Department of Mathematics & Statistics
Concordia University

MATH 206
Algebra & Functions
Fall 2018

Instructor*: _____

Office/Tel No.: _____

Office Hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course.

Textbook: *College Algebra,* 3rd Custom Edition for Concordia University, by Sullivan, Pearson/Prentice Hall, with *Student Solutions Manual.*

Note: It is recommended to Psychology students as preparation for their statistics courses. Math 200 or some previous exposure to Algebra is assumed in this course. For this reason a placement test to help you determine if you are ready for Math 206 is included at the end of this outline. Please take it seriously and consult your instructor or an academic advisor if in doubt.

Office Hours: Your professor will announce her/his office hours during which she/he will be also available to give a reasonable amount of help. Note, however, that if you missed a class it is not reasonable to expect your professor to cover the missed material for you.

Tutorials: The material in this course requires a lot of practice. There is not enough class time to do all the examples and problems needed to learn the material thoroughly. The Department has therefore organized two special tutorial sessions conducted every week to provide additional support to students outside the lecture room environment. These sessions are conducted by tutors who will help with solving problems on the topics learned in class that week, with particular emphasis on the material that students may have difficulties with in this course. Students may attend either of the scheduled tutorials, and are strongly encouraged to participate and be active at these problem-solving sessions. They are an important resource to help students succeed in this course.

Math Help Centre: In addition to tutorials, a Math Help Centre staffed by graduate students is available. The schedule of its operation will be posted in the Department and on the Department webpage: https://www.concordia.ca/artsci/math-stats/services/math-help-centre.html.

MyMathLab: Every student who buys a textbook will also receive an access code to an online system called **MyMathLab**. Access codes can also be purchased in the Concordia Book Store. The system provides you with a full electronic version of the text (an eBook) as well as many exercises and practice problems. Students will use this system to do online assignments (see **Assignments** below). Students are also strongly encouraged to use this resource to help with problems similar to assignment problems, and in areas where they need extra assistance. If you have an old MyMathLab account, please refer to the footnote* on page 2.

Assignments: Students are expected to submit assignments online using **MyMathLab**. Late assignments **will not** be accepted. Assignments contribute 10% to your final grade. Working regularly on the assignments is essential for success in this course. Students are also strongly encouraged to do as many problems as their time permits from the list of supplementary problems included in this outline. A solutions manual for all odd-numbered questions is packaged with the textbook.

Calculators: Only calculators approved by the Department (with a sticker attached as a proof of approval), such as **Sharp EL 531** or the **Casio FX 300MS**, available at the Concordia Bookstore, are permitted for the class test and final examination.
See http://www.concordia.ca/artsci/math-stats/services.html#calculators for details.

Midterm Test: There will be one **midterm test,** based on the material of weeks 1-6, which will contribute up to 20% to your final grade (see the **Grading Scheme** below). The test will be **common** for all sections of this course and will be held on **Sunday, October 21, 2018, at 2:00 P.M.** Students who will not be able to write the test that day for a valid reason, e.g. religious (to be reported to the section's **instructor** in advance) or illness (***a valid medical note required***), may write an alternate midterm test on **Saturday, October 27, 2018, at 10:00 A.M.**

NOTE: It is the Department's policy that tests missed for any reason, **including illness,** cannot be made up. If you miss both the midterm and alternate test **because of illness *(medical note required)*** the final exam will count for 90% of your final grade, and the assignments will count for the remaining 10%.

Final Exam: The final examination will be three hours long and will cover all the material in the course.

NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts or problems with the scheduling of the final exam must be reported directly to **the Examinations Office**, **not to your instructor**. It is the Department's policy and the Examinations Office's policy that **students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

Grading Scheme: The final grade will be based on the higher of (a) or (b) below:

a) 10% for the assignments,
20% for the midterm test,
70% for the final exam.

b) 10% for the assignments,
10% for the midterm test,
80% for the final exam.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE**

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*If you are repeating this course and have an old **MyMathLab** account, you might be able to get your account extended. To request this, please contact our Pearson representative at christine.cozens@pearsoned.com and provide the following information:

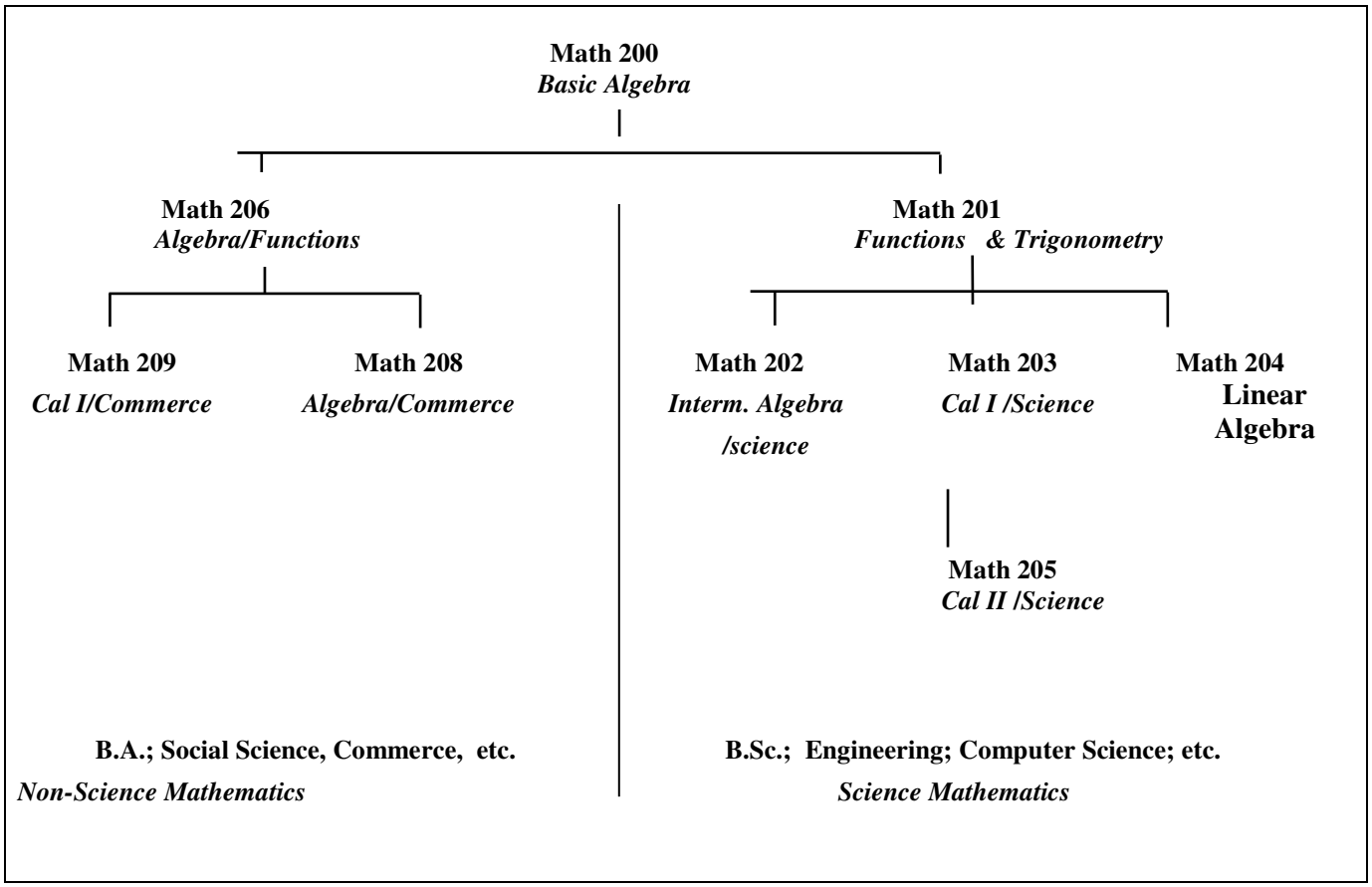
- Your full name and Concordia student ID number.
- The name of the course, section, and the term you are currently registered in (e.g. MATH 206/Section D – Fall 2018).

