Syllabus for Math-5: Contemporary Mathematics— Eureka Campus		
Semester & Year:	Spring 2016	
Course ID and Section #:	MATH-5-9152	
Instructor's Name:	Miguel-Angel Manrique	
Day/Time:	TTh 11:40am-1:05pm	
Location:	SC 202	
Number of Credits/Units:	3	
Contact Information:	Office location:	SC 216G
	Office hours:	T 11-11:30am; W 8:30-9:30am, 1:30-2pm; appointment
	Phone number:	(707) 476 - 4351
	Email address:	`miguelangel-manrique@redwoods.edu`
Textbook Information:	Title & Edition:	*Using and Understanding Mathematics*, 4th edition
	Author:	Bennett and Briggs
	ISBN-10:	0321458206

Course Description:

An approved CR and CSU General Education course designed primarily for non-science majors. This course is a study of selected topics from contemporary mathematics. Typical topics, which are chosen by the instructor, will be from areas including: inductive and deductive reasoning, mathematical modeling and analysis of linear and exponential functions, geometric symmetries, geometry of fractals, sequences and series, dynamics of population growth, statistics, mathematics of finance and management science, mathematics of methods of voting, fair division, and problem-solving techniques.

Student Learning Outcomes:

1. Accurately communicate mathematical ideas using correct mathematical notation, graphs, and vocabulary.
2. Use of the graphing calculator or other technology to explore mathematical concepts and also to verify their quantitative conclusions.
3. Solve problems and applications demonstrating the skills required for college-level mathematics.
4. Examine the quantitative arguments on both sides of issues currently in the news.
5. Explain the concepts of mathematics of social choice, statistics, growth, symmetry, finance, and/or management science and use the concepts to solve problems in these fields.

Special accommodations:

College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS at 707-476-4280.

Academic Support:

Academic support is available at Counseling and Advising and includes academic advising and educational planning, Academic Support Center for tutoring and proctored tests, and Extended Opportunity Programs & Services, for eligible students, with advising, assistance, tutoring, and more.

Academic Honesty:

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the students status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct (AP 5500) is available on the College of the Redwoods website at: `http://www.redwoods.edu/district/board/new/chapter5/documents/AP5500StudentConductCodeandDisciplinaryProceduresrev1.pdf` Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods website.

Disruptive Classroom Behavior:

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructors directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive behavior. In such cases where the instructor determines that a student has disrupted the educational process a disruptive student may be temporarily removed from class. In addition, he or she may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct (AP 5500) is available on the College of the Redwoods website at: `http://www.redwoods.edu/district/board/new/chapter5/documents/AP5500StudentConductCodeandDisciplinaryProceduresrev1.pdf` Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods website.

Emergency Procedures for the Eureka campus:

Please review the campus evacuation sites, including the closest site to this classroom (posted by the exit of each room). The Eureka campus emergency map is available at: `http://www.redwoods.edu/Eureka/campus-maps/EurekaMap_emergency.pdf`. For more information on Public Safety, go to `http://redwoods.edu/safety/` In an emergency that requires an evacuation of the building:

- Be aware of all marked exits from your area and building.
- Once outside, move to the nearest evacuation point outside your building:
- Keep streets and walkways clear for emergency vehicles and personnel.
- Do not leave campus, unless it has been deemed safe by the Incident Commander or campus authorities. (CR's lower parking lot and Tompkins Hill Rd are within the Tsunami Zone.)

RAVE – College of the Redwoods has implemented an emergency alert system. In the event of an emergency on campus you can receive an alert through your personal email and/or phones at your home, office, and cell. Registration is necessary in order to receive emergency alerts. Please go to `https://www.GetRave.com/login/Redwoods` and use the "Register" button on the top right portion of the registration page to create an account. During the registration process you can elect to add additional information, such as office phone, home phone, cell phone, and personal email. Please use your CR email address as your primary Registration Email. Your CR email address ends with "redwoods.edu." Please contact Public Safety at 707-476-4112 or `security@redwoods.edu` if you have any questions.

MATH-5, Contemporary Mathematics
COLLEGE OF THE REDWOODS
Spring 2016

Instructor: Miguel-Angel Manrique
Office: SG 216G
Email: miguelangel-manrique@redwods.edu
Office hours: T 11:00-11:30am; W 8:30-9:30am, 1:30-2:00pm; by appointment
Meeting location: SC 202
Meeting times: TTh 11:40am-1:05pm
Prerequisite: Grade of "C" or better in Math-120 or Math-194, or appropriate score on assessment exam.

Book: There is no textbook to buy. We will refer to a number of sources, which will be provided to you or will be available from the library. You will need a standard Rubik's Cube by next Tuesday.

1. Course Description

The main ideas we will look at in this course are

1. mathematical games: Sudoku and the Rubik's Cube
2. "dimension"
3. perspective art
4. fractals and fractal art
5. the mathematics of loans and simple investments
6. mutual funds, bonds
7. how to split up something of value in a fair way (three roommates choosing differently-sized rooms in a three-bedroom apartment, for example)
8. musical tuning and musical intervals
9. cryptography
10. MP3 music compression, JPEG image compression.

