

Fayetteville State University
College of Arts and Sciences
Dr. Henry M. Eldridge Department of Mathematics and Computer Science
MATH 130-01 Precalculus Mathematics II
Fall 2011

I. Locator Information:

Instructor: **Dr. Radoslav Nickolov**

Course # and Name: **MATH 130-01 Precalculus Mathematics II**

Semester Credit Hours: **3**

Office Location: **SBE 307-C**

Office hours: **MWF 10:00am -11:00am**

TR 11:00am – 1:30pm

Day, Time and Room Class Meets: **MWF 11:00am – 11:50pm, SBE 212**

Office Phone: **2053**

Total Contact Hours for Class: **35**

Email address: rnickolov@uncfsu.edu

MathXL (www.mathxl.com) Course ID: **XL0P-K1RD-801Y-7C22**

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@broncos.uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at

<http://www.uncfsu.edu/policy/general/FSUE-mailFINAL.pdf>

II. Course Description:

This course is the second of a two-semester sequence that provides the background for students who are preparing to take calculus. Topics include graphing, systems of equations, matrices, complex numbers, mathematical induction, the binomial theorem, sequences and series, polar coordinates, parametric equations, trigonometric functions, inverse trigonometric functions, law of sines, law of cosines, and trigonometric identities. A graphing calculator is required. *Prerequisites: MATH 129 or equivalent or consent of department.*

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

IV. Textbook: M. Sullivan & M. Sullivan III, Algebra and Trigonometry: Enhanced with Graphing Utilities, 5th edition, Pearson 2009, ISBN-13: 9780136004929 **and** MathXL Student Access Kit, Addison Wesley Edition, ISBN: 9780201726114 (**Required**)

V. Student Learning Outcomes – Upon completion of this course, students will be able to:

- Compute the values of trigonometric functions
- Use the properties of the trigonometric functions
- Graph the trigonometric functions and their transformations
- Solve linear systems of three equations with three unknowns
- Add and multiply matrices, find inverses, and evaluate determinants
- Apply the elimination method and the Cramer's Rule to solve linear systems of three equations with three unknowns
- Solve systems of linear inequalities graphically
- Use sequences (arithmetic, geometric) and geometric series, find their sums
- Use the Binomial Theorem
- Use polar coordinates and graph polar equations using a graphing utility
- Demonstrate the ability to use graphing calculators to solve problems.

VI. NCDPI and NCATE Standards

Standards Used in this Course	NCDPI Standards for Mathematics Teacher Candidates	NCATE Standard(s)	Assessment(s)
✓	<p>1. Mathematics teacher candidates possess the mathematical knowledge needed to enable students to understand numbers, ways of representing numbers, and relationships among numbers and number systems and to enable students to understand meanings of operations and how they relate to one another. Candidates enable students to develop computational fluency and to make reasonable estimates. At the middle and secondary grade levels, teacher candidates need the mathematical knowledge to enable students to transfer their understanding of numbers and number operations to symbolic expressions involving variables. Number sense, numeration, numerical operation, and algebraic thinking</p>	Content Knowledge	Homework and tests
✓	<p>2. Mathematics teacher candidates possess the mathematical knowledge needed to enable students to analyze the characteristics and properties of 2- and 3-dimensional geometric shapes; to develop mathematical arguments about geometric relationships; to understand units, processes of measure, and measurable attributes of objects; and to apply appropriate techniques, tools, and formulas to determine measurements. They enable students to develop the visualization, spatial reasoning, and geometric modeling to solve problems. Teacher candidates particularly at middle and secondary grade levels need the mathematical knowledge to enable students to use coordinate geometry in solving problems, to understand concepts of symmetry, and to apply transformations. Spatial sense, measurement and geometry</p>	Content Knowledge	Homework and tests
✓	<p>3. Mathematics teacher candidates possess the mathematical knowledge needed to enable students to understand patterns, relations, and functions. This includes the use of algebraic symbols to represent and analyze mathematical situations, the use of mathematical models to represent and understand quantitative relationships, and the analysis of “change” in various contexts. Patterns, relationships, and functions</p>	Content Knowledge	Homework and tests
	<p>4. Mathematics teacher candidates possess the mathematical knowledge needed to enable students to formulate questions that can be addressed with data, along with the necessary skills to collect, organize, and display relevant data to answer those questions. They enable students to select and use appropriate statistical methods to analyze data, to understand and apply basic concepts of probability, and to develop and evaluate inferences and predictions that are based on data. Data analysis, probability and statistics</p>		Homework and tests
✓	<p>5. Mathematics teacher candidates possess the mathematical knowledge needed to enable students to develop skills in problem solving, making connections between various branches of mathematics, reasoning and proof, and communication and representation of mathematical ideas. Mathematical process skills</p>	Content Knowledge	Homework and tests

