

Single Variable Calculus II
The University of Toledo
College of Natural Sciences and Mathematics
MATH 1860 – 001

Instructor: Paramasamy Karuppuchamy (PK)

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Office Hours: MW 11:00-12:00, TR 01:00-2:30

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Term: Spring 2015

Class Location: UH 4010

Class Day/Time: TR 05:30–07:10

Credit Hours: 4

Course/Catalog Description: Inverse functions, techniques and applications of integration, polar coordinates, sequences and series.

Student Learning Outcomes:

The successful Calculus II student should be able to

1. **Definite Integrals:** Use antiderivatives to evaluate definite integrals and apply definite integrals in a variety of applications to model physical, biological or economic situations. Whatever applications (e.g. determining area, volume of solids of revolution, arc-length, area of surfaces of revolution, centroids, work, and fluid forces) are chosen, the emphasis should be on setting up an approximating Riemann sum and representing its limit as a definite integral.
2. **Techniques of Integration:** Employ a variety of integration techniques to evaluate special types of integrals, including substitution, integration by parts, trigonometric substitution, and partial fraction decomposition.
3. **Improper Integrals:** Evaluate improper integrals, including integrals over infinite intervals, as well as integrals in which the integrand becomes infinite on the interval of integration.
4. **Sequences and Series:** Determine the existence of and find algebraically the limits of sequences. Determine whether a series converges by using appropriate tests, including the comparison, ratio, root, and integral.
5. **Power Series:** Find the n-th Taylor polynomial at a specified center for a function and estimate the error term. Use appropriate techniques to differentiate, integrate and find the radius of convergence for the power series of various functions.
6. **Parametric Curves:** Analyze curves given parametrically and in polar form and find the areas of regions defined by such curves.
7. **Lines and Planes:** Perform and apply vector operations, including the dot and cross product of vectors, in the plane and space.

Prerequisites: Passing grade in Math 1850 or equivalent.

Textbook: *Thomas' Calculus Early Transcendentals*, 12th edition by George B. Thomas, Maurice D. Weir and Joel Hass.

University Policies: The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

Academic Accommodations: The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the Student Disability Services Office.

Student Privacy: Federal law and university policy prohibits instructors from discussing a student's grades or class performance with anyone outside of university faculty/staff without the student's written and signed consent. This includes parents and spouses. For details, see the Confidentiality of student records (FERPA) section of the University Policy Page at <http://www.utoledo.edu/policies/academic/undergraduate/index.html>.

Calculator: No calculators with symbolic or graphing capabilities are allowed during quizzes and exams. Cell Phones/Smart Phones are not allowed during quizzes and exams.

Cell Phones and Laptop Computer Usage: Please turn off your cell phone and keep it stored away. You can use a laptop computer to take notes, but it cannot be used for any other purpose.

Attendance: Your attendance to all classes is strongly encouraged. Any announcements made in class regarding the schedule of future classes, exams or other information takes precedence over this outline.

Missed Quizzes and Exams: If you miss a class you are responsible for obtaining the material, notes, etc. Absence for quizzes and exams can only be excused if covered by the University's missed class policy. The policy specifically mentions absences from class may be excused for personal emergencies, religious observances, participation in certain UT sponsored activities, and government required activities. For more information see http://www.utoledo.edu/facsenate/missed_class_policy.html. The student must contact me in advance by phone, e-mail or in person, provide official documentation to back up his or her absence, and arrange to make up the missed item as soon as possible.

Academic Honesty: Successful completion of this course requires personal integrity and honest academic effort. Any dishonest activities will not be tolerated in this course. Any student who engages in dishonest behavior will, at the instructor's discretion, fail the exam, fail the course, or more serious consequences. See the University's "Policy Statement on Academic Dishonesty".

Homework: It will be assigned but not collected.

Quizzes: There will be a quiz weekly. Some will be announced and some will not. No late quiz is accepted. To allow some unexpected cases, 1-2 of the lowest quizzes will be dropped.

Exams: There will be two in class exams and a comprehensive final exam given during scheduled final exam period for the section.

Grading: The following percentages are assigned to the components of the student's grade.

Quizzes 30%, Exam I 20%, Exam II 20%, Final Exam 30%.

The final letter grade will be based on your total average as follows:

Total average	below 60%	60% – 69%	70% – 79%	80% – 89%	90% – 100%
Grade	F	D	C	B	A

Calendar:

Last day to add/drop	Jan 26
Exam I	Feb 12
Exam II	Mar 19
Last day to withdraw	Mar 27
Final Exam	May 08, 8:00-10:00

Schedule:

Week	Subject
1	6.1 Volumes using Cross Sections 6.2 Volumes using Cylindrical Shells
2	6.3 Arc Length
3	8.1 Integration by Parts 8.2 Trigonometric Integrals
4	8.3 Trigonometric Substitution 8.4 Integration of Rational Functions by Partial Fractions
5	8.7 Improper Integrals 10.1 Sequences Exam I
6	10.2 Infinite Series 10.3 The Integral Test
7	10.4 Comparison Tests 10.5 Ratio and Root Tests 10.6 Absolute and Conditional Convergence
8	10.7 Power Series 10.8 Taylor and Maclaurin Series 10.9 Convergence of Taylor Series
9	10.10 Applications of Taylor Series 11.1 Parameterizations of Plane Curves Exam II
10	11.2 Calculus with Parametric Curves 11.3 Polar Coordinates
11	11.4 Graphing in Polar Coordinates 11.5 Areas and Lengths in Polar Coordinates
12	12.1 Three Dimensional coordinate system 12.2 Vectors
13	12.3 The Dot Product 12.4 The Cross Product
14	12.5 Lines and Planes in Space
15	12.6 Cylinders and Quadric Surfaces (opt)