Fayetteville State University
College of Arts and Sciences
Dr. Henry M. Eldridge
Department of Mathematics and Computer Science
MATH 260 Foundations of Mathematics
Spring 2015

I. Locator Information:
Instructor: Dr. Radoslav Nickolov
Course # and Name: MATH 260-01 Foundations of Mathematics
Day, Time, and Place Class Meets: MWF, 10:00 a.m. - 10:50 a.m., SBE 117
Semester Credit Hours: 3
Total Contact Hours for Class: 35
Office Location: Science and Technology Building 205-B
Office Hours: MW 8:45a.m. - 9:45a.m. and 11:00a.m. - 12:00p.m.;
TR 11:00a.m. - 01:00p.m.
Office Phone: 2053
Email Address: rnickolov@uncfsu.edu

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

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an
 electronic mail account (studentid@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/documents/policy/general/FSUE-mailFINAL.pdf

II. Course Description:
A course designed to help students transition to upper level courses in mathematics. Topics include set theory, logic, proof
 techniques, induction, equivalence relations, functions and cardinality, countable and uncountable sets, and 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, please contact the Center for Personal Development in the Spaulding
 Building, Room 155 (1st Floor); 910-672-1203.

IV. Title IX – Sexual Misconduct
Fayetteville State University (University) is committed to fostering a safe campus environment where sexual misconduct —
 including sexual harassment, domestic and dating violence, sexual assault, and stalking - is unacceptable and is not
 tolerated. The University encourages students who may have experienced sexual misconduct to speak with someone at the
 University so that the University can provide the support that is needed and respond appropriately. The Sexual Misconduct
 policy can be found at the following link: http://www.uncfsu.edu/Documents/Policy/students/SexualMisconduct.pdf

Consulting with a Health Care Professional - A student who wishes to confidentially speak about an incident of sexual
 misconduct should contact either of the following individuals who are required to maintain confidentiality:

Ms. Pamela C. Fisher Ms. Linda Melvin
Licensed Professional Counselor Director, Student Health Services
Spaulding Building, Room 165 Spaulding Building, Room 121
(910) 672-387 (910) 672-1454
psmith@uncfsu.edu lmelvi10@uncfsu.edu
**Reporting an Incident of Sexual Misconduct** - The University encourages students to report incidents of sexual misconduct. A student who wishes to report sexual misconduct or has questions about University policies and procedures regarding sexual misconduct should contact the following individual:

Ms. Victoria Ratliff  
Deputy Title IX Coordinator for Students  
Spaulding Building, Room 155  
(910) 672-1222  
vratliff@uncfsu.edu

Unlike the Licensed Professional Counselor or the Director of Student Health Services, the Deputy Title IX Coordinator is legally obligated to investigate reports of sexual misconduct, and therefore cannot guarantee confidentiality, but a request for confidentiality will be considered and respected to the extent possible.

Students are also encouraged to report incidents of sexual misconduct to the University’s Police and Public Safety Department at (910) 672-1911.

V. **Textbook:**  

VI. **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.

VII. **NCDPI and NCATE Standards**

<table>
<thead>
<tr>
<th>Standards Used in this Course</th>
<th>NCDPI Standards for Mathematics Teacher Candidates</th>
<th>NCATE Standard(s)</th>
<th>Assessment(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>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. <strong>Patterns, relationships, and functions</strong></td>
<td>Content Knowledge</td>
<td>Homework and tests</td>
</tr>
<tr>
<td>✔</td>
<td>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. <strong>Mathematical process skills</strong></td>
<td>Content Knowledge</td>
<td>Homework and tests</td>
</tr>
</tbody>
</table>
VIII. Course Requirements and Evaluation Criteria:

1. **Prerequisites:** *MATH 142 Calculus with Analytic Geometry I* and *MATH 150 Discrete Mathematics I*.

2. The student is expected to read the topics to be considered in class in advance (see the class outline below). 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 or 4 classes) will be assigned an interim grade “EA”. See the section on “Class Attendance” of the 2014-2015 FSU Catalog for details http://catalog.uncfsu.edu/undergraduate/academic-regulations/class-attendance.htm.

4. Since the lowest test score 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. Homework assignments are due at the start of the class meeting on the due date. Late homework will not be accepted unless the student has compelling reasons for being late with the homework assignment and has notified the instructor in advance.

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/students/withdrawals).