✓	6. Mathematics teacher candidates must be versed in the appropriate use of mathematical tools and manipulatives. Mathematical tools	Knowledge and Content, Technological Competence, Pedagogical Content Knowledge	Homework and tests
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VII. Course Requirements and Evaluation Criteria

The following is a list of the assessment tools, and their respective weights, that will be used in determining the course grade.

Homework (32 homework assignments on www.MathXL.com , each with weight of 0.63%)	20%
Tests (3 highest test scores out of 4 tests, each with weight of 20%)	60%
Final Exam	20%

Final grade will be established on the basis of the grading scale below:

A	90-100%
B	80- 89%
C	70 - 79%
D	60 - 69%
F	Below 60%
FN	Failing due to non-attendance (Student registered, but <u>never</u> attended.)

To see how your grade will be calculated, suppose your test scores are 72, 84, 70, and 90, your homework average is 95, and your final exam score is 88. Since the lowest test score is dropped your grade would be calculated as follows:

$$0.60*[(72 + 84 + 90)/3] + (0.20* 95) + (0.20* 88) = 85.8$$

Since 85.8 is between 80 and 89, you would receive a letter grade of **B** for the course.

Please note: If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.

Requirements

1. Pre-requisite: MATH 129 or equivalent or consent of the department.
2. The student is expected to read the topics to be considered in class in advance (see the class outline bellow). The student is expected to complete all assignments and to spend adequate time on class work to insure that the course outcomes are met.
3. It is the responsibility of the student to attend all class meetings, and obtain individual help from the instructor. Student whose class absences exceed 10% of the total contact hours (i.e. 3.5 hours) will be assigned an interim grade "EA".
4. Since the lowest test will be dropped, no make-up tests will be given unless under extenuating circumstances. **In case of such excused absences student should contact the instructor prior to the test!**
5. The student is expected to submit her/his homework on time. Late homework assignments will not be accepted unless under extenuating circumstances.
6. Students are expected to enter the classroom on time and remain until the class ends. Late arrivals and early departures without appropriate excuses will not be tolerated.
7. Each student is encouraged to participate in class discussions for a clearer understanding and meet with the instructor when additional assistance is needed.
8. All class discussions should be done in a soberly, orderly, and respectful manner.
9. **Dishonesty on graded assignments will not be tolerated.** Students must neither give nor receive help on any work to be graded. The University policy on cheating will be applied to any violations. The **minimum** penalty will be a grade of **zero** on the assignment.
10. No usage of cellular and other electronic devices (except a calculator) is permitted during class!

11. Withdrawal from Class

Withdraw from Class means you are withdrawing from 1 or 2 classes that you will not be attending and you have other classes on your schedule that you will attend. Effective Fall 2009, students will be allowed only 5 withdrawals from class for the remainder of your college career. The 6th W will be calculated as "F".
<http://www.uncfsu.edu/registrar/withdrawals.htm>

VIII. Academic Support Resources

- **Blackboard System**

<http://blackboard.uncfsu.edu/>

All class documents (syllabus, instructors' locator card etc.) and resources (slides, worksheets, handouts and reviews for tests) will also be posted on the Blackboard system.

- **MathXL**

You can access your course from your MathXL page at <http://www.mathxl.com/>.

