**MATH 105-20 Summer 2013 (Term II)**

**Contemporary Mathematics**

MTWRF, 9:40 AM – 11:10 AM

Natural Sciences Building, Room 108

**Instructor** Steven Skees

**E-mail**  steven.skees@louisville.edu

**Phone** 852-6022

**Office** Natural Sciences Building, Room 321

**Office Hours** MTR,11:15 AM – 12:15 PM; other times by appointment

**COURSE INTRODUCTION**

Contemporary Mathematics is a 3 credit hour course intended for non-science majors. This course fulfills the mathematics content area of the General Education Program at the University of Louisville and fosters active learning by asking students to think critically and to communicate effectively. Students use mathematical modeling to solve practical problems. Applications include management science, social choice, and personal finance. We will study Interest, Periodic Payments, Linear Programming, Voting Theory, and Apportionment. These topics were chosen to show ways in which mathematics is applied to solve concrete problems in the modern world. Be sure of your major’s requirements, since this course does not provide the specific requirements of many majors. This course does not provide the prerequisites for any other mathematics course.

**REQUIRED MATERIALS**

* *Topics in Contemporary Mathematics*, 5th Edition (2011), by Wiley Williams, ISBN 978-0-7575-9140-2
* Scientific calculator capable of operations involving algebraic logic, exponents, and logarithms (a graphing calculator is fine, but cell phones, tablets, computers, and any other device capable of communicating with others may not be used in class)

**LEARNING OUTCOMES/GOALS**

Mathematics is concerned with solving real-world problems through mathematical methods. Students will increase their critical thinking and communication skills. Through daily homework, tests, quizzes, and projects, students will demonstrate the following:

1. Represent mathematical information symbolically, visually, and numerically.
2. Use arithmetic, algebraic, and geometric models to solve problems.
3. Interpret mathematical models, such as formulas, graphs, and tables.
4. Estimate and check answers to mathematical problems, determining reasonableness, alternatives, and correctness and completeness of solutions.

**DAILY HOMEWORK**

Daily homework assignments will be given, and you are to complete them. Most of these can be found on the last page of the syllabus, but some supplemental homework assignments may be given from time to time. However, they will not be collected or graded.

**TESTS**

There will be four in-class tests, with Tests 1, 2, and 4 worth 200 points each and Test 3 worth 100 points. Each test will be based upon the material in the corresponding chapter. They will be given (tentatively) on June 12, June 21, and June 28, and July 9. There will not be a comprehensive final examination in this course.

**QUIZZES**

There will be eight quizzes, and they will be worth 25 points each. All quiz dates will be announced during class at least one day in advance.

**PROJECTS**

There will be one project assigned, and it will be worth 100 points. This will be based upon the material covered in Chapter 3. You will be allowed to work in groups for the project. It will be due on July 5.

**ATTENDANCE**

Attendance is not a graded component, but it is unreasonable to expect to perform well on the tests and quizzes if you are not attending class.

**GRADING**

In this course, you are guaranteed to have the opportunity to earn at least 1000 points. The number of points needed to earn a particular grade, along with the number of points available for each graded component, is shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 900 or more | **A** |  |  | |
| 800-899 | **B** | **Tests** | 700 points |
| 700-799 | **C** | **Quizzes** | 200 points |
| 600-699 | **D** | **Project** | 100 points |
| 599 or less | **F** |  | |

Note that the grading guidelines established above are minimum guarantees. These may be lowered at the discretion of the instructor. Plus/minus grades will not be used.

**PREPARING FOR TESTS AND QUIZZES**

Most problems on tests and quizzes will be derived from examples in the book, examples in the class, homework problems, and study guides that will be provided. In fact, there is a possibility that some of the problems will be exactly the same as the problems that you have already seen. Thus, using these resources is your best method to prepare for tests and quizzes.

**POLICY FOR MISSED COURSEWORK**

Makeup and/or alternate assignments will be given for any student who is absent due to university-approved activities or a documented emergency. Any student anticipating an absence due to a university-approved activity should bring that to the attention of the instructor as soon as possible. In the event of an emergency, the instructor should be notified as soon as possible and be provided with appropriate documentation. The instructor reserves the right to determine what qualifies as a documented emergency.

