MA-211 CALCULUS II (4)

Spring 2018 01/16 – 05/04/2018

MA 211-01: MWF 8:30 – 9:20AM, **CTCC 253** & M 1:30 - 2:20PM, **EIBN 207**

MA 211-02: TTH 8:30 – 9:50AM, & W 1:30 - 2:20PM, **HENR 203**

INSTRUCTOR: DR. CHOCK Y. WONG

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Office Hours: M,W: 10:40 – 11:40am; T,TH: 10:00 – 11:00am; or by appointments.

Course Description: This course is the continuation of MA-210. It will mainly cover the differentiation and integration of transcendental functions (exponential, logarithmic, and inverse trigonometric functions), and more advanced techniques of integration. It will also discuss topics in sequences and series, such as limits of sequences, the L'Hospital's rule, convergence and divergence of series, Taylor series and power series.

Prerequisites: Calculus I (MA-210) or equivalent.

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 more transcendental functions (logarithmic functions, exponential functions, inverse trigonometric functions): their differentiation and integration;

(2) acquire basic knowledge of differential equations that apply to growth and decay, and logistic models;

(3) develop advanced skills in integration (integration by parts, trigonometric substitution, and partial fractions) and limit evaluation (L'Hospital's rule);

(4) develop skills to solve applied problems (in physics and geometry) using integration;

(5) gain understanding of the concepts of sequences and series;

(6) develop skills to test the convergence of series and represent functions by power series.

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

• to develop mathematical maturity to undertake higher-level studies in mathematics and related fields.

Topics & Tentative Schedule:

Chapter 5, 6, 7, 8, and 9 will be covered. Main topics include:

(1) The transcendental functions: Their derivatives and integrals. (Ch.5)
   (i) The natural logarithmic function. Week 1 — Week 2
   (ii) Exponential functions. Week 3
   (iii) Inverse trigonometric functions. Week 4 — Week 5

(2) Differential equations. (Ch.6: selected sections)
   Week 6 — Week 7

(3) More techniques of integration; the L'Hospital's rule. (Ch.8)
   (i) Integration by parts. Week 7
   (ii) Trigonometric integrals. Week 8
   (iii) Trigonometric substitution. Week 9
   (iv) Partial fractions. Week 10
   (v) L'Hospital's rule. Week 11

(4) Applications of the integral: Area, volume, and work problems. (Ch.7)
   Week 12 — Week 13

(5) Infinite series: Convergence, Taylor series, Power series. (Ch.9: selected sections)
   Week 14 — Week 15

Homework: Many odd-numbered problems **from the textbook** will be selected either as **on-your-own** exercises or as homework assignment to turn in — it will be indicated by handout homework worksheets. It is important for you to work through the assignments on time so that you can grasp the Calculus II concepts and build up your skills in a timely manner and keep up with the progress of the course. **Be aware that grading panalty would be applied to late papers.** When working at assignments, you are encouraged to seek help from mathematics tutoring web sites (a good sugggestion: www.WolframAlpha.com) and form study groups to help each other.

Calculators/Cellular Phones/Electronic Devices: A scientific calculator is required **in class** and is allowed in all quizzes and exams; graphic calculators are helpful but not required. **Please note that cellular phones, computers (laptops, notebooks, penal PC's) and any kind of wireless devices are not allowed to be used in all 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.

Quizzes and Exams:

There will be **8 quizzes** as described below (some may be in open book format):

QUIZ	Sections to Cover	Week
QUIZ 1	§5.1	3
QUIZ 2	§5.2	4
QUIZ 3	§§5.4, 5.5	6
QUIZ 4	§§5.6, 5.7	8
QUIZ 5	TBA	TBA
QUIZ 6	§8.2	10
QUIZ 7	§8.4	12
QUIZ 8	TBA	14

No make-up quiz will be allowed except for school events (sports/conferences) or medical reasons with supporting documentation.

A **Mid-term exam** will be on Week 9, to cover Chapter 5 and 6.

The **Final Exam** will be accumulative, and in closed-open book format.

Grading: (subject to changes)

ATTENDANCE:	5% of the total	**A:**	$90 - 100\%$
HOMEWORK:	30% of the total	**B:**	$80 - 89\%$
QUIZZES:	20% 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%