Syllabus for MTH 229 — Calculus I

DEPARTMENT OF MATHEMATICS AND STATISTICS, WRIGHT STATE UNIVERSITY

Course policy regarding calculators and computers:

Current departmental policy forbids the use of calculators capable of symbolic differentiation or integration on the common final exams of MTH 229 and MTH 230. Your instructor may also forbid them on some or all midterm exams. Examples of calculator models excluded under this policy are the TI-89, TI-92, and HP-48. If you are using such a calculator, you do not need to buy another, but you *do* need to plan to use a different calculator on the common final.

Information regarding Common Final Examination:

All sections of MTH 229 and MTH 230 take common final exams at the time given in the WSU Class Schedule for the Mathematics Common Examination. *This includes evening sections.* If you have a conflict with the final exam, tell your instructor and attempt to resolve it as soon as possible. Final exam times are listed in the Class Schedule; by registering for a course you accept responsibility for being at the final exam.

Students in all mathematics and statistics classes are expected to bring a picture identification card (such as a WSU student ID or a drivers license) to the final exam.

The common final will not contain any questions from optional sections; in particular there will be no questions taken directly from Chapter 1. If optional sections are covered in your class, you will be responsible for that material on midterm exams or quizzes unless your instructor says otherwise.

Laboratory: Richard Mercer, *Calculus I Laboratory Manual*

Lab[1]	Text	Sample Assignment
Chapter 1: Functions and Models	***0-1 wk***	
03 Graphs and Calculus	*A Preview of Calculus*	
01 Graphs and Mathematica	1.3	L01.1, L01.2
02 Functions and Graphs	*1.1, 1.2, 1.5, 1.6*	*L02.1b, L02.2a, L02.3, L02.6*
Chapter 2: Limits and Derivatives	**3 wk**	
11 Limits and Derivatives	2.2, 2.3	L11.1(*omit (iv) all parts*), L11.3, L11.5
12 Limits and Infinity	2.5	L12.1, L12.3, L12.5
04 Tangent Lines	2.1, 2.6	L04.1, L04.2abc, L04.5, L04.6
05 Rates of Change	2.1, 2.6	L05.3
06 Derivatives and Graphs	2.7, 2.8, 2.10	L06.1, L06.3b, L06.4b, L06.6
10 The Derivative	2.7, 2.8, 2.10	L10.1, L10.2ac, L10.3, L10.5
Chapter 3: Differentiation Rules	**3 wk**	
13 Polynomial Functions	3.1, 4.2	L13.1, L13.2, L13.3, L13.4, L13.5
15 Algebra and Derivatives	3.2	L15.1efhikl, L15.3
16 The Chain Rule	3.5, 3.6	L16.1, L16.2, L16.3, L 16.4, L16.6
14 Transcendental Functions	3.1, 3.4, 3.7	L14.1cd, L14.2, L14.4, L15.1abcdgj, L14.5
17 Inverse Trig Functions		*L17.1ab, L17.2ab, L17.4, L17.5*
21 Linear Approximation	3.8	L21.1, L21.2b, L21.3
Chapter 4: Applications of Differentiation	**2-3 wk**	
20 Derivatives and Rates	3.3, 4.1	L20.2, L20.3, L20.5, L20.6, L20.7
18 Mean Value Theorem	4.3	L18.1, L18.4, L18.5
23 Advanced Graphing	*4.4*	*L23.1abc, L23.2*
25 Optimization	4.6	L25.1, L25.4, L25.5
24 Newton's Method	4.8	L24.1bd, L24.2b, L24.3

[1] Labs listed in *italics* are suggested for omission. Instructors should feel free to modify the lab syllabus to suit their approach.

