MATH 110: Course Outline, 2016W

Course Description: MATH 110 is a two-term course in Differential Calculus. The main topics covered are Limits and Derivatives of elementary functions, Related Rates problems, Optimization, Graphing, and Approximations. We also review some key precalculus concepts, such as functions, points and lines, basic trigonometry, exponentials and logarithms.

Topics: On the following page is an approximate schedule of topics. The section numbers refer to the course textbook Note that, in some cases, not every topic in a textbook section will be covered; and occasionally a topic will be introduced in class which is not covered in the textbook.

Textbook: The required textbook is *Contemporary Calculus* by Dale Hoffman. This is an online textbook available for free under the Creative Commons license. You are encouraged to download a copy from the course webpage; you may also print it out if you wish.

Grading Scheme: A student's final grade is based on assignments (13%), workshops (13%), midterm tests (10% each), section-specific in-class work (4%), the December exam (20%) and April exam (30%).

Common course website: http://www.math.ubc.ca/ costanza/math110.html

Week	Dates	Topic	Sections	Notes
1.1	Sept. 6 - 9	Welcome, Why Calculus?	0.2	No HW
				No workshop
				No class Sept 6
1.2	Sept. 12 - 16	Lines in the Plane, Functions	0.2, 0.3, 0.4	WS1
1.3	Sept. 19 - 23	Tangent Lines, Velocities, Growth	1.0	Q1.1, WS2
1.4	Sept. 26 - 30	Evaluating limits	1.1, 1.2	HW1.1, WS3
1.5	Oct. 3 - 7	Continuity, The idea of derivative	1.3, 2.0	Q1.2, WS4
1.6	Oct. 10 - 14	The definition of derivative	2.1	HW1.2, WS5
				No class Oct. 10
1.7	Oct. 17 - 21	Derivatives: properties and formulas	2.2	Q1.3, WS6
1.8	Oct. 24 - 28	The Product and Quotient Rules	2.2	HW1.3
	Oct. 25	Midterm Test		No workshop
1.9	Oct. 31 - Nov 4	Trigonometry	Suppl. Notes	Q1.4, WS7
1.10	Nov. 7 - 11	The Chain Rule	2.4	HW1.4, WS8
				No class Nov. 11
1.11	Nov. 14 - 18	The derivative as a rate of change	2.0	Q1.5, WS9
1.12	Nov. 21 - 25	Exponential growth and decay	2.3, Suppl. Notes	HW1.5, WS10
1.13	Nov. 28 - Dec. 2	Higher derivatives, Review	-	Q1.6, WS11
		Exams and break		
2.1	Jan. 2 - 6	Implicit Differentiation	2.9	No assignment
				No class Jan. 2
2.2	Jan. 9 - 13	Related Rates I	2.6	
2.3	Jan. 16 - 20	Related Rates II	2.6	
2.4	Jan. 23 - 27	Extrema and the Mean Value Theorem	3.1, 3.2	
2.5	Jan. 30 - Feb. 3	The First Derivative Test	3.3	
2.6	Feb. 6 - 10	Concavity and The Second Derivative Test	3.3, 3.4	
2.7	Feb. 13 - 17	Asymptotes	3.6	
				Midterm Feb. 14
				no class Feb. 13
				No workshops
		Reading Week		
2.8	Feb. 27 - Mar. 3	L'Hopital's rule	3.7	
2.9	Mar. 6 - Mar. 10	Curve Sketching	-	
2.10	Mar. 13 - 17	Optimization I	3.5	
2.11	Mar. 20 - 24	Optimization II	3.5	
2.12	Mar. 27 - 31	Approximations	2.8	
2.13	Apr. 3 - 7	Antiderivatives and Review	-	No assignment
		Final Exams		