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- **Math Learning Center**

Information is available here

<http://www.uncfsu.edu/learningcenter/math/>

- **Smarthinking**

Information is available here

<http://www.uncfsu.edu/learningcenter/wac/CampusResource.htm>

IX. Course Outline and Assignment Schedule

Week	Date	Section / Topic	Homework due for sections:
1	08.19.2011	7.1 Angles and Their Measure	
2	08.22.2011	7.2 Right Triangle Trigonometry	
	08.24.2011	7.3 Evaluating Trigonometric Functions of Acute Angles	
	08.26.2011	7.4 Evaluating Trigonometric Functions of General Angle	
3	08.29.2011	7.5 Unit Circle Approach; Properties of the Trigonometric Functions	
	08.31.2011		
	09.02.2011	7.6 Graphs of the Sine and Cosine Function	
4	09.07.2011	7.7 Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions	
	09.09.2011	Review for Test 1	
5	09.12.2011	Test 1 (09.12.2011)	7.1 to 7.7
	09.14.2011	8.1 The Inverse Sine, Cosine, and Tangent Functions	
	09.16.2011	8.2 The Inverse Trigonometric Functions (Continued)	
6	09.19.2011	8.3 Trigonometric Identities	
	09.21.2011	8.4 Sum and Difference Formulas	
	09.23.2011	8.5 Double-angle and Half-angle Formulas	
7	09.26.2011	8.6 Product-to-Sum and Sum-to-Product Formulas	
	09.28.2011	8.7 & 8.8 Trigonometric Equations	
	09.30.2011	9.1 Applications Involving Right Triangles	8.1 to 8.7
8	10.03.2011	9.2 The Law of Sines	
	10.05.2011	9.3 The Law of Cosines	
	10.07.2011	9.4 Area of a Triangle Review for Test 2	
9	10.10.2011	Test 2 (10.10.2011)	9.1 to 9.4
	10.12.2011	10.1 Polar Coordinates	
	10.14.2011	10.2 Polar Equations and Graphs	

10	10.19.2011	10.3 The Complex Plane; De Moivre's Theorem	
	10.21.2011	12.1 Systems of Linear Equations: Substitution and Elimination	
11	10.24.2011	12.2 Systems of Linear Equations: Matrices	10.1 to 10.3
	10.26.2011	12.3 Systems of Linear Equations: Determinants	
	10.28.2011	12.4 Matrix Algebra	
12	10.31.2011	12.5 Partial Fraction Decomposition	
	11.02.2011	12.6 Systems of Nonlinear Equations	
	11.04.2011	12.7 Systems of Inequalities	
13	11.07.2011	Review for Test 3	
	11.09.2011	Test 3 (11.09.2011)	12.1 to 12.7
14	11.14.2011	13.1 Sequences	
	11.16.2011	13.2 Arithmetic Sequences	
	11.18.2011	13.3 Geometric Sequences; Geometric Series	
15	11.21.2011	13.4 Mathematical Induction	
	11.23.2011	13.5 The Binomial Theorem	
16	11.28.2011	Review for Test 4	
	11.30.2011	Test 4 (11.30.2011)	
	12.02.2011	Review for the final exam	13.1 to 13.5
17	TBA	Final Exam	

Note: This schedule is tentative! It might be changed for the benefit of the class.

Note: In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.

X. Teaching Strategies

MATH 130 is a lecture-based course. Each lecture will contain a summary of the most important concepts from each section. The graphing calculator will be utilized to bring clarity and understanding to each concept or theory discussed. Questions will be posed to the class daily to measure their comprehension of particular concepts. Worksheets with problems will be used each class. Therefore, there will be lectures, class discussions, student presentations and cooperative group learning activities.

XI. Bibliography

Bittinger – Beecher – Ellenbogen – Penna, *PRECALCULUS*, Addison-Wiley Longman 2001
 Demania Waits Foley Kennedy, *PRECALCULUS 4TH Edition*, Addison-Wiley, 2001
 Sullivan, Michael, *Algebra and Trigonometry*, 8/E, Prentice Hall, 2008
 Lial, Hornsby, Schneider, *Trigonometry 9TH Edition*, Addison-Wesley, 2008