

**Instructor**

bil bonnice

Office location: Regis, top floor

Home phone: 603-888-4807      Office phone: 603-897-8540

Home e-mail: cf1bb@aol.com      E-mail: [wbonnice@rivier.edu](mailto:wbonnice@rivier.edu)

**Office hours:** Please let me know whenever you need help. Many ideas in this class will be new to you and you will need to study them beyond the classroom in order to understand them fully. You are invited to stop by my office whenever I am there or make an appointment with me. I will also respond to e-mail questions. My scheduled office hours are:

**M 2:00 – 5:00, W 12:30 – 2:00** and by appt.(Feel free to call me at home or at my office.).

**Textbook:** *Contemporary College, Data, Functions, Modeling* (5<sup>th</sup> Edition, 2004) by Don Small, McGraw-Hill CUSTOM PUBLISHING, ISBN: 0-07-299383-9.

**Use of Graphing Calculator:..** Although we will sometimes use MATLAB in class and you can get along in this course by using MATLAB, a graphing calculator with a table function will be helpful. It will be possible to do many the problems without a graphing calculator, but often the required work will be very tedious to do by hand. Probably anything that you can do on your calculator can be done using MATLAB if you can figure out how.

The overhead projector calculator which I will use sometimes in class will be a TI-83. TI-82's and TI-83's are easy to use and are programmable. TI-85's and TI-86's are acceptable but slightly more complex. They do have better statistical capabilities than the 82/83 versions. If you own a brand other than TI, you are welcome to use it, but I will not be familiar with the commands. Particularly, in this case, make sure you have a manual for the calculator so that I can read it in order to try to help you.

**Brief course description:** Algebraic concepts and computational techniques are introduced and motivated in response to the need to solve real-life problems. In this course a student should develop the ability to understand elementary data analysis, to extract function relations from data, and to mathematically model real-life situations in different disciplines. Such abilities are fundamental to the linear arts education of every student.

NOT AVAILABLE FOR CREDIT TO STUDENTS WHO HAVE SUCCESSFULLY COMPLETED PRECALCULUS OR CALCULUS IN HIGH SCHOOL OR A COURSE EQUIVALENT TO RIVIER'S MA130 OR HIGHER.

**Prerequisite:** Rivier's MA 100 or equivalent.

**Course Objectives:**

To mathematically model real-world situations.

To provide small group experiences.

**To have fun exploring and creating solutions to meaningful problems.**

To acquire skill in solving first and second degree equations.

To acquire skill in using and solving inequalities.

To acquire skill in operations with polynomials and algebraic fractions.

To learn the concept and properties of functions.

To study systems of equations and systems of inequalities.

To learn how to apply the appropriate mathematical knowledge and skills to the solving of word problems.

To communicate your work effectively.

You are expected to participate in class. You should study the book, take notes on your studying, be prepared to ask questions about the reading and the problem assignments, and take part in class discussions and problem solving.

**In particular, and most importantly, you are expected to study the upcoming section before coming to class and to write up the answers to the book's *Queries* in that section and turn them in at the start of each class. Also with this write up, write down any questions that you have about that section.**

### **Peer Study Groups:**

Class activities will complement, not substitute, for the reading, problem solving, and discussion that you engage in outside of class. Studies over a long period at Harvard (See *Making the Most of College* by Richard Light, Harvard U. Press, 2001) have shown that one of the two main things that make for the most success in college is the formation of peer study groups which meet weekly. Thus every student in this class will be expected to be part of a study group which meets weekly. I will expect you to form your own groups and will ask you to list your group members and state the place and time of your weekly meetings.

### **Homework:**

Plan to spend 6-8 hours per week outside of class in study, writing answers to the book's *Queries*, and doing assignments for this course. As explained in the previous section, you are encouraged to study together, but be sure you do as much explaining as your partners do. You will know that you have learned a concept when you are able to reproduce reasoning and solutions developed during a conversation. Regular study as well as regular attendance in class is very important to your success in the course.