Weeks	Sections		Supplementary Problems
1	R4	Polynomials	27, 33, 37, 49, 57, 61, 71, 73, 75, 87, 95, 99
	R5	Factoring Polynomials	17, 19, 27, 29, 35, 41, 49, 53, 71, 75, 83, 91, 95
	R6	Synthetic Division	5, 9, 19, 23
	R7	Algebraic Expressions	7, 9, 13, 19, 27, 39, 49, 65, 69
2	R8	n^{th} Roots, Rational Exponents	9, 15, 18, 29, 31, 45, 48, 49, 59, 69
	1.1	Linear Equations	17, 19, 25, 29, 37, 41, 47, 77, 81
	1.2	Quadratic Equations	9, 17, 33, 36, 37, 42, 43, 49, 55, 65, 79, 89
	1.4	Radical Equations, Equation Quadratic in Form; Factorable Equations	8, 11, 17, 21, 33, 41, 45, 49, 55, 65, 73, 77
3	1.5	Solving Inequalities	55, 57, 61, 63, 69, 81, 99
	1.6	Equations and Inequalities involving Absolute Value	7, 11, 25, 29, 35, 37, 41, 47
	1.7	Problem Solving	23, 25, 31, 34, 35, 45
4	2.1	Distance and Midpoint	21, 24, 31, 37, 40, 57
	2.2	Graphs of Equations, Intercepts, Symmetry	17, 23, 25, 41, 43, 45, 51, 53, 56, 61, 64
	2.3	Lines	15, 21, 25, 39, 41, 49, 52, 62, 72, 78
	2.4	Circles	14, 17, 22, 25, 29, 35, 39
5	3.1	Functions	27, 29, 31, 37, 47, 54, 57, 63, 70, 87, 89, 93
	3.2	Graphs of Function	14, 23, 27, 35
6	3.3	Even and Odd Functions	33, 34, 39, 41, 42
	3.4	Library of Functions	18, 19, 21, 23
	3.5	Graphing Techniques, Transformations	19, 21, 23, 25, 29, 53, 59
	3.6	Mathematical Models	5, 10, 13, 23
7	4.1	Linear Functions	29, 31, 39, 49
	4.3	Quadratic Functions	19, 21, 37, 41, 44
	4.4	Quadratic Models	8, 9, 14, 17
	4.5	Inequalities involving Quadratic Functions	3, 6, 7, 11, 15, 21, 25
8	5.1	Polynomial Functions	17, 19, 21, 25, 27
	5.2	Properties of Rational Functions	11, 14, 21, 27, 29, 37, 42, 44, 47
	5.3	Graph of Rational Function	7, 10, 17, 20
	5.4	Polynomial and Rational Inequalities	3, 6, 8, 13, 18, 22, 24, 26, 31
9	6.1	Composite Functions	14, 15, 17, 23, 25, 31, 39
	6.2	One-to-One and Inverse Functions	33, 35, 50, 51, 59, 61, 65, 75, 90
10	6.3	Exponential Functions	13, 17, 19, 38, 41, 51, 53, 60, 62, 64, 66, 75, 77
	6.4	Logarithmic Functions	10, 13, 19, 23, 27, 29, 31, 37, 43, 46, 77, 82, 91, 93, 97, 101, 103, 111, 119, 133
	6.5	Properties of Logarithms	7, 10, 14, 15, 19, 31, 33, 36, 39, 41, 53, 55, 62, 81, 83, 87
11	6.6	Logarithmic and Exponential Equations	6, 8, 25, 27, 33, 37, 42, 47, 51, 55
	6.7	Compound Interest	5, 7, 13, 16, 21, 25, 32, 36, 39, 41, 46, 50
	6.8	Exponential Growth and Decay Models	2, 4, 7, 9, 11
12	8.1	Systems of Linear Equations	17, 20, 21, 23, 26, 30, 32, 37, 55, 58, 62
	8.6	Systems of Non-Linear Equations	5, 9, 16, 26, 34, 41, 46, 71, 73, 87
13	**Review**		

