Calculus II (Math 173) — Winter 2018

Location and Time: 112 Bouillon, M-F, 12:00 ─ 12:50 P.M.

Instructor: Professor Yvonne Chueh

Office: 107D Bouillon

Office Hours: MTWRF 9:00 – 9:50 P.M., and by email appointment.
Check http://www.cwu.edu/faculty/chueh for my current class schedule.

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Textbook: <u>Calculus: Single and Multivariable</u> by Jon Rogawski et al, Third Edition. **The textbook is required.**

Calculator: A graphing calculator is required for this course. The TI-83+ is recommended. The calculator (and computers in general) can be a powerful tool for understanding mathematical ideas and for solving problems … provided you learn how (and when) to use it.   Some more advanced calculators can now do both differentiation and integration. However, in this course you will learn methods for doing things by hand and will have to do them by hand on exams.

Course Content: The course will cover chapters 5, 6, 7, and 8 of the text. Some optional material from these chapters may be covered if time permits. You should read the book. The examples in the text will supplement those given in class and the discussion given in the text will provide extra discussion and reinforcement for material presented in class.

Course Conduct: You are expected to attend class daily. Attendance will be taken and shown on the Canvas, online course management system. You should check your course information in Canvas once a day. Homework will be assigned in Knewton system to earn practice points. Access the Knewton from Canvas and follow each due date in the Knewton.   If you expect to do well in this course, you must do the homework. Some time will be available during class to discuss the homework problems and your instructor is available during office hours and by appointment via email. Seeking help timely is important to succeed in our quarter setting. Your questions are always welcomed during class and outside the class. Use will be made of calculator during class, on homework, and on exams (but note the comment made above).

Students with disabilities: If you require accommodation based on a documented disability, have emergency medical information to share, or need special arrangements in case of emergency evacuation, please discuss the situation with me as soon as possible.

Course Prerequisites: Calculus I is a formal prerequisite for this course. You must <u>know</u> the basic rules for differentiation: sum rule, product rule, quotient rule and chain rule. You must also <u>know</u> the formulas for the derivatives of the basic functions, including powers, roots, exponentials, logarithms, trigonometric and inverse trigonometric functions (arcsin, arccos, and arctan). In addition, basic algebra skills are crucial. You must be

able to manipulate algebraic expressions, powers and rational expressions. You should be able to solve linear, quadratic, exponential, logarithmic and trigonometric equations.

Learner Outcomes: Upon successful completion of this course, the student will understand:
- the concept of definite integral and basic properties of integrals;
- how integrals can be approximated by Riemann sums and by other numerical approximation schemes;
- the concept of antiderivative and its applications;
- the Fundamental Theorem of Calculus;
- analytical methods for constructing antiderivatives, including integration by parts and various substitution methods;
- the various interpretations of the integral as displacement, area, volume, work, density, center of mass, probability distributions and densities;

Grading: Your course grade will be determined by the following:

1. Four 100-point in-class exams. You get to drop the lowest of your four scores (see note below), so these exams will count for up to 300 points.
2. KNewton online homework will count for up to 100 points.
3. Attendance and in class participation will count for up to 10 points.
4. A comprehensive final exam worth 100 points.

A perfect score on both of the above categories would result in a total of 400 points. Your course grade will be determined by the percentage p of these points you earn, according the following scale.

$$93 \leq p \qquad \text{A} \qquad 74 \leq p < 76 \quad \text{C}$$
$$90 \leq p < 93 \quad \text{A-} \qquad 70 \leq p < 74 \quad \text{C-}$$
$$86 \leq p < 90 \quad \text{B+} \qquad 65 \leq p < 70 \quad \text{D+}$$
$$84 \leq p < 86 \quad \text{B} \qquad 58 \leq p < 65 \quad \text{D}$$
$$80 \leq p < 84 \quad \text{B-} \qquad p < 58 \qquad \text{F}$$
$$76 \leq p < 80 \quad \text{C+}$$

Note: No makeup exams will be given except for uncontested causes (illness, emergencies). If you miss an exam, it will be the one you drop. You **must** take the final exam to pass the course.

SCHEDULE OF CLASS TOPICS AND ASSIGMENTS

A list of timing of topic coverage and exams is presented below. In order to perform well in this class, **preliminary textbook reading** before each class and throughout the entire course is ***necessary***.

<u>Week</u>	<u>Sections to be covered</u>	<u>Topic for reading</u>
1.	Chapter 5: The integral	Knewton demonstration
1/3~1/5		**5.1** Approximating and Computing Area

5.2 The Definite Integral

2.
1/8-1/12

5.3 The Indefinite Integral
5.4 The Fundamental Theorem of Calculus, Part I
5.5 The Fundamental Theorem of Calculus, Part II

3.   **Exam 1 (1/15)**

1/15~1/19
5.6 Net Change as the integral of a rate of change
5.7 Substitution Method
5.8 Further Transcendental Functions

                          4.
1/22~1/26

Chapter 6: Applications of the Integral
6.1 Area Between Two Curves
6.2 Setting Up Integrals: Volume, Density, Average
     Value
6.3 Volumes of Revolution

5.
1/29-2/2

6.4 The Method of Cylindrical Shells
6.5 Work and Energy

6.   **Exam 2 (2/5)**
2/5-2/9

Chapter 7: Techniques of Integration
7.1 Integration by Parts
7.2 **Trigonometric Integrals**

7.
2/12-2/16

7.3 Trigonometric Substitution
7.4 Integral Involving Hyperbolic and Inverse
     Hyperbolic Functions (optional))
7.5 The Method of Partial Fractions

8.   **Exam 3 (2/19)**
2/19-2/23

7.6 Strategies of Integration
7.7 Improper Integrals

9.   Chapter 8: Further Applications

                                           8.1 Arc Length and Surface Area

2/26-3/2   8.2 Fluid Pressure and Force

10.

3/5- 3/9   **Exam 4 (3/5)**   **Review all the topics and optional topic**

11.

3/12-3/16   **Final Exam**

The section material covered on each Exam is as planned on the syllabus but may change. Any change will be announced in class and on the Canvas system. Please check Canvas once a day for online assignment and helpful information to help you keep on the tract of due date.