### **Reading**

Reading technical material is a very valuable skill that you will need in this course and in other courses that you take. One of the goals of this class is that you become comfortable reading mathematical material. Toward this aim, I expect that, before each class, you read in advance the textbook sections that we will be covering in class and **write out the answers to the *Queries* in that section to turn in**. Reading mathematics can be difficult. As you read through your textbook, follow these:

***Guidelines for Reading a Math Textbook*** (based on material from Tommy Ratliff at Wheaton College, MA)

Reading a mathematics textbook is a skill that you can learn. As the semester progresses, you should be able to read more effectively. Here are some suggestions:

- **Spend Time:** Spend time for each reading assignment. It is not unusual to spend up to an hour for each reading assignment.
- **Read and Re-read:** A mathematics text is not easy to read. You might not understand it your first time through. Read in preparation for class. Re-read after class. Re-re-read when doing homework assignments. Things should become clearer each time you look at material in the text.
- **Learn the Language:** Make sure that you understand the terminology, the keywords, the definitions. When you encounter a word that you don't understand or whose definition you have forgotten, look it up in the index. Reread the section where the word is defined and used.
- **Don't Just Read - Do!:** Read with paper and pencil in hand. Read the statement of an example in the book. Then cover up the book's solution and try to do it yourself. After your attempt, look at the book's solution. When you think you understand the book's solution, try again to do the problem.

- **Follow the Instructions:** Sometimes the book will ask you to check calculations or graph an expression. Do it! Let the text step you through the material. Write out the answers to any of the Queries and turn in these answers.
- **Reflect:** Reflect on what you have read. While you are reading try to determine the main concept in the section or the chapter. How does the new material fit in with what you've already learned? Where do you think it is going?

### Problem Assignments

The assignments and their due dates accompany this syllabus. Staple loose homework pages together. If homework is handwritten, it must be neat, and easy to read. One of the objectives for this course is to be able to communicate your work to others. Handing in homework that is neat and easy to read is a form of communication. Heed carefully the following suggestions:

### Math Homework Guidelines

An important skill that you should learn in college is how to communicate. In math classes, you should learn to communicate mathematics.

As a starting point, I want you to communicate your homework solutions clearly and effectively. Here are some suggestions:

- **Identify yourself:** Remember to put your name on top of your paper
- **Identify the assignment:** Write the page, the section number, and the homework assignment number, clearly at the top of the paper.
- **Now what was that problem?** Rewrite the gist of the question or problem as well as the solution. I will not always have a book with me when I look at your homework. So, it isn't very helpful to know only that I am looking at problem #32. I need to know what was asked in problem #32.
- **Neatness is Nice:** Homework must be *neat*, and easy to read. You are not *communicating* mathematics if your writing is illegible.
- **Where's that problem?** Don't make someone hunt around your pages to find your solutions. Clearly identify the beginning and end of each problem.
- **Explain:** Do not be afraid to use words in your homework assignments. In fact, words are highly encouraged. Complete sentences are highly regarded. Justify and explain your arguments. *A list of answers or a string of expressions without any explanation is not acceptable.*
- **Write with your peers in mind:** Write your solutions so that any other student in the class could read and understand your solution. Always keep in mind that your intended audience is other students, not your professor ! One of your goals in this class is to be able to *explain* your work to others. Do not be afraid to use words in your homework assignments. In fact, words are highly encouraged. Even though only some questions will explicitly ask for an explanation, I encourage you to give explanations for all problem solutions.

You should study together, but you should write up your homework solutions on your own, without looking at the work of others. Only then will you be sure that you have understood the material and are able to communicate the material to others.

I will try to return homework by the next class period. I will look to see that you have completed the homework, and I will spot check some selected problems more carefully.

### Homework Advice

The homework assignments given are a reasonable sample of the kinds of problems you should be able to do. You should work the assigned problems as soon as possible after each class. I suggest that you do problems in addition to those assigned. You should *not* leave homework until 1 a.m. the night before it is due!

## Turning in Homework

The answers to the Queries are due at the *beginning* of class and should be put into the “Query Folder” on entering the classroom.

I encourage you to ask questions *before* the due date of the homework. Questions that you have on the homework or your reading should be written on a separate piece of paper so that you will remember what you want to ask.

At the end of class put your homework into the “Homework Folder”. You are expected to do this without being reminded.

