

**Fayetteville State University**  
**College of Arts and Sciences**  
**Department of Mathematics and Computer Science**  
**MATH 260 Foundation of Mathematics**  
**Spring 2012**

**I. Locator Information:**

Instructor: Dr. Valentin Milanov  
 Course # and Name: Math 260- Foundation of Mathematics Office Location: LS 119  
 Semester Credit Hours: 3 Office Hours: MW 1:00-3:00 pm, R 12:00-2:00 pm,  
3:45-5:45 pm  
 Day and Time Class Meets: MWF 3:00-3:50 pm  
**SBE 116** Office Phone: 910-672-2202  
 Total Contact Hours for Class: 44 Email Address: vmilanov@uncfsu.edu

**FSU Policy on Electronic Mail:** Fayetteville State University provides to each student, free of charge, an electronic mail account ([username@uncfsu.edu](mailto:username@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:** A course providing transition to students for upper level courses in mathematics. Topics include set theory, logic, proof techniques, induction, equivalence relations, functions and cardinality, countable and uncountable sets, sequences. **Prerequisite:** MATH 142 and MATH 150

**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 (1<sup>st</sup> Floor); 910-672-1203.

**IV. Textbook:** Richmond, Bettina and Thomas Richmond. **A Discrete Transition to Advanced Mathematics**. Belmont, CA: Brooks/Cole Publishing Co., 2004.

**V. Student Learning Outcomes –**

Upon completion of this course, students will be able to:

- Use the set theoretic operations
- Use symbolism of mathematical logic
- Give examples of various proof techniques
- Demonstrate a thorough knowledge of the concepts of relations (equivalence, partial order etc.)
- Use the concept of function, domain, range, etc
- Understand recursive definitions of sequences and functions

**VI. Course Requirements and Evaluation Criteria:**

Grading Scale – Homework will be collected regularly. Four major tests will be given. The lowest test score will be dropped. A comprehensive final exam will be given at the conclusion of the course. The grading scale for determining the course grade is given below. To see how your grade will be calculated, suppose your test scores are 75, 80, 94, and 92, you have 9 points extra credit from quizzes, your final exam score is 89, and your homework score is 96. Your percentage grade will be calculated as follows:  $0.60 \times [(80+94 + 92+9) / 3] + 0.2 \times 89 + 0.2 \times 96 = 92$  and you will have a grade of A for the course. Grading Scale: **A 90 - 100%, B 80 - 89%, C 70 - 79%, D 60 - 69%, F Below 60%**

a.

<b>FN</b>	Hours attempted – Not earned	0 per credit hour	Failing due to non-attendance. (Student registered, but <b>never</b> attended.)
-----------	------------------------------	-------------------	---

<b>W</b>	Hours attempted – Not earned	No impact on GPA	Class withdrawal prior to deadline (see Academic Calendar)
<b>P</b>	Hours attempted and earned	No impact on GPA	Satisfactory - Assigned only in classes specified as Pass/Fail
<b>WU</b>	Hours attempted – Not earned	No impact on GPA	<b>Withdrawal from all classes for semester or term</b>
<b>AU</b>	Hours attempted – Not earned	No impact on GPA	Auditing

- b. Attendance Requirements – The FSU Attendance Policy stated in the 2011-12 University Catalogue will be strictly enforced. **Three (3) late arrivals** and/or early departures will count as one absence. Exceeding the limit of **four (4) unexcused absences** will result in an interim grade **EA = EXCESSIVE ABSENCES**. When a student enters the classroom after the roll call, it is the responsibility of the student to inform the instructor after class that (s)he was in attendance. You must notify the instructor when it is necessary for you to leave early.

