NEW RIVER COMMUNITY COLLEGE

DUBLIN, VIRGINIA

COURSE PLAN

Course Number and Title: MTH 152 – Mathematics for the Liberal Arts II

Prepared by: Caroline M. Abbott   Spring, 2007
                              (Instructor)   (Date)

Approved by: Spring, 2007
                             (Interim Dean)   (Date)

I.   Course Description

Presents topics in functions, combinations, probability, statistics, and algebraic systems. Prerequisites: a placement recommendation for MTH 152 and Algebra I, Algebra II, and geometry, or equivalent. Lecture 3 hours per week.

II.   Introduction

This course is intended for transfer students in majors other than sciences, business, engineering and other mathematics related areas. It fulfills the requirements for two-year students in Computer Information Systems.

III.   Specific Objectives

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

1. Define mathematical system.
2. Identify the following properties: closure, commutative, associative, identity, and inverse.
3. Determine which properties are satisfied within a given finite mathematical system.
4. Define group.
5. Determine whether a mathematical system forms a group.
6. Perform clock arithmetic.
7. Perform modular arithmetic.
8. Solve problems using modular arithmetic.
9. Identify functions, domain, and range.
10. Evaluate functions.
11. Graph linear functions.
12. Decide whether an ordered pair solves a system.
13. Solve a system by graphing, elimination, and substitution.
14. Solve applications of linear systems.

15. Graph linear inequalities.
16. Graph systems of linear inequalities.
17. Use graphical methods for linear programming.
18. Solve applications of linear programming.
19. Evaluate exponential expressions.
20. Graph exponential functions.
21. Solve applications of exponential functions.
22. Calculate simple and compound interest.
23. Find present and future value.
24. Solve problems about add-on interest.
25. Solve problems using unpaid balance and average daily balance.
26. Solve problems by systematic listing.
27. Calculate using factorial notation.
28. Solve problems using the Fundamental Counting Principle.
29. Calculate using combinations and permutations.
30. Solve problems using permutations, combinations, and/or other various methods.
31. Use counting principles involving "not" and "or".
32. List sample space, and find basic probabilities.
33. Compute probabilities.
34. Determine whether two events are mutually exclusive.
35. Compute probabilities using "not" or "or".
36. Construct a probability distribution table.
37. Determine whether two events are independent or dependent.
38. Solve probability involving "and".
39. Use Pascal's triangle to solve combination problems.
40. Use binomial theorem to expand binomials.
41. Solve binomial probability problems.
42. Construct frequency tables, histograms, and frequency polygons.
43. Construct stem-and-leaf displays.
44. Find mean, median, and mode of a data set.
45. Solve problems involving measures of central tendency.
46. Find range and standard deviation for a data set.
47. Solve problems involving measures of variation.
48. Use z-scores to calculate percentiles, deciles, and quartiles.
49. Construct box plots.
50. Find percent of data within a number of standard deviations from the mean.
51. Find z-scores given percentages.
52. Solve problems involving normal distribution.

III.   Instructional Procedures

The primary instructional technique will be lecture. Some group activities will be assigned. Students are encouraged to ask questions and respond to questions asked by either the instructor or another student.

IV. **Instructional Materials**

1. Textbook: <u>Mathematical Ideas</u>
   Miller, Hereen, Hornsby (ISBN: 0-321-21863-9)
   10th Edition
2. Math XL Access Code bundled with textbook or purchased separately
   (ISBN: 0-201-72611-4)
3. Scientific calculator. TI 36X preferred.

Additional resource materials for some New River Community College classes can be found on the NRCC Web-based learning site at nr.edu/learninglinks.

V. **Course Content**
Chapter 4 - Sections 4 & 5, Finite Mathematical Systems and Groups.
Chapter 5 - Section 4, Clock Arithmetic and Modular Systems
Chapter 8 - Functions, Graphs, and Systems of Equations and Inequalities
Chapter 11 - Counting Methods
Chapter 12 - Probability
Chapter 13 - Statistics
Chapter 14 - Consumer Mathematics

VI. **Evaluation**

A student's final grade is determined through a variety of assessments. The breakdown is as follows:

Category	Total Points Possible	Percent of Final Grade
MathXL Homework	75	7.5
Quizzes	125	12.5
Project	150	15
Miscellaneous	50	5
Tests	400	40
Final Exam	200	20
TOTAL	1000	100

The following grading scale is used:

	Least Number of Points Needed
90 – 100 = A	900
80 – 89 = B	800
70 – 79 = C	700
60 – 69 = D	600
0 – 59 = F	

Assignments submitted through Blackboard or MathXL are due by 11:59 p.m. on the due date. Assignments turned in in class are due at the beginning of class. Assignments turned in late do not receive full credit.

If a student has an average of at least 90 (A) on all four unit tests and has a final average of at least 90 (A) on all four unit tests, all eleven quizzes, the project, the MathXL homework, and the miscellaneous assignments, the student will not be required to take the final exam and will receive an "A" for this course.

Homework – Each section has a MathXL assignment, a book assignment, or both. Each MathXL assignment counts 4 points. Your MathXL score will be converted to a 4-point scale.

Quizzes – There are ten (10) quizzes throughout the semester. They are either administered through MathXL or distributed in class to be completed outside of class. Either way, the quiz problems are similar to those encountered in homework.
There is also a 25-point cumulative quiz.