3/21/05

Syllabus for MTH 229 — Calculus I

DEPARTMENT OF MATHEMATICS AND STATISTICS, WRIGHT STATE UNIVERSITY

Text: James Stewart, *Calculus: Concepts and Contexts, 3rd Edition*

Section [2]		Time [1]	Sample Homework Assignment
A Preview of Calculus		*0*	[This section is worth reading.]
Chapter 1: Functions and Models		***0-1 wk***	
1.1	*Four Ways to Represent a Function*	*0-1*	*4, 10, 18, 44, 48, 50, 64*
1.2	*Mathematical Models*	*0-1*	*2, 4, 14, 20, 23*
1.3	*New Functions from Old Functions*	*0-1*	*1-4, 38, 43, 44, 51*
1.5	*Exponential Functions*	*0-1*	*9, 11, 17, 18*
1.6	*Inverse Functions and Logarithms*	*0-1*	*1, 5, 12, 13, 33, 36, 47, 50*
1.7	*Parametric Curves*	*0-1*	*1, 4, 5, 6, 10, 16, 20, 30, 34, 40*
Appendix C: Trigonometry Review		*0-1*	*3, 4, 7, 9, 13, 14, 20b, 24, 37, 40, 41, 42, 48*
Chapter 2: Limits and Derivatives		3 wk	
2.1	The Tangent and Velocity Problems	0.5	2, 3, 7
2.2	The Limit of a Function	1	1, 3, 5, 10, 15, 20
2.3	Calculating Limits Using the Limit Laws	1.5	1, 2, 4, 9, 13, 16, 24, 25, 40
2.4	Continuity	1	1, 4, 6, 7, 16, 25, 31, 32, 39
2.5	Limits Involving Infinity	1.5	1, 4, 6, 9, 17, 22, 24, 27, 32, 47
2.6	Tangents, Velocities, and Other Rates of Change	1.5	2, 5, 13, 15, 18, 26
2.7	Derivatives	1.5	2, 4, 5, 8, 18, 20, 22, 25
2.8	The Derivative as a Function	1.5	3, 6, 8, 10, 12, 22, 32, 37, 39
2.9	What Does f' Say about f?	1	1, 2, 4, 9, 11, 18
Chapter 3: Differentiation Rules		3 wk	
3.1	Derivatives of Polynomials and Exponentials	1.5	6, 10, 13, 16, 22, 38, 42, 43, 44, 53, 55, 60
3.2	The Product and Quotient Rules	1	1, 4, 6, 12, 20, 24, 32, 38, 40, 42, 43
3.3	Rates of Change in the Natural & Social Sciences	2	2, 4, 6, 8, 13, 18, 20, 23, 26
3.4	Derivatives of Trigonometric Functions	1	4, 6, 7, 14, 19, 24, 27, 32, 34
3.5	The Chain Rule (skip "Parametric Curves")	2	7, 8, 12, 16, 25, 26, 28, 37, 43, 45, 54, 61, 64
3.6	Implicit Differentiation (skip "Orthogonal Trajectories")	1.5	1, 6, 19, 26, 30, 32, 35, 49, 53
3.7	Derivatives of Logarithmic Functions	1	4, 7, 10, 12, 16, 24, 25
3.8	Linear Approximations and Differentials	1	4, 12, 15, 20, 26, 32
Chapter 4: Applications of Differentiation		**2+ wk**	
4.1	Related Rates	3	2, 11, 14, 16, 20, 22, 27, 34
4.2	Maximum and Minimum Values	1.5	3, 8, 10, 25, 41, 45, 46, 47, 56, 59
4.3	Derivatives and the Shapes of Curves	1.5	5, 6, 9, 12, 21, 27, 48
4.4	*Graphing with Calculus and Calculators*	*0-1*	*6, 11, 19, 30*
4.6	Optimization Problems	3	8, 18, 24, 27, 29, 38, 44
4.8	*Newton's Method*	*0-1*	*4, 6, 21*

[2] Sections listed in *italics* are optional and will not be tested on the common final exam.

[1] For the instructor: Time for sections represents suggested number of fifty-minute classroom "hours", based on 4 hours per week. The suggested hours for required sections add to 31 out of the 40 nominally available for the non-lab portion of the course. The remaining hours can be used for exams, projects, review, optional sections, etc.

3/21/05

Course policy regarding calculators and computers:

Current departmental policy forbids the use of calculators capable of symbolic differentiation or integration on the common final exams of MTH 229 and MTH 230. Your instructor may also forbid them on some or all midterm exams. Examples of calculator models excluded under this policy are the TI-89, TI-92, and HP-48. If you are using such a calculator, you do not need to buy another, but you *do* need to plan to use a different calculator on the common final.

Information regarding Common Final Examination:

All sections of MTH 229 and MTH 230 take common final exams at the time given in the WSU Class Schedule for the Mathematics Common Examination. *This includes evening sections.* If you discover you have a conflict with the final exam, tell your instructor and attempt to resolve it as soon as possible. Final exam times are published in the Class Schedule; by registering for a course you accept responsibility for being at the final exam as scheduled.

Students in all mathematics and statistics classes are expected to bring a picture identification card (such as a WSU student ID or a drivers license) to the final exam.

The common final will not contain questions from optional sections or problems. If optional sections are covered in your class, you will be responsible for that material on midterm exams or quizzes unless your instructor says otherwise.

Laboratory: Richard Mercer, *Calculus II Computer Laboratory Manual*

	Lab[1]	Text	Sample Assignment
Chapter 4: Applications of Differentiation	**1 wk**		
27 Indeterminate Forms		4.5	L27.1, L27.2, L27.8, *(L27.7)*
28 Antiderivatives		*4.9*	*L28.1, L28.2, L28.3*
31 Area		*5.1*	*L31.1, L31.2, L31.6*
Chapter 5: Integrals	**4 wk**		
33 Riemann Sums		5.1	L33.1, L33.2, L33.3, L33.4
34 Areas and Limits		5.2, 5.4	L34.1, L34.2, L34.7
32 Area and Functions		*5.3, 5.4*	*L32.1, L32.3, L32.4*
35 Substitution		5.5	L35.1acegi, L35.2b, L35.3
36 Integration by Parts		5.6	L36.1bd, L36.2a, L 36.3
37 Partial Fractions		5.7, App. G	L37.1
38 Trigonometric Integrals		*5.7*	*Instructor's Choice*
39 Numerical Integrals		5.9	L39.2, L39.3, L39.6
40 Improper Integrals		*5.10*	*L40.2, L40.3, L40.7*
Chapter 6: Applications of Integration	**2+ wk**		
41 Areas in the Plane		6.1	L41.1, L41.2, L41.3
42 Volumes of Revolution		6.2	L42.1, L42.3
43 Arc Length		6.3	L43.1, L43.2, L43.4
Chapter 7: Differential Equations	**2 wk**		
45 Differential Equations		7.2, 7.3	L45.1, L45.2, L45.3, L45.4, L45.5, L45.8

[1] Labs listed in *italics* are optional. Instructors should feel free to modify the lab syllabus to suit their approach.