We will look at these topics through student-led investigations. You will be asked to think about questions and explain why and how you arrived at your conclusion. Clarity of writing is an important part of this course.

Participation and attendance: Active participation in class is an essential ingredient in this course. Participation in your group and in whole class discussions is a significant part of your grade. You will regularly explore investigations in class. You are expected to contribute to your group's problem solving, offer to present your individual process, your reasoning and your solutions to the whole class, and critically evaluate any reasoning presented in class.

For this reason, attendance is mandatory. Missing class, late arrival to class, or leaving in the middle of class will result in a lower grade. No make-ups will be given for missed quizzes or work except in the event of a true, documented emergency where the instructor is notified **in advance**–if reasonable. In such a circumstance, it is the students responsibility to contact the instructor at the earliest possible time to make alternate arrangements.

Class Organization and Portfolio: In class, you will explore a certain number of investigations, in close collaboration with the other students in your group. You need to have a "scrap" notebook and a

"good" portfolio, which you can hand in while continuing your investigations. Bring both notebooks to class at all times.

It is natural that some of your paths of investigation may not directly lead you to insights or "Aha!" moments, so a fair amount of exploratory "scrap" work may be needed. However, such "scrap" material is really a very valuable part of your exploration, since it can give you insight into why a particular path does not work and help you find other promising paths.

After every class, one part of your homework is to create—in your "good" portfolio—a neat, clear, and complete write-up of your class investigations, observations, reasoning, questions, conjectures, and findings. Include a summary of relevant parts of your "scrap" work. Prepare this material in a way that you could give it to a student not in this class, who has not worked on this investigation themselves, and have them be able to completely follow your explanations of your reasoning and your findings (try with someone not taking a math class right now). *Caution:* What may seem "clear" or "obvious" to you right after having worked intensively with the material will likely need more details to be comprehensible to somebody else. Keep in mind that your good portfolio will be your resource for preparing for the final exam after you have not looked at this material for several months!

Your good portfolio will be collected a week or two into the semester to provide you with feedback and towards the end of the semester for a grade. It will be returned to you.

Journal and Reflection Paper: You are expected to keep a weekly journal in which you will document your reflections on your learning experiences, your confusion and "aha!" moments on a weekly basis. It will contain *weekly entries* about your mathematics learning in and out of class. I am not interested in the content of our classes, but in your *internal processes, discoveries, beliefs, insights, confusions, and feelings.* This journal will serve as your resource for a reflection paper that will be due later in the semester. Your journal may be collected at any time, and is to be handed in at the end of the term along with your reflection paper. In addition, there will be three formal journaling assignments during the semester.

2. Grading

In order to pass this class, you must pass the final.

$$\begin{array}{lcl} \text{A} & = & 90\%+ \\ \text{B} & = & 80-89\% \\ \text{C} & = & 70-79\% \\ \text{D} & = & 60-69\% \\ \text{F} & = & \text{less than } 60\% \end{array}$$

I will use the following grading scheme:

Portfolio: 10%
Homework and quizzes: 15%
Journal and reflection paper: 10%
Class participation (including attendance): 40%
Exam 1: 5%
Exam 2: 5%
Final exam: 15%

3. Help!

You are warmly invited to come and see me whenever you are faced with questions, confusion, insights, or concerns – or to share an exciting discovery. The listed office hours are times when I'm available specifically

for you. Take advantage of this opportunity! In addition, whenever my office door is open throughout the week you are welcome to check in for help. If our schedules don't match well, email is a good way to get in touch: feel free to suggest a few times that would work for your schedule and we can make special arrangements to meet face-to-face.

4. Advice

Here are some suggestions for what you can do to succeed:

- Attend every class.
- Do the reading before coming to class. You may not understand all the fine details on first reading. Every time you get stuck reading, formulate a question on that material, and ask it when we discuss that topic on class. Try to identify the general ideas and concepts presented.
- Go through your notes very carefully. Be sure to understand all the ideas and examples discussed in class. Ideally, you should be able to solve the example problems discussed in class on your own, without looking at your notes. If you get stuck, consult your notes, and come to talk to me if you don't understand some of the steps. Don't memorize! Try to understand the reasoning.
- Start the homework assignments immediately and have them ready early.
- Do extra problems. I only assign a sampling of the problems from the text, but you are expected to know how to do most of the problems in the book, not just those that are assigned. Before an exam, it is excellent practice to work through problems that were not assigned in class and ask questions if you have difficulty with them. Also consult the Review sections at the end of the chapters.
- Take advantage of office hours. Office hours are time I set aside for you to come in with the questions you encountered trying to solve the problems. I can help you exactly where you are stuck. So do come with your questions!
- Use other available resources. If you have questions outside of class and office hours, you can come by and check whether my office door is open. I am also very accessible by e-mail, and you should feel free to send me a note at any time.
- Go through the review sheets carefully before the exams. A few days before an exam, I will hand out a detailed review sheet with the material you are expected to know. Use it as an outline for studying. Go through it carefully in advance, asking me questions about material you aren't sure how to do.

Best wishes for a successful semester!