**No late homework** will be accepted unless you have a valid reason which you clear with me.

**Quizzes, Tests, and Projects:** There will be two quizzes, a comprehensive final, and two projects which you will present to the class.

. The dates and required material for the quizzes are listed on the accompanying schedule of assigned problems.

I may make arrangements with you to make up a quiz in case of an emergency ( being unprepared is not considered an emergency). Any arrangements should be made with me *prior* to the test. In case of a last minute emergency, contact me by phone or e-mail at your first opportunity. *Arrangements for a make-up must be made before the next class.*

## Help

I really like this course and I like to talk about it. I expect that you will have questions on the text material and on homework and I do want to help you learn the material. So please feel free to ask me questions. You can e-mail questions to me. I have office hours when you can just drop in. You can set up a meeting with me at other times. Please come by with your questions.

In addition, let me know if you find the course material too easy, or too difficult, if the pace of the course is too slow or too fast, or if the course is not what you expected. I will try to help you work out a solution to make the course much more profitable and enjoyable to you.

## Computation

**Of Grades** The weights in determining the final grade are as follows:

Writing up the answers to the book’s “Queries”	10%
Homework assignments	20 %
Two Quizzes ( 10% each )	20 %
Cumulative Final examination	20 %
Two Projects	20 %
Miscellaneous(Putting Homework Solutions on the Board, Group Participation; Class Discussion; Writing up Questions, 5 min quizzes, etc)	5 %
Self-evaluation at the end of the semester ( See final page below.)	5 %

**NOTE:** The **final exam** will be cumulative and will be 8:00 – 10:00 AM on Wed., Dec. 13

Grades are intended to reflect the degree to which the mathematical content has been mastered, not the performance of one student in relation to others. I want my students to help one another learn. I don't want them competing with one another for grades. Instead, the goal is to lift everyone's level of understanding so that everyone can get a high grade. To foster cooperation, I never "scale" grades. I use the Rivier College standard grade boundaries to assign grades:

	87-89 B+	77-79 C+	67-69 D+
93-100 A	83-86 B	73-76 C	63-66 D
90-92 A-	80-82 B-	70-72 C-	00-62 F

These grade boundaries will not be changed. I would be very happy if everyone earned an A.

**Attendance Factor:** Before assigning the final grade, the score based on the above percentages will be multiplied by an attendance factor. Each student's attendance factor starts out as 1.03, but for each absence one percentage point (0.01) will be subtracted from this factor. Arriving up to 30 minutes late will count as half an absence. A student who is present but inattentive may also be penalized. A student with a 78 average who never misses a class would receive  $(78)(1.03)=80.34$ , a B-, while another student with a 78 average and 11 absences, would receive  $(78)(.92)=71.76$ , a C-.

## Statement on Attendance

The classroom is the heart of the educational experience at Rivier College because it provides, uniquely, a formal setting for the important exchanges among faculty and students. Regular and punctual attendance at all classes, essential for maximum academic achievement, is a major responsibility of Rivier College students. Failure to attend and contribute to the classroom environment significantly and demonstrably reduces the quality of the educational experience for everyone in the classroom. As a result, absences almost always impact the quality of performance.

As part of its commitment to a quality educational experience for all members of the Rivier community, the College formally requires specific attendance policies to be developed by its professors and reviewed by the Division Head and Academic Dean. Any attendance policy used by an individual professor as a criterion for evaluation must be specified in the course syllabus and presented to students during the first week of classes. These policies can be found in respective course syllabi, and may include reasonable penalties and sanctions for excessive absences.

In the event of prolonged illness, accident, or similar emergency, it is the responsibility of the student to notify both the professor and the Office of the Academic Dean. Students must remember that it is always their responsibility to make up the work they may have missed during an absence from class. Students are directed to confer with their professors when their absences jeopardize satisfactory progress. Whenever a professor is absent without notification, students are expected to wait fifteen minutes before leaving and to sign an Attendance List, which a class member delivers to the Office of the Academic Dean.

Instructors are required to record attendance and alert the Registrar when a student fails to attend the equivalent of two weeks of courses (2 absences for a course meeting once a week, 4 absences for a course meeting twice a week, 6 absences for a course meeting three times a week). The student will then be alerted that he/she is in danger of falling under the "habitual non-attendance policy" (see below).