**WITHDRAWALS, INCOMPLETES, AUDITS, AND PASS/FAIL GRADES**

The last day to withdraw from the course with a final grade of “W” is June 20. Do not expect to be able to withdraw from the course beyond this date. Grades of incomplete will only be available in extreme emergency situations (i.e. your own hospitalization, being called into military active duty, etc.), and requires the approval of the department. This course may not be audited, and it may not be taken for pass/fail credit.

**ACADEMIC DISHONESTY**

While homework and projects may be done collaboratively (within certain guidelines for projects), tests and quizzes are to be individual efforts. Furthermore, unless specific directives are otherwise given, no notes or books are to be used on tests and quizzes. Any evidence of academic dishonesty may result in a failing grade for the course and/or actions as outlined in the University of Louisville Redbook.

**STATEMENT FOR STUDENTS WITH DISABILITIES**

The University of Louisville is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodation to participate and complete requirements for this class, notify me immediately and contact the Disability Resource Center (Stevenson Hall, Room 119) for verification of eligibility and determination of specific accommodations.

**DISCLAIMER**

The instructor reserves the right to make changes in the syllabus when necessary to meet learning objectives, to compensate for missed classes, or for similar reasons.

**TENTATIVE SCHEDULE AND HOMEWORK ASSIGNMENTS**

**6/4** Percents; Simple Interest

1.1 7, 9, 11, 13, 15, 21, 23, 25, 27

1.2 11, 13, 17, 19

**6/5** Annual Compound Interest; Compounding More Often; APY

1.3 3, 5, 7, 11, 13, 15

1.4 9, 10, 11, 12, 13, 15, 17, 19, 21, 23

**6/6** Finding Present Value with Compound Interest

1.5 7, 9, 11, 13, 15

**6/7** Finding Interest Rates

1.6 1, 3, 7, 9, 11, 13, 15, 17, 19

**6/10** Length of Time for Investment Growth

1.7 1, 2, 3, 4, 5, 8, 9, 11, 13, 15, 17, 19, 21

**6/11** Consumer Price Index and Purchasing Power

1.8 9, 11, 13, 15, 17, 19, 21, 23

**6/12 Test 1 (Chapter 1)**

**6/13** Future Value of a Sequence of Payments

2.1 3, 4, 6, 7, 8, 9, 11, 13, 15, 17, 19

**6/14** Present Value of a Sequence of Payments

2.2 4, 6, 8, 9, 11, 13, 15, 17

**6/17** Finding the Required Periodic Payments

2.3 1, 2, 3, 4, 6, 7, 9, 11(a, b), 13(a, b), 17, 19

**6/18** Amortization Schedules

2.4 1, 2, 5, 6, 9, 11, 12, 13, 15, 17, 19, 23, 25

**6/19** Finding the Number of Payments

2.6 1, 2, 3, 4, 5, 7, 9, 11, 13, 15

**6/20** Home Mortgages; Saving for Retirement

2.5 1, 5, 7

2.7 1, 3, 5, 7, 9

**6/21 Test 2 (Chapter 2)**

**6/24** Translating the Problem into Mathematics

3.1 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15, 17, 19

**6/25** Solving a Linear Programming Problem Graphically

3.2 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35

**6/26** The Simplex Method

3.3 1, 2, 3, 4, 5, 6, 7, 8, 25, 27

**6/27** First Examples of Voting Methods

4.1 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15, 17

**6/28 Test 3 (Chapter 3)**

**7/1** More Involved Voting Methods

4.2 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15, 17, 20, 21, 23

**7/2** Is There an Ideal Voting Method?

4.3 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15, 16, 17

**7/3** The Hamilton Method; Early Divisor Methods

4.4 1, 2, 3, 4, 7, 8, 11, 13, 15, 17, 19, 21, 23, 25

4.5 1, 2, 3, 4, 5, 6, 11, 12, 13, 15, 17

**7/4** INDEPENDENCE DAY – NO CLASS

**7/5** Measuring Unfairness in Apportionments

4.6 7, 9, 11, 13, 15 **7/8** The Search for an Ideal Apportionment Method

4.7 1, 2, 3, 4, 5, 6, 7, 8, 13, 15, 17, 19

**7/9 Test 4 (Chapter 4)**