FRANKLIN
UNIVERSITY SWITZERLAND

# MAT103
## College Algebra
Department of International Management
Spring 2019

## I. COURSE INFORMATION

Instructor: Erich Prisner
eprisner@fus.edu
Office Hours:
M 16:00-17:30, 17:15-17:45
T 10:15-11:15,
Th 12:00-13:00,
and by appointment, LAC 11
Class location: MV4
Class Meeting times: TF 11:30-12:45
Final: Friday May 10, 11:00-13:00

## II. COURSE DESCRIPTION

(Prerequisites: Placement test or MAT 102 with passing grade)
The first part of this course reviews the basic concepts of algebra, real numbers, first-degree equations and inequalities, rational expressions, exponents and radicals, polynomials, systems of equations and inequalities. The second part strongly emphasizes graphs and functions. The most important functions for applications are introduced, such as linear, quadratic, exponential, logarithmic, and rational functions.

## III. RATIONALE

MAT103 is preparing you (and is required, if you don't have the needed placement test result) for Calculus (MAT200) and for Introduction to Statistics (MAT201). You can also satisfy your quantitative reasoning core requirement with this course.

## IV. COURSE GOALS

Algebra is used to solve problems. First real-world information is formulated in a mathematical way, usually resulting in equations (and sometimes inequalities) with one or more "unknowns", which are usually represented by letters like "x" or "y". Then these equations are solved, i.e. we find out for which values of the unknowns the equations are true. Graphing the corresponding equations, and using the concept of a function (which is very important, and forms the basis of calculus) helps at this task.
The main emphasis of the class is to enable the students to formulate problems in a mathematical way, and solve the corresponding equations and inequalities by algebraic manipulation and by graphing.

## V. SPECIFIC LEARNING OUTCOMES

Upon completion of this class, students should

- have a clear understanding of the main concepts and methods in College Algebra,
- be able to apply them to mathematical problems, like solving equations or inequalities,
- be able to formulate word problems in mathematical terms and solve the corresponding equations,
- be able to communicate both concepts and methods verbally and formally.

## VI. REQUIRED TEXTS AND MATERIALS

***Colburn, Coffelt: College Algebra Essentials 3rd Ed ebook, together with ALEKS.***

## VII. ASSESSMENT OVERVIEW

At the end of the semester, you will receive a score from 0 to 100%, based on the following:

- ALEKS Homework: 10%
- ALEKS end result (time spent and achievement): 10%
- Participation 5%
- Six best of eight quizzes: 20%
- Midterm exam: 20%
- Final exam: 35%
- Nonattendance may lower your score as will be described below.

## VIII. ASSESSMENT DETAILS

***Homework:***

Homework will be assigned on ALEKS regularly. This homework is graded automatically by the system. There may be some additional on-paper homework.

***ALEKS:*** You are supposed to work every week using the software ALEKS. Each student will make individual progress. At the end of the semester I will give 0-10% (or even more, as bonus, for exceptional work) based on your achievement on ALEKS.

***Class Participation:***

The participation score will reflect your *participation.*

***Quizzes, Midterm, Final:***

There will be eight 15-minute quizzes. Only the best six of them count. There will also be a midterm exam and a final exam. No make-up quizzes or tests are given, unless there is documented evidence of a medical (or other serious) problem.

***Attendance:***

Regular attendance is required. You can miss 4 classes without penalty, but I will subtract 5% from your score for each further missed class.

## IX. GRADING POLICIES AND EXPECTATIONS

Final grades will be determined as follows:

| | | |
|---|---|---|
| | A: 93 - 100 % | A-: 90 - 92.9 % |
| B+: 87 - 89.9 % | B: 83 - 86.9 % | B-: 80 - 82.9 % |
| C+: 77 - 79.9 % | C: 73 - 76.9 % | C-: 70 - 72.9 % |
| D+: 67 -69.9 % | D: 63 - 66.9 % | D-: 60 - 62.9 % |
| F: below 60 % | | |

## X. HOW TO DO WELL IN THIS COURSE (POLICIES / REQUIREMENTS)

During classes: Attend class, participate, ask questions, or answer them, if you can. Work on the in-class assignments. In Mathematics, you don't have to believe the teacher, rather (ideally) everything has to be understood. Please interrupt as soon as something is unclear.
Between classes: Class time is precious, so I have to ask you sometimes to read or view some material prior to coming to class. In that case, please write down questions and ask them during class. Do the ALEKS homework in time. Try out ALEKS—if it helps, do as much in ALEKS as you can. Please review the material covered in class also after class. Contact me as soon as problems occur.
If you miss a class, you are expected to find out (by contacting me, for instance) which material was covered and which announcements were made during class. Please don't leave during class. Please focus on the material during class and don't do anything else.
Calculator Policy: You are encouraged to use any type of calculator on homework assignments and projects. Simple calculators are also allowed in quizzes, and tests, but more sophisticated calculators may be banned in certain quizzes and parts of tests.

## XI. ACADEMIC INTEGRITY: STATEMENT ON CHEATING AND PLAGIARISM

A student whose actions are deemed by the University to be out of sympathy with the ideals, objectives or the spirit of good conduct as fostered by the University and Swiss community, may be placed on Disciplinary Probation or become subject to dismissal from the University. Cheating is a dishonest action out of sympathy with the ideals, objectives and spirit of the University. Furthermore, cheating reflects negatively on one's personal integrity and is unjust to those students who have studied.
See the Academic Catalog for full statement (page 199):
https://www.fus.edu/files/FUS-academic-catalog-2018-2020.pdf
In particular, all work submitted must be your own work, and in tests you are not allowed to use notes, cell phones, talk with other students, or copy their work. In case of a violation you will get 0 points for the assignment and be reported to the Dean of Academic Affairs.

## XII. RESOURCES AVAILABLE

If you have questions, I am the first person to contact. You can come during office hours but also send me an email if these hours don't work for you. Then we can find another time. The Writing and Learning Center (WLC) also offers help in Mathematics, in particular in Algebra.

## XIII. COURSE SCHEDULE

Week 1: Introduction, R.1, R.2 // Exponents and Radicals R.3, R.4, Polynomials R.5,
Week 2: Polynomials, R.5// Rational expressions R.6, Linear equations, 1.1, Quiz#1,
Week 3: Systems of linear equations, 6.1, 6.2, Word Problems 1.1, 6.1, 6.2 // Word Problems 1.1, 6.1, 6.2, Quiz#2,
Week 4: Word Problems, Linear inequalities, 1.1, 1.2 // Quadratic equations, 1.5, Quiz#3,
Week 5: Radical and hidden quadratic equations, 1.6 // no class on Friday,
Week 6: Radical and hidden quadratic equations, 1.6, Quiz#4, // Distance and Circles, 2.1
Week 7: Midterm, // Straight lines, 2.2, 2.3
Academic Travel
Week 8: Functions, 2.4, 2.6, // Transformations of Functions, 3.1, Operations on Functions, Composition 3.5, Quiz#5,
Week 9: Quadratic functions 4.1, Solving polynomial equations of higher degree than two 4.2, 4.3 // Solving polynomial equations of higher degree than two 4.2, 4.3, Quiz#6,
Week 10: Rational Functions, Polynomial and rational inequalities 4.6// Inverse Functions, 5.1, Quiz#7,
Week 11: , Exponential Functions 6.2, // Logarithmic functions, 6.3,
Week 12: Properties of Logarithms 6.4 // Exponential and logarithmic equations, 6.5, Quiz#8,
Week 13: Applications 6.6 // Review,

Final: Friday May 10, 11:00-13:00