18.01 Spring 2012

Class meetings: Tuesdays and Thursdays 11:00am–12:00pm, Fridays 2:00pm–3:00pm, in room 2–142.

Recitation meetings: Mondays and Wednesdays 2:00pm–3:00pm, in room 2–142.

Lecturer
Andrew Snowden
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Friday 1:00pm–2:00pm

Recitation Instructor
Tiankai Liu
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Office hours: Friday 3:00pm–5:00pm

Text: Simmons, Calculus with Analytic Geometry, 2nd edition, McGraw–Hill.

Supplementary notes: Available free electronically, or in paper form from CopyTech for $12.

Tutoring: The Math Learning Center (room 2–102) offers tutoring Monday through Thursday 3:00pm–5:00pm and 7:30pm–9:30pm, starting the second week of classes.

Homework: Problem sets will be posted to Stellar on Tuesday and due the following Tuesday. Problem sets must be turned in to the 18.01 mailbox in room 2–108 no later than 3:00pm on the day they are due. Late homework will not be accepted. However, your lowest homework score will be dropped, so one missing homework will not affect your grade.

Quizzes: There will be a short (10–15 minute) quiz each Friday at the beginning of class. Missed quizzes cannot be made up. However, your lowest quiz score will be dropped, so missing one quiz will not affect your grade. If you are going to miss a quiz for a valid reason, please let me know ahead of time.

Exams: There will be four hour-long exams throughout the semester (approximately one every eight lectures) and an additional final exam at the end of the semester. If you must miss an exam for a valid reason, schedule a make-up ahead of time, preferably a week in advance.

Grades: The final grades will be computed by weighting your work as follows.

Problem sets	25%
Quizzes	5%
Hour-long exams	40% total (10% each)
Final	30%

Schedule

The right column below indicates the relevant sections of the text book (e.g., 2.1) and/or supplementary notes (e.g., G1). I encourage you to read these sections before lecture.

1. Differentiation

Lecture 1	Feb 7	Derivatives, slope, velocity, rate of change	2.1–2.4, G1–4
Lecture 2	Feb 9	Limits, continuity, trigonometric limits	2.5, 2.6 to p. 75, C
Lecture 3	Feb 10	Derivs of products, quotients, sine, cosine	3.1, 3.2, 3.4
Lecture 4	Feb 14	Chain rule, higher derivatives	3.3, 3.6
Lecture 5	Feb 16	Implicit differentiation, inverse functions	3.5, 9.5, G5
Lecture 6	Feb 17	Exp and log, logarithmic differentiation	X, 8.2, 8.3 to 267, 8.4 to 271
	Feb 21	*No lecture, Monday schedule due to President's Day*	
Lecture 7	Feb 23	Hyperbolic functions, review for Exam 1	9.7 to 326
Lecture 8	Feb 24	**Exam 1**	

2. Applications of differentiation

Lecture 9	Feb 28	Linear and quadratic approximation	A
Lecture 10	Mar 1	Curve sketching	4.1, 4.2
Lecture 11	Mar 2	Max–min problems	4.3, 4.4
Lecture 12	Mar 6	Related rates	4.5
Lecture 13	Mar 8	Newton's method and other applications	4.6, 4.7
Lecture 14	Mar 9	Mean value theorem, inequalities	2.6 to 77, MVT
Lecture 15	Mar 13	Differentials, antiderivatives	5.2, 5.3
Lecture 16	Mar 15	Differential equations, separation of variables	5.4, 8.5
Lecture 17	Mar 16	**Exam 2**	

3. Integration with applications

Lecture 18	Mar 20	Definite integrals	6.3 to (4), 6.4, 6.5
Lecture 19	Mar 22	First fundamental theorem of calculus	6.6, 6.7 to p. 215
Lecture 20	Mar 23	Second fund. thm. of calculus, defn. of log	PI, FT
		Spring Break Mar 26–30	
Lecture 21	Apr 3	Areas between curves, volume by slicing	7.1–7.3
Lecture 22	Apr 5	Volume by disks and shells	7.4
Lecture 23	Apr 6	Work, average value, probability	7.7 to 247, AV
Lecture 24	Apr 10	Numerical integration	10.9
Lecture 25	Apr 12	Further applications, review for Exam 3	
Lecture 26	Apr 13	**Exam 3**	

4. Techniques of integration

	Apr 17	*No class, Patriot's Day*	
Lecture 27	Apr 19	Trigonometric integrals	10.2–10.3
Lecture 28	Apr 20	Inverse substitution, completing the square	10.4
Lecture 29	Apr 24	Partial fractions	10.6, F
Lecture 30	Apr 26	Integration by parts, reduction formulas	10.7
Lecture 31	Apr 27	Parametric equations, arc length, surface area	17.1, 7.5, 7.6
Lecture 32	May 1	Polar coordinates, area in polar coordinates	16.1, 16.2, 16.3 to p. 570, 16.5
Lecture 33	May 3	Review for Exam 4	
Lecture 34	May 4	**Exam 4**	

5. Improper integrals and infinite series

Lecture 35	May 8	Indeterminate forms, L'Hôpital's Rule	12.2, 12.3
Lecture 36	May 10	Improper integrals	12.4, INT
Lecture 37	May 11	Infinite series, convergence tests	13.3, 13.5
Lecture 38	May 15	Taylor series	14.4 to 498
Lecture 39	May 17	Review for Final Exam; last class	

The final exam will be held in the week of May 21–25.