### **Habitual Non-Attendance Policy**

Habitual non-attendance is defined as an absence in any course (for any reason whatsoever) equating to three full weeks of missed class sessions (3 absences for a course meeting once a week, 6 absences for a course meeting twice a week, 9 absences for a course meeting three times a week).

It is the responsibility of the student to notify the College of any intention to withdraw from a course or withdraw from the College. The College will attempt to resolve the issue of habitual non-attendance with the student; however, the College reserves the right to withdraw students who are no longer attending classes.

Habitual non-attendance in one or more classes may result in administrative withdrawal from the class or classes affected, withdrawal from the College or, in cases with extenuating circumstances, an administrative leave of absence. In such cases a grade of W or NF will be assigned to the classes affected according to the appropriate date published in the academic calendar.

Students who have attended no class sessions of a course or courses from which they are registered by the end of the drop/add period will be dropped from each class not attended. If a student never attended any courses during the drop/add period, the student will be withdrawn from his/her full schedule of courses.

### **GRADING OF THE HOMEWORK:**

I will not have time to grade each problem individually. Instead I will be checking that you have done the homework. I will rely on you to check your own work. If you are not sure of your solution, write down ***specifically*** what you are not sure about and ask about it in class. I will get an overall impression of each assignment that you turn in and award it a check plus(110%), a check(100%), a check minus(80%), or a check minus minus(60%). **You can get full credit for any problem that you can't do, by asking a specific question whose answer will help you solve the problem.** Just writing question marks or things like "No clue" receive no credit.

There will be no credit given for late homework. It is important to keep up with your work.

### **Homework Grading Rubric:**

**Check Plus (110%)** if you get all the problems that I check correct **and** you do all the problems.

**Check(full credit)** if you get at least one problem wrong that I check but you do **all** the problems.

**Check minus(80%) or Check minus minus(60%)** if you get at least one problem wrong that I check and you don't do **all** the problems.

### **Academic Honesty**

Plagiarism and cheating are serious breaches of academic honesty. In general, plagiarism is defined as the presentation of someone else's work in whatever form: copyrighted material, notes, film, art work, reports, statistics, bibliographies, and the like, as one's own, and failing to acknowledge the true source. Quoting word-for-word, or almost so, or using the argumentation of another source without acknowledging this dependence also constitutes plagiarism. Cheating is defined as the giving or attempting to give or to receive unauthorized information or assistance during an examination or in completing an assigned project. Submission of a single work for two separate courses without the permission of the instructors involved is also a form of cheating.

If students are unsure whether a specific course of action would constitute plagiarism or cheating, they should consult with their instructor in advance.

Penalties for plagiarism and cheating vary with the degree of the offense and may take the form of the following academic sanctions:

- the grade of F for the work in question;
- the grade of F for the course;
- notification of the department chair and/or Academic Dean of the College of the misconduct of the student;
- recommendations that the student be suspended or dismissed from the College.

### Americans with Disabilities Act (ADA)

Rivier College wants to provide reasonable accommodations to students with disabilities. To accomplish this goal effectively and to ensure the best use of our resources, the College expects students to provide timely notice of a disability to the Office of Special Services for verification and for evaluation of available options. Any student whose disabilities fall within ADA should inform the instructor within the first two weeks of the term of any special needs or equipment necessary to accomplish the requirements for the course. To obtain current information on this procedure, contact the Office of Special Services at telephone extension 8497.

**NOTE:** You are responsible for understanding and complying with the contents of this syllabus. If you have any questions about this syllabus please raise them at any time during the semester.

### **MA 112 Self-evaluation** (due at the beginning of class on Friday, December 8)

This Self-evaluation will count as 5 per cent of your grade. You will be scored on the quality of how you evaluate yourself, how you evaluate your work in this course and how you evaluate your progress and understanding in this course. In other words you could say that you deserve a low grade in the course and give good reasons for that and receive maximum credit on this Self-evaluation.

On the other hand, you could say that you deserve an “A” in the course and receive a low score on the Self-evaluation because you did a poor job justifying your claim for an “A”.

