MA-210 CALCULUS I (4)

Spring 2017   01/17 – 05/05/2017

MA210-01:   MWF 9:30 – 10:20AM, **WESS 120**,   &   T 1:00 -1:50PM, HENR 227

MA210-02: TTH 11:30AM – 12:50PM, **CTCC 254**, & M 1:30 - 1:20PM, CTCC 253

INSTRUCTOR: Dr. CHOCK Y. WONG

Office: WESS 109   (Phone #: 739-4682)   cwong@chaminade.edu

Office Hours: M,T & F: 10:30 – 11:30am; W: 12:30 – 1:30pm; or by appointments.

Course Description: This is the first course in the calculus sequence. Topics include limits, differentiation and integration of single variable functions including polynomials, rational powers, and trigonometric functions, the mean value theorem, and the fundamental theorem of calculus. Both concepts and techniques as well as application will be stressed. Fulfills Track D general education requirement in mathematics.

Prerequisites: Precalculus (MA110 or equivalent), or placement test.

Text Book: Larson/Edwards: **CALCULUS Of A Single Variable** (10th edition). ISBN 0-547-20998-3.

Learning Outcomes: By taking this course, the student will

(1) gain understanding of the concept of limits;
(2) gain understanding of the continuity of functions;
(3) gain understanding of the concept of the derivative, and how it is related to the behavior of a function;
(4) develop skills to compute derivatives, and demonstrate a comprehension to use 8 basic formulas and 5 general rules for differentiation;
(5) develop skills to use derivatives in the following applications: Critical point analysis, graph sketching, and optimization problems;
(6) gain understanding of the concepts of indefinite integration and definite integration, and the Fundamental Theorem of Calculus;
(7) develop skills to calculate integrals, and demonstrate a comprehension to handle the basic antidifferentiation formulas and the U-substitution method;
(8) develop skills to solve applied problems using integrals.

These learning outcomes are directly linked to the Program Learning Outcomes, especially in terms of

• to demonstrate the understanding and skills in reading, interpreting and communicating mathematical contents which are integrated into other disciplines or appear in everyday life

• to articulate the understanding of more advanced mathematical concepts and computational skills to support the study of other disciplines, including skills with numeric, analytic and graphic methods

Standard writing format and basic algebraic skills will be emphasized throughout the course. Most assignments, quizzes and exams are not in multiple-choice format. Be ready (or learn how) to write solutions in step-by-step manner.

Topics & Tentative Schedule: [Details: See the attached schedule sheet.]

Chapters 1 to 4 and selected sections from Chapter 7 will be covered.

    (1) Limits and continuity. (Ch.1)

         Week 1 — Week 2.

    (2) Differentiation.   (Ch.2)

         Week 3 — Week 7.

    (3) The Mean Value Theorem and applications of differentiation.   (Ch.3)

         Week 9 — Week 11.

    (4) Definite and indefinite integration.   (Ch.4)

         Week 12 — Week 14.

    (5) (Optional) Applications of the integral in geometry: Areas, volumes, and arc lengths. (§§7.1–7.4)   Week 15.

Homework: To get success in this course, you need to attend and actively participate in all classes, and **do more exercises**. In order to master the basic skills of calculus and keep up with the pace of the class, you are advised to do more assigned "on-your-own" problems as basic drills, meanwhile turn in each assignment worksheet **on time**. You are encouraged to seek help from math tutoring web sites (a good suggestion is: www.WolframAlpha.com) and form study groups to help each other. To help each student build up basic calculus skills I may ask you to REDO a part of your assignment when it is necessary. In this case a temporary "R" grade will be marked on your paper and you need to resubmit your assignment with corrections — many of my students have made tangible and significant pregress in calculus through that special process and greatly appreciate it. At any rate that would be a second chance for you to work for a higher score in your assignment.

Follow the guidelines below when submitting your assignment worksheet:

    (1) Most importantly, turn in **on time**. Grading penalty will be given to late papers.

    (2) Use the handout worksheet as cover page(s) and add in extra paper (regular 10.5x8 inches ruled paper) as needed, and staple all pages.

    (3) Prefer using **pencil** in your work and leave **spaces between problems** — that way I can insert my corrections and comments to your work. (I am not willing to give corrections and comments to those solutions that were sloppily written or tightly squeezed together; and in extreme cases I may ask you to redo all problems.)

    (4) Solutions written in red ink will not be accepted.

Calculators/Electronic Devices: A scientific calculator is required in class and is allowed in all quizzes and exams; graphic calculators are helpful but not required. **Cellular phones are not allowed to be used as calculator in quizzes and exams.** [Also, according to the CUH Student Handbook, the use of cellular, wireless and other mobile telephones while in class is prohibited; emergency calls shall be engaged in outside of the classroom; and according to the NS&M Division's policy, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade.]

Quizzes and Exams:

Up to 10 quizzes will be given. The detailed requirements for each quiz will be announced in advance. Be aware that **No** make-up quiz will be allowed except for school events (sport/conference) or medical reasons with supporting documentation and timely notice (emails or official memos). Please also be aware that quite often quizzes are given in the 4th hour.

A mid-term exam to cover Chapter 1 and 2 will be given on Week 9. The Final Exam is going to be an accumulative one, and will be in "half-open-half-closed" format.

Grading: (subject to changes)

ATTENDANCE:	5% of the total	**A:**	$90 - 100\%$
HOMEWORK:	35% of the total	**B:**	$80 - 89\%$
QUIZZES:	15% of the total	**C:**	$70 - 79\%$
Mid-term EXAM:	15% of the total	**D:**	$60 - 69\%$
FINAL EXAM:	30% of the total	**F:**	below 60%

MA-210 CALCULUS I: Tentative Schedule (subject to changes)

Week	Sections	Topics	Homework	Quiz
1	1.1–1.3	Limits: Finding limits numerically, graphically, and analytically.	HW 1	
2	1.4, 1.5	More on limits; continuity.	HW 2	Quiz 1 (Limits)
3	2.1, 2.2	Definition of the derivative; tangent lines; basic differentiation rules.	HW 3 HW 4	Quiz 2 (Continuity)
4	2.3	More differentiation rules	HW 5	Quiz 3 (HW 3)
5		Higher order derivatives; simple applications of the derivative.	HW 6	Quiz 4 (HW 4 & 5)
6	2.4	Chain Rule.	HW 7 HW 8	
7	2.5, 2.6	Implicit differentiation; related rates.	HW 9	Quiz 6 (Chain Rule)
8		Review for Midterm Exam		Quiz 7 (Chain rule)
9	3.1, 3.2	Extrema on an interval; MVT.	HW 10	**Midterm Exam**
10	3.3, 3.4	I/D test; concavity.	HW 11	
11	3.6, 3.7	Graph sketching; Optimization problems.	HW 12, HW 13	Qui z 8 (HW10 & 11)
12	4.1, 4.5	Indefinite integration.	HW 14	
13	4.2--4.4	Definite integration.	HW 15	Quiz 9 (HW 14)
14	4.5, 4.6	Integration by substitution; Simson's rule.	HW 16	
15		Review for Final Exam		Quiz 10 (TBA)
16	**FINAL EXAM**	MA-210-01: Monday, 5/8, 11am – 1pm MA-210-02: Wednesday, 5/10, 8:30-10:30am		