLASS TEST # 2 Week 7				
7.	Quadratic Functions and Model, Synthetic Division, Zeroes of Polynomial Functions	Week 9		
8.	Graphs, Applications, and Models of Polynomial and Rational Functions, Variation	Week 10		
IN CLASS TEST # 3 Week 10				
9.	Solving Systems of Equations, Two-Variable Linear Systems, Multivariable Linear Systems	Week 11		
IN CLASS TEST # 4 Week 14				

**Note: Tests must be taken in consecutive order.
No credit awarded for Lab Tests not passed.**

OVERALL COURSE OBJECTIVES:

At the completion of this course, each student should be able to:

- Success in college-level mathematics courses begins with a good understanding of algebra. So the primary objective of this course is to help students develop their algebra and problem-solving skills.
- acquire an understanding of mathematical skills.
- show how algebra can be used as a modeling language for real life problems.