1) **Note:** Grades are based on understanding, competence and achievement, **not on time and effort**. It usually takes a lot of effort to achieve these but effort alone, without achievement, understanding, and competence in the subject matter, does not warrant a passing grade. See 6) below.

In addition to stating what grade you think you deserve in the course, along with justification, you should evaluate yourself on the following:

- 2) How well did I work with my classmates in and out of class?
- 3) How much did I work outside of class and how was the quality of that work? Did I study the text thoroughly with a pencil and paper at hand to try to work out examples before reading them and to work out things I didn't understand? Did I write out and turn in the answers to all of the “Queries” in the text? Did I write down questions to be answered in class? How well did I do on the homework and how much time did I put in on it? What was the quality of my effort?
- 4) QUIZZES: How did I do on them? How well did I prepare for them? After receiving them back, did I consult with my classmates about them and compare my answers with theirs? Wherever I made a mistake, did I either figure out my mistake or check with others or the instructor until I understood where I went wrong?
- 5) IN-CLASS PARTICIPATION AND BOARD WORK: Did I go to the board regularly and explain what I did there? Did I ask questions in class? How much did I contribute to class discussions?

6) UNDERSTANDING, PROGRESS, and ACHIEVEMENT: How much did I learn and understand in this course? Did I meet my expectations? How much progress did I make? (Compare where you are now to where you were at the beginning of the course. Has there been much change?) What have you achieved in this course?

7) CRITIQUE OF THE PROFESSOR: What did you like least about my teaching? What did you like most? Suggest at least one thing that I could do to improve my teaching.

8) CRITIQUE OF THE COURSE: What did you like least about the **course**? What did you like most? Suggest at least one thing that could be done to improve the course.

9) CRITIQUE OF THE TEXT:

10) MISCELLANEOUS: Say anything else you'd like to say.

## **MA 112A, MWF 8:30 – 9:20: *Contemporary College Algebra* by Don Small: Assignments for Fall of 2006**

<b>Date Due</b>	<b>Sections in Book</b>	<b>Queries</b>	<b>Assignments</b>
F Sep 8	Ch1. and 2.1 Data and Variables	<b>2.2: 1 - 5</b>	<b>2.1: P. 12 / 1,2,6,12 (+ 5min Quiz on Syllabus )</b>
M Sep 11	2.2 Average(Mean)	<b>2.3: 1 - 6</b>	<b>2.2: P. 17 / 1,2,5,6,18</b>
W Sep 13	2.3 Median and Mode	<b>2.4: 1 - 4</b>	<b>2.3 P. 24 / 2,12,20,22,23</b>
F Sep 15	2.4 Variable Representation	<b>2.5: 1 - 3</b>	<b>2.4 P. 31 / 1,2, 7bde, 8bcd, 10,13</b>
M Sep 18	2.5 Circle Properties and Pie Charts	<b>2.6:1 - 10</b>	<b>2.5 P. 40 / 1,2,5,8,15</b>
W Sep 20	2.6 Discovering Relations between Vars.	<b>2.7: 1 - 4</b>	<b>2.6 P. 53 / 1,2,5,6,9,11</b>
F Sep 22	2.7 Applications of Linear Equations	<b>2.8: 1 - 3</b>	<b>2.7 P. 63 / 1,2,4,5,10,11</b>
M Sep 25	2.8 Systems of Equations	<b>2.8: 4 - 5</b>	<b>2.8A P.77/4,6,7. Set up 8, 9, &amp; 10;solve next time.</b>
W Sep 27	2.8 continued	<b>2.9: 1 - 2</b>	<b>2.8B P. 77 / 1,2,8,9,10,12</b>
F Sep 29	2.9 Linear Inequalities	<b>2:10: 1</b>	<b>2.9 P. 86 / 1,2,5,6,8,14</b>
M Oct. 2	2.10 Linear Programming	<b>2:10: 2</b>	<b>2.10A P.96/1,2,3. Set up 6, 8, &amp; 9:solve next time.</b>
W Oct. 4	2.10 continued		<b>2.10B P. 96 / 5,6,7,8,9</b>
F Oct. 6	2.11Ch. Sum. <b><u>Asn. Ch 2 Fun Grp Proj.</u></b>	<b>Study 3.1</b>	<b>Five expls. of Ch. 2 things you found difficult.</b>
M Oct 9	<b>Fall Holiday – no classes</b>		
W Oct 11	<b><u>Quiz on Ch. 2</u></b>		
F Oct 13	3.1 Displaying Functions	<b>3.2: 1 - 7</b>	<b>3.1 P.122 /1,2,3(Make up <u>one</u>, not 3), 4,5,8,10,11</b>
M Oct 16	3.2 Definitions	<b>3.3:p.145</b>	<b>3.2 P. 134 / 1,2,5,8,12,15,18,20,26</b>
W Oct 18	3.3 Predictions Based on Data	<b>3.4: 1 - 2</b>	<b>3.3 P. 146 / 1,4,5,7,10,13,14,18,20</b>
F Oct 20	3.4 Shifting and Scaling Graphs	<b>3.4: 3 - 5</b>	<b>3.4A P. 159 / 1,2,4,5,10,12,14</b>
M Oct 23	3.4 continued	<b>3.5: 1 - 3</b>	<b>3.4B P. 159 / 7,8,9,16,18,20</b>
W Oct 25	3.5 Algebra of Functions	<b>3.5: 4 - 9</b>	<b>3.5A P. 175 / 1,4,6,7,8</b>

