SINGLE VARIABLE CALCULUS II

The University of Toledo
Mathematics & Statistics Department, College of Natural Sciences and Mathematics
MATH1860-0XX, CRN XXXXX

Instructor:	(Insert Name)	**Class Location:**	(Insert Building/Room)
Email:	(Insert Email Address)	**Class Day/Time:**	(Insert Days/Time)
Office Hours:	(Insert Days/Time)	**Lab Location:**	(Insert Bldg/Office #, if applicable)
Office Location:	(Insert Building/Office #)	**Lab Day/Time:**	(Insert Days/Time, if applicable)
Office Phone:	(Insert Phone Number)	**Credit Hours:**	4
Term:	(Insert Semester/Year)		

COURSE 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:

- ***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.
- ***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.
- ***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.
- ***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.
- ***Power Series***: Find the nth 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.
- ***Parametric Curves***: Analyze curves given parametrically and in polar form and find the areas of regions defined by such curves.
- ***Lines and Planes***: Perform and apply vector operations, including the dot and cross product of vectors, in the plane and space.

PREREQUISITES

Minimum grade of C- in MATH 1850 or equivalent.

TEXTBOOK: *Thomas' Calculus, A Custom Edition for the University of Toledo*, 1st Edition, by George B. Thomas, Maurice D. Weir packaged with MyMathLab (ISBN: 9781269644334), Pearson.

UNIVERSITY POLICIES:

POLICY STATEMENT ON NON-DISCRIMINATION ON THE BASIS OF DISABILITY (ADA)

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 ACCOMODATIONS

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 Disbility Services Office (Rocket Hall 1820;

419.530.4981; studentdisabilitysvs@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations. For the full policy see: http://www.utoledo.edu/offices/student-disability-services/sam/index.html

ACADEMIC POLICIES:

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

MISSED CLASS POLICY
If circumstances occur in accordance with The University of Toledo Missed Class Policy (found at http://www.utoledo.edu/policies/academic/undergraduate/index.html) result in a student missing a quiz, test, exam or other graded item, the student must contact the instructor 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 DISHONESTY
Any act of academic dishonesty as defined by the University of Toledo policy on academic dishonesty (found at http://www.utoledo.edu/dl/students/dishonesty.html) will result in an F in the course or an F on the item in question, subject to the determination of the instructor.

GRADING AND EVALUATION
Your syllabus should describe the methods of evaluation, whether by quizzes, exams or graded assignments. (There should be at least two one-hour in-class exams. If quiz scores are not included in the final grade computation, there should be three one-hour exams.) If a grading scale is used, it should be clearly stated. A statement of the proportion that each evaluation component contributes toward the final grade should also be included. A sample reasonable distribution for this class would be:

Component	points
Homework and/or Quizzes	30%
Midterm Exams	40%
Final Exam	30%

In scheduling quizzes and exams, it should be kept in mind that the last day to add/drop the class is the end of the second week and the last day to withdraw is the end of the tenth week. By these dates, students should have sufficient data to realistically gauge their progress in the class.

IMPORTANT DATES
The instructor reserves the right to change the content of the course material if he perceives a need due to postponement of class caused by inclement weather, instructor illness, etc., or due to the pace of the course.

MIDTERM EXAM:
FINAL EXAM:

OTHER DATES
The last day to drop this course is:
The last day to withdraw with a grade of "W" from this course is:

STUDENT SUPPORT SERVICES

Students should be made aware of the tutoring help available during each week of the semester in the Mathematics Learning and Resource Center, located in Rm B0200 in the lower level of Carlson Library (phone ext 2176). The center operates on a walk-in basis. MLRC hours can be found on their web page at `http://math.utoledo.edu/mlrc/MLRC.pdf`.

CLASS SCHEDULE

The syllabus should provide a list of sections to be covered and ideally, should indicate the material that might be covered on each in-class examination. Please include in your syllabus a list of important dates, including mid-term exam dates, the drop and withdrawal dates, and the time and place of the final exam.

A recommended schedule of the class time to be devoted to each section is listed below. While individual experiences may vary somewhat, the schedule is a template for completing all of the topics in the course and it should be consulted periodically to ensure that you are on track to complete the syllabus with an appropriate amount of time devoted to each section. Most students passing this course will proceed to MATH 2850. (If you are not familiar with our calculus sequence, please consult the course coordinator.) **It is critically important that you do not shortchange them or hamper MATH 2850 instructors by skipping important sections or by rushing through the introduction to vectors and geometry of space because of poor planning.**

SUGGESTED SCHEDULE

Chapter	6	**Applications of Definite Integrals**	(total 4.5 hr)
	6.1	Volumes using Cross Sections; *Definite Integration*	2
	6.2	Volumes using Cylindrical Shells; *Definite Integration*	1.5
	6.3	Arc Length; *Definite Integration*	1
	6.4	**(Op.)** Areas of Surfaces of Revolution	
	6.5	**(Op.)** Work and Fluid Forces	
	6.6	**(Op.)** Moments and Centers of Mass	
Chapter	8	**Techniques of Integration**	(total 8 hr)
	8.1	Integration by Parts; *Techniques of Integration*	1.5
	8.2	Trigonometric Integrals; *Techniques of Integration*	1
	8.3	Trigonometric Substitution; *Techniques of Integration*	1.5
	8.4	Integration of Rational Functions by Partial Fractions; *Techniques of Integration*	2
	8.5	**(Op.)** Integral Tables	
	8.6	**(Op.)** Numerical Integration	
	8.7	Improper Integrals; *Improper Integrals*	2
Chapter	10	**Infinite Sequences and Series**	(total 12.5 hr)
	10.1	Sequences; *Sequences and Series*	2
	10.2	Infinite Series; *Sequences and Series*	1.5
	10.3	The Integral Test; *Sequences and Series*	1.5
	10.4	Comparison Tests; *Sequences and Series*	1
	10.5	Ratio and Root Tests; *Sequences and Series*	1
	10.6	Alternating Series, Absolute and Conditional Convergence; *Sequences and Series*	1
	10.7	Power Series; *Power Series*	2
	10.8	Taylor and Maclaurin Series; *Power Series*	2
	10.9	Convergence of Taylor Series; *Power Series*	1
	10.10	Applications of Taylor Series; *Power Series*	0.5
Chapter	11	**Parametric Equations and Polar Coordinates**	(total 6.5 hr)
	11.1	Parameterizations of Plane Curves; *Parametric Curves*	1
	11.2	Calculus of Parametric Curves; *Parametric Curves*	2
	11.3	Polar Coordinates; *Parametric Curves*	1
	11.4	Graphing in Polar Coordinates; *Parametric Curves*	1
	11.5	Areas and Lengths in Polar Coordinates; *Parametric Curves*	1.5
	11.6	**(Op.)** Conic Sections	
	11.7	**(Op.)** Conic Sections in Polar Coordinates	
Chapter	12	**Vectors and Geometry of Space**	(total 6.5 hr)
	12.1	Three Dimensional coordinate system; *Lines and Planes*	0.5
	12.2	Vectors; *Lines and Planes*	1
	12.3	The Dot Product; *Lines and Planes*	1.5
	12.4	The Cross Product; *Lines and Planes*	1.5
	12.5	Lines and Planes in Space; *Lines and Planes*	2
	12.6	**(Op.)** Cylinders and Quadric Surfaces	
		Total Hours	39