Project – The project has two components: a general exploration of the topics presented in sections 14.1, 14.2, and 14.3 of the textbook with MathXL assignments for each section and a more-specific exploration in greater depth of one of the topics. Each component is worth 75 points for a total of 150 points.

Tests – There are four (4) 100-point tests. There are no make-up tests. If a student misses a test, the grade for that test is "0".

Final Exam – There is a 100-point comprehensive final exam. For points, the final exam score is recorded twice. The final exam grade also replaces the lowest test grade if doing so is to the student's advantage. Everyone takes the final exam.

Disability Statement - If you are a student with a documented disability who will require accommodations in this course, please register with the Disability Services Office located in the Counseling Center for assistance in developing a plan to address your academic needs. Please feel free to talk with me privately concerning your accommodations and we will work together with the D.S.O. staff, Jeananne Dixon and Phyllis Holliman (Rooker Hall, Counseling Center).

Diversity Statement - The NRCC community values the pluralistic nature of our society. We recognize diversity that includes, but is not limited to, race, ethnicity, religion, culture, social class, age, gender, sexual orientation and physical or mental capability. We respect the variety of ideas, experiences and practices that such diversity entails. It is our commitment to ensure equal opportunity and to sustain a climate of civility for all who work or study at NRCC, or who otherwise participate in the life of the college.

VII. <u>**Withdrawal Policy**</u>

<u>**Student Initiated Withdrawal Policy**</u>
A student may drop or withdraw from a class without academic penalty during the first sixty percent (60%) of a session. For purposes of enrollment reporting, the following procedures apply:

a. If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.

b. After the add/drop period, but prior to completion of sixty percent (60%) of a session, a student who withdraws or is withdrawn from a course will be assigned a grade of "W."

c. After that time, if a student withdraws from a class, a grade of "F" will be assigned.

A student may be awarded, retroactively, a grade of "W", if and only if, the student would have been eligible under the previously stated policy to receive a "W" on the last date that he/she attended class.

1. The student must appeal for a grade of "W" based on attendance.

2. The Admissions and Records staff will collect the relevant documentation for the appeal, including the last date of attendance, from the instructor of the course that is being appealed and other relevant documentation when mitigating circumstances are to be considered. For an appeal related to a distance education course (IDL), the last date that work was submitted will be considered the last date of attendance.

3. All relevant documentation will be reviewed by the Director of Student Development and the withdrawal policy strictly applied in determination of changing the grade to "W".

4. If the student ceased attending class during the first 60 percent of the semester, a grade of "W" will be given. If the last date of attendance falls beyond the sixty percent mark, the student must demonstrate mitigating circumstances and must have been passing before a grade of "W" will be awarded.

5. Appeals asserting mitigating circumstances must be further reviewed by and a determination made by a committee of faculty appointed by the Dean of Instruction and Student Services.

A grade of withdrawal implies that the student was making satisfactory progress in the class at the time of withdrawal, or that the withdrawal was officially made before the deadline date published in the college calendar, or that the student was administratively transferred to a different program.

Instructor Initiated Withdrawal Policy

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance in each class.

Students who have not attended class by the last day to drop class and receive refund must be deleted by the instructor during the following week. No refund will be applicable.

When a student's absences equal twice the number of weekly meetings of a class, the student may be dropped for unsatisfactory attendance in the class by the instructor.

When an instructor determines that absences constitute unsatisfactory attendance, a Faculty Withdrawal Form should be completed and submitted to the Admissions and Records Office. The last date of attendance must be documented. A grade of "W" will be recorded during the first sixty percent (60%) period of a course. Students withdrawn after the sixty percent (60%) period will receive a grade of "F" except under mitigating circumstances, which must be documented. A copy of this documentation must be placed in the student's academic file.

The student will be notified of the withdrawal by the Admissions and Records Office. An appeal for reinstatement into the class may be approved only by the instructor.

VIII.   Cheating

The giving or receiving of help on any graded portion of the course will not be tolerated. The student will receive a grade of "0" on that portion and possibly an "F" for the course.

IX.   Attendance

Attendance will be a factor in grading. If a student has missed no days, three (3) percentage points will be added to the final average prior to assigning a letter grade. If a student missed exactly one (1) day, two (2) points will be added and if exactly two (2) days are missed, one (1) point will be added. With classes that meet on Tues. & Thurs, each class meeting counts as 1½ days for this purpose.

Attendance on a test day or exam day is mandatory since there are no make-up tests.

The attendance requirements outlined in the college's *Instructor Initiated Withdrawal Policy* will also be followed.

X.   Student Help

Help is available to students in several forms including:

a.   A videotape series on CD-ROM is provided with the text for student convenience.
b.   Math Tutor Center (http://www.awl.com/tutorcenter)
       Live one-on-one tutoring is available to students who purchase the text. A Tutor
       Center registration number is bundled with the text. Students can contact the Tutor
       Center via toll-free phone, fax, e-mail, or Internet.
c.   A web site for this text (http://www.awl.com/mhh) provides additional resources for
       students.
d.   I am available for help by phone, fax, e-mail, voice mail, or during office hours.
e.   Other students taking the course are often a good source of help.
f.   Academic Assistance has tutors to help you.

XI.   Instructor

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