Choosing Between Math 200 and Math 206

If the last math course you took was at the high school level (Quebec), and more than five years have passed since, you should probably register for Math 200. If you are still unsure of your level, read on.

Math Courses at Concordia



A self-administered test to help you decide between Math 200 and Math 206, follows. Give yourself about 20 or 30 minutes to complete the test. Be honest with yourself, since registering in the wrong course may cost you money and result in a poor grade. Remember that all university level courses usually demand quite a bit of your time. Students in Math 206 will find they will not have time once the course begins to review material that they are expected to know before they enter the course.

Dropping a course: If you find yourself "out of your depth" and decide to drop the course, you must drop the course on your myconcordia portal at www.myconcordia.ca before the published deadline. ***If you just stop going to class without formally discontinuing the course you will receive an F grade for the course.***

Help: The Math Department runs a drop-in **Math Help Centre** in **LB 912** - call the Department's office for further information at 848-2424, Ext. 3222/3223 or visit www.mathstat.concordia.ca. Counseling and Development runs math skills workshops, 2 or 3 times a week - call the Counseling and Development's office for further information at 848-2424, Ext. 3555/3556 or visit cdev.concordia.ca

MATH 206 Self-Test
(One Mark for each correct answer)

Simplify (write as a single number) 1) $3^2 - 2^3$

2) $\dfrac{6-4(6-4)}{2}$

Solve for x: 3) $\dfrac{3}{2x-1} = \dfrac{7}{3x+1}$

4) $3x + 10 = 4$

Expand (multiply out): 5) $(a-b)^2$

Factor: 6) $x^2 - 16$

7) $x^2 + 5x + 6$

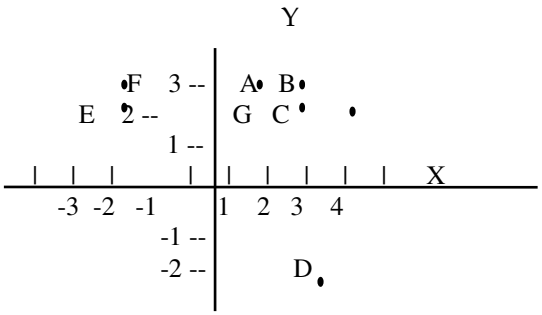
Substitute $a = 1, b = 1,$ in the following equations in order to determine whether or not the statement is true or false:

8) $\dfrac{1}{a} + \dfrac{1}{b} = \dfrac{2}{a+b}$

9) $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

Give the missing step or steps: 10) $\dfrac{a^2 + a}{a+1} = ? = a$

11) Locate the points (3,2) and (-2,2) on the plane below:



12) Write an algebraic expression for: Twice x is equal to 3 less than half x.

Scoring: 6 or less = Math 200; 7-8 = see an advisor; 9 or better = Math 206.

Answers:

1) 1 **2)** -1 **3)** 2 **4)** -2 **5)** $a^2-2ab+b^2$ **6)** $(x+4)(x-4)$ **7)** $(x+2)(x+3)$ **8)** False, $2\neq 1$ **9)** False, $\sqrt{2}\neq 2$ **10)** $\frac{a(a+1)}{(a+1)}=a\frac{(a+1)}{(a+1)}$ **11)** C is (3,2), E is (-2,2) **12)** $2x=\frac{x}{2}-3$

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*