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

- **Tests** (3 highest test scores out of 4 tests, each with weight of 20%) ________________ 60%
- **Homework** (5 highest homework scores out of 6 homework assignments, each with weight of 4.0 %) ________________ 20%
- **Final Exam** (comprehensive) ________________ 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 and/or excessive absences

**Note:** If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.
IX. Academic Support Resources:
- Blackboard System
  http://blackboard.uncfsu.edu/
  All class documents and resources, such as syllabus, slides, worksheets, handouts and reviews for tests will be posted on the Blackboard system.

- Smarthinking
  Smarthinking is an online tutoring website that is free for all students at Fayetteville State University. It may be accessed via the Blackboard website. Smarthinking provides online tutoring 24 hours a day, 7 days a week enabling students to get the help they need when they need it.

X. Policy on Administrative Withdrawal from the University:
All students are expected to attend all classes regularly and consistently and are responsible for notifying faculty members, in advance, of the reasons for class absences. “Class attendance” in classes taught online is understood as regular and consistent interaction with the course website and instructor and submission of assignments according to stated deadlines. All forms of financial aid -- including scholarships, grants, work-study, and loans – are provided to support students who are attending classes and making satisfactory progress toward degree completion. To ensure accuracy of their academic records and financial accounts, students who are enrolled for a semester/term but stop attending classes are required to complete the official withdrawal process. Students who stop attending all classes in a semester will be administratively withdrawn from the university and may be required to make immediate repayment of all or some of the aid they received for that semester

XI. Course Outline and Assignment Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Section / Topic</th>
<th>Assignment due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01/12/15</td>
<td>Discussion about the syllabus</td>
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<tr>
<td></td>
<td>01/14/15</td>
<td>1.1 Sets</td>
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<td></td>
<td>01/16/15</td>
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<td>2</td>
<td>01/21/15</td>
<td>1.2 Set Operations</td>
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<td>01/23/15</td>
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<td>3</td>
<td>01/26/15</td>
<td>1.3 Partitions</td>
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<td></td>
<td>01/28/15</td>
<td>1.4 Logic and Truth Tables</td>
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<td>01/30/15</td>
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<td>4</td>
<td>02/02/15</td>
<td>1.5 Quantifiers</td>
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<td>02/04/15</td>
<td>1.6 Implications</td>
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<td>02/06/15</td>
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<tr>
<td>5</td>
<td>02/09/15</td>
<td>Review for Test 1</td>
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<td></td>
<td>02/11/15</td>
<td><strong>Test 1 (02/11/2015)</strong></td>
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<td></td>
<td>02/13/15</td>
<td>2.1 Proof Techniques (I)</td>
<td><strong>Homework 1</strong></td>
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<td>6</td>
<td>02/16/15</td>
<td>2.1 Proof Techniques (II)</td>
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<td></td>
<td>02/18/15</td>
<td>2.2 Mathematical Induction</td>
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<td>02/20/15</td>
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<td>7</td>
<td>02/23/15</td>
<td>2.3 The Pigeonhole Principle</td>
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<td></td>
<td>02/25/15</td>
<td>3.1 Divisibility</td>
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<td>02/27/15</td>
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<tr>
<td>8</td>
<td>03/02/15</td>
<td>Review for Test 2</td>
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<td></td>
<td>03/04/15</td>
<td><strong>Test 2 (03/04/2015)</strong></td>
<td><strong>Homework 3</strong></td>
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<td></td>
<td>03/06/15</td>
<td>5.1 Relations</td>
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<tr>
<td>10</td>
<td>03/16/15</td>
<td>5.2 Equivalence Relations</td>
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<td>03/18/15</td>
<td>5.3 Partial Orders</td>
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<td>03/20/15</td>
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<td>11</td>
<td>03/23/15</td>
<td>5.4 Quotient Spaces</td>
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<td>03/25/15</td>
<td>Review for Test 3</td>
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<td>03/27/15</td>
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<tr>
<td>12</td>
<td>03/30/15</td>
<td><strong>Test 3 (03/30/2015)</strong></td>
<td><strong>Homework 5</strong></td>
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<tr>
<td></td>
<td>04/01/15</td>
<td>6.1 Functions</td>
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Note: This schedule is tentative! It might be changed for the benefit of the class.

XII. Teaching Strategies:
MATH 260 is a lecture-based course designed to help students transition to upper level courses in mathematics. The majority of the material of the course will be given in lecture format. Each lecture will contain a summary of the most important concepts from each chapter section. Questions/problems will be posed to class to measure comprehension. Therefore, there will be lectures, class discussions, student presentations and cooperative group learning activities.

XIII. Bibliography: