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MATH 173 Calculus II
FALL 2021 (Sep 22 – Dec 3)

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Instructor: Sahadeb Upretee, PhD   Office Hours: MT 10-11:00 am,WR 12 – 1:00 pm or appointment
E-mail: upretees@cwu.edu   Office: Samuelson 218J
Class Time: MTWR 2:00 - 2:50 PM   Classroom: Samuelson 106

TEXTBOOK: Rogawski, J.*, Adams C., and Franzosa R. (2020). *Calculus: early transcendentals (4th ed.)*. New York: W.H. Freeman.

PRE-REQUISITES: MATH 173 with a grade of C or higher.

COURSE CONTENT: This course covers theory, techniques, and applications of differentiation and integration of the elementary functions.

COURSE OUTCOMES**:** At the end of the Math 173 course students will be able to:
- Use the process of antidifferentiation to solve problems.
- Demonstrate an understanding of the definition of a definite integral.
- Use the Fundamental Theorem of Calculus to solve problems.
- Compute antiderivatives using basic antidifferentiation rules.
- Use improper integrals to solve problems.
- Set up definite integrals to represent quantities that are given in context.
- Relate the techniques of integration to the solution of differential equations.

Unit 1: Integration
Approximation and Computing area, the Definite Integral, the Indefinite Integral, the Fundamental Theorem of Calculus, Net change as the integral of a rate of change, the Substitution Method, Further Integral Formulas.

Learning Outcomes
The students will be able to:
- Compute the approximate area under the graph of a function using rectangles.
- Compute the exact area under the graph of a function.
- Definite Integral and Signed Area
- Apply the properties of the definite integral
- Evaluate the indefinite integral
- Apply to Fundamental Theorem of Calculus (FTC) to solve the problems

Unit 2: Applications of the Integral
Area Between Two Curves, Setting Up Integrals: Volume, Density, Average Value, Volumes of Revolution: Disks and Washers, Volumes of Revolution: Cylindrical Shells, Work and Energy

Learning Outcomes
The students will be able to:
- Find the area between curves
- Calculate volume by applying integration
- Find the average volume

- Apply mean value theorem for integral
- Calculate the area of the vertical cross section
- Find the volume of cylindrical Shells

Unit 3: Techniques of Integration & Applications
Integration by Parts, Trigonometric Integrals, Trigonometric Substitution, Integrals Involving Hyperbolic and Inverse Hyperbolic Functions, The Method of Partial Fractions, Strategies for Integration, Improper Integrals, Numerical Integration, Arc Length and Surface Area.

Learning Outcomes
The students will be able to:
- Apply integration by parts
- Integrate the trigonometric integrals
- Correctly apply substitution method
- Correctly apply partial fraction methods
- Evaluate the improper integral
- Find the integration by using numerical methods (Midpoint Rule, Trapezoidal Rule, Simpson's Rule)
- Calculate arc length and surface area

REQUIRED CALCULATOR: A scientific or graphing calculator is required.

IMPORTANT DATES:
First Class: Sep 22.
Class End: Dec 3
Veteran Day: Nov 11 -No Class
Thanksgiving Break: Nov 24-26 No Class
Study Day: Dec 6
Midterm Exam One: Nov -1
Midterm Exam Two: Nov- 29
Comprehensive Final Exam: Update later

EVALUATIONS:
Attendance and Participant:	5%
Weekly Assignments:	30%
Midterm Exam One:	20%
Midterm Exam Two:	20%
Comprehensive Final Exam:	25%

GRADING SCALE (MINIMUM CUTOFFS):
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93	90	87	83	80	77	73	70	67	63	60	below 60

CELL PHONE POLICY
I will not allow cell phones or similar devices to be used during exams. This includes using your phone as a calculator.

TIME INVESTMENT REQUIREMENT:
The information listed below illustrates the total investment of time by an average student to achieve the learning goals of the course. (30 hours/credit x 5 = 150 hours)
The amount of time that an average student should expect to spend on this class is as follows:

- 50 hours - Time spent in the classroom, online instruction, taking exams and doing worksheets etc.
- 100 hours - Time for preparation and study for worksheets, assignment, monthly and final exams, discussion during the office hours.

EMAIL CORRESPONDENCE: I will respond to student communications during business hours (M-F, 8am-5pm). You can typically expect a reply within approximately 24 hours, not including weekends. If you email me with questions about specific problems, I can be more helpful if you send pictures of what you've tried so far.

HOMEWORK: Each week homework will be assigned, and due dates will be announced in the Canvas. Students are encouraged to discuss among the friends but do not copy other's work directly. If I find identical solutions, then both parties will get zero points. Your work should be clear, in a logical order, and provide sufficient explanation. You must upload a single pdf file of the homework into Canvas.

EXAM POLICY: There will be two midterm exams and one comprehensive final exam. All exams are cumulative. You will be allowed to use your book and notes.

COURSE POLICIES

COVID-19 STATEMENT 2021:

In accordance with *Proclamation 21.14.1*, CWU has chosen to make vaccinations a priority this fall. We believe a fully vaccinated community is the best way to protect our individual and collective health and safety. **Proof of full vaccination against COVID-19 will be required by October 18, 2021,** for all employees and students. Medical and /or religious accommodation requests will be considered. All employees and students are required to wear masks while indoors.

FACE COVERING POLICY 2021

Cloth face coverings must be worn indoors by all CWU students, employees, and visitors. The mask must cover mouth and nose, fitting as snugly as possible against the sides of the face. Student not wearing a mask will be asked to put one on, if they refuse, students will be asked to leave the classroom and building.

MENTAL HEALTH STATEMENT:

"*Stress and other life circumstances that may be out of your control can make learning and focusing difficult. If you find stress or other mental health concerns make academics difficult, Central has resources to support you. I encourage you to reach out as soon as you notice you're struggling.*"

RESOURCES FOR STUDENTS:

CWU Counseling Center: https://www.cwu.edu/medical-counseling/counseling-clinic

Mental Health Crisis Support outside normal business hours: 1-800 – 273 - 8255, Text HOME to 741741 or call 911.

Wellness Center: https://www.cwu.edu/wellness/   509-963 -3213

Student Rights and Responsibilities: https://www.cwu.edu/student-rights/office-student-rights-responsibilities

POLICY ON ACADEMIC DISHONESTY:
Students are on their honor to follow the student conduct code as outlined in the Washington Administrative Code. Violations of this section will result in a failing grade in the course in addition to further possible university sanctions. (See http://apps.leg.wa.gov/WAC/default.aspx?cite=106-125)

POLICY ON DIVERSITY:
University-level education is about broadening horizons and looking at academic issues from a variety of perspectives. With this in mind, the participants in this class are encouraged to bring their own life experiences and viewpoints to bear on classroom discussions and assignments. Along with the freedom to express one's own views comes the responsibility to respect the views of others. No student will be discriminated against on the basis of race, ethnicity, age, creed, religion, gender, sexual orientation, marital status, or political ideology.

DISABILITY SERVICES:
Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any obstacles to learning, contact Disability Services to discuss a range of available options. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information. (see https://www.cwu.edu/disability-services/)

SUBMITTING ELECTRONIC FILES:
All electronic files must be submitted in .doc, .docx or .pdf format. If you don't have Microsoft Office, you can download it for free, using your CWU email and password from the MS Office website. Here is the guide on (https://cwu.teamdynamix.com/TDClient/2015/Portal/KB/ArticleDet?ID=9080), how to download MS Office. Mac users make sure to save documents with visible extension (.docx or .rtf).

RELIGIOUS HOLIDAY ABSENCES: In compliance with RCW 28B.137.010, CWU makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.