F Oct 27	3.5 continued	<b>3.6: 1 - 2</b>	<b>3.5B P. 175 / 2,11,12,13,15,17</b>
M Oct 30	3.6 Graphical Approximations	<b>3.6: 3</b>	<b>3.6A P. 196 / 1,2,4,6,7,9,10</b>
W Nov 1	3.6 continued	<b>5 m Quiz on 3.7</b>	<b>3.6B P. 196 / 11,12,13,15</b>
F Nov 3	3.7 Symbolic Approxn. of Data	<b>3.8: 1 - 3</b>	<b>3.7 P. 207 / 1,2,4,5,6,7</b>
M Nov 6	3.8 Optimization		<b>3.8 P. 213 / 1,2,4,6,7,10,12</b>
W Nov 8	3.9 Ch. 3 Summary on page 215 – 216.		<b>Five expls. of Ch. 3 things you found difficult.</b>
F Nov 10	<b><u>Quiz on Ch. 3</u></b>		
M Nov 13	<b>Presentations of Ch 2 Fun Projects</b>		<b>Study Ch. Fun Projects, pages 217 to 232.</b>
W Nov 15	<b><u>Asn Ch 3 Fun Grp Projs to NEW Grps</u></b>	<b>4.1: 1 - 2</b>	<b>Study 4.1. Answer Queries 1 and 2 to turn in.</b>
F Nov 17	4.1 Mathematical Modeling	<b>4.1: 3</b>	<b>4.1A P. 245 / 1,2,5,7,8,12</b>
M Nov 20	4.1 continued	<b>4.2: 1 – 6</b>	<b>4.1B P. 245 / 3,4,6,9,11,16</b>
W Nov 22	4.2 Modeling ( Business) (TKSGVG.)	<b>4.2: 7 – 9</b>	<b>4.2A P. 256 / 4,7,8,9,12,13</b>
M Nov 27	4.2 continued	<b>4.6: 1 – 4</b>	<b>4.2B P. 256 / 1,2,14,15,20,23</b>
W Nov 29	4.6 Modeling ( Life Sciences )	<b>4.6: 5</b>	<b>4.6A P. 301 / 1,5,7,8,9</b>
F Dec 1	4.6 continued	<b>4.8: 1 - 2</b>	<b>4.6B P. 301 / 2,12,13,14,16</b>
M Dec 4	4.8 Modeling ( Music and Art )	<b>4.8: 3</b>	<b>4.8A P. 322 / 1,2,3,4</b>
W Dec 6	4.8 continued		<b>4.8B P. 322 / 6,8,9,10</b>
F Dec 8	<b>Presentations of Ch 3 Fun Projects</b>		
M Dec 11	4.9 Ch. 4 Summary, appropriate parts		<b>Write up the solution to each of the two most difficult problems for you in each of Chs. 2,3,4.</b>

FINAL EXAM: Wed., Dec. 13, 8:00 AM – 10:00 AM