Notice that:

- **Students receive no refund for withdrawing from individual classes and they slow their progress toward degree completion.**
- **Students who withdraw from or fail more than one-third of their classes will no longer be eligible for financial aid.**
- **STUDENTS MUST STRIVE TO EARN CREDIT FOR ALL THE CLASSES IN WHICH THEY ENROLL. STUDENTS SHOULD WITHDRAW FROM CLASSES ONLY WHEN IT IS ABSOLUTELY NECESSARY.**

- c. Graded Assignments -- There will be four homeworks, four tests, and a comprehensive final exam (see the schedule). The weight given to various activities for evaluation is as follows: tests-60%, final exam-20%, and homeworks-20%. There will be some extra credit from unannounced quizzes.
- d. Policy on **Missed or Late Assignments** - Late homework will no longer be accepted after it has been graded and returned to class. If homework is given to me the day after it is due, it will lose 20% of its total value. For two days delay it will lose 40% of its total value and so on. **No makeup tests for unexcused absences! For excused absences student should contact the instructor prior to the test!**
- e. Other - 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 (including tests).

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

**Student Behavior Expectations:** -The instructor will respect all students and will make every effort to maintain a classroom climate that promotes learning for all students. Students must accept their responsibility for maintaining a positive classroom environment by abiding by the following rules:

1. Students are expected to arrive to class on time, remain in class until dismissed by the instructor, and refrain from preparing to leave class until it is dismissed.
2. Student/teacher relationships, as well as relationships among peers, must be respectful at all times.
3. Students are not permitted to wear headphones or other paraphernalia that may be distracting to the classroom environment.
4. Students must refrain from any activity that will disrupt the class; this includes turning off cell phones and pagers.
5. Students are not permitted to use profanity in the classroom.
6. Students will not pass notes or carry on private conversations while class is being conducted.

**Consequences for Failing to Meet Behavioral Expectations:** The first time a student violates one of these rules, the instructor will warn him or her privately, either after class or before the next class. (Faculty members reserve the right to warn students publicly if needed.) The second time a student violates the guidelines, the instructor may deduct as many as twenty points from the student's next exam grade. If a student violates the guidelines three times, the instructor will report the student to the Dean of Students for disciplinary action according to the FSU Code of Student Conduct.

## VII. Academic Support Resources –Use of SI, Smarthinking, University College Learning Center

## VIII. Course Outline and Assignment Schedule

### WEEK TOPICS

1	Sets and set operations
2	Partitions, Logic, Truth tables
3	Quantifiers and implications, <b>Review, Test # 1</b>
4	Proof methods, Induction
5	Induction, Pigeonhole Principle
6	Divisibility, Euclidean Algorithm, <b>Review, Test # 2</b>
7	Fundamental Theorem of Arithmetic
8	Relations, Equivalence relations, Partial orders, <b>Review, Test # 3</b>
9	Quotient spaces
10	Functions, Inverses
11	Infinite sets, Cardinal numbers, Schroder-Bernstein Theorem
12	Sequences, <b>Review, Test # 4</b>
13	Finite differences, Limits of sequences

- 14 Convergence properties, Infinite arithmetic
- 15 Recurrence relations, Pascal's Triangle, Fibonacci numbers

**Final Exam Wednesday, May 2, 2:00 p.m. - 3:50 p.m.**

\* This schedule is subject to change for the optimum benefit of the class as a whole. Therefore, it is important to stay alert and attend class regularly. **In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.**

### **IX. Teaching Strategies**

The teaching strategies for this course will be: lectures, group discussion, simulated teaching experiences, cooperative learning groups, computer experiences, singing, and playing classroom instruments and demonstration of problem solving in class. There will be a comprehensive review before each test.

### **X. Bibliography**

1. Bartle, Robert G. And Donald R. Sherbert, Introduction to Real Analysis, 3rd ed., John Wiley & Sons, Inc. 2000.
2. Smith, Eggen, and St. Andre, A TRANSITION TO ADVANCED MATHEMATICS 5th. ed. Brooks/Cole Publishing Co., 2001
3. Baker, Crump W. Introduction to Topology. Malabar, FL: Kreiger Publishing Company, 1997.
4. Devlin, Keith. The Joy of Sets: Fundamentals of Contemporary Set Theory, 2<sup>nd</sup> Ed. New York, NY: Springer-Verlag, 1994.
5. Halmos, Paul. Naïve Set Theory. New York, NY: Springer-Verlag, 2000.
6. Pickover, Clifford A. Wonders of Numbers: Adventures in Mathematics, Mind and Meaning. New York, NY: Oxford University Press, 2001.