

Oberlin College

# Calculus 132

Spring 2014      Craig Lecture Hall SC  
schedule: M W F      9am – 9:50  
   QFR

**Instructor:** Kay Knight      Drop in Office Hours: Scheduled Office Hours  
Office: Peters 114      Tu 3-4      M 10-11      Tu 9-10  
Phone: 5 6538      W 11-12      F 2-3      W 3:30-4:30      F 1-2

**Text:** J. Stewart, Single Variable Calculus, 7<sup>th</sup> edition, Chapters 3,4,5

## Course Objectives:

- Sketch the graphs of curves.
- Solve optimization problems.
  - Find the area under a curve by estimation,
  - limits, Riemann Sums and integration.
- Understand key theorems, proofs and historical key points in Calculus 1.
- Use integration to find the area between curves,
  - volume of solids,
  - volume produced by rotation of curves,
  - and amount of work.
- Solve problems with differentiation, antiderivatives, u substitution, integration and the Fundamental Theorem of Calculus.

## Evaluation: Total Points accumulated from the following:

14 Assignments, 15 pts each	210 total
4 practice sets, 25 pts each	100 total
4 Exams 100 % each	400 total
<i>February 26, March 21, April 18, May 7</i>	
Quizzes, class work,	~ 90 points
Final, ( <i>optional</i> ) TBS	replace 200 points
	<b>total ~800 points</b>

## Grades: Percentage of Total Points

100% A+	90, 89% B+	80, 79% C+	69-61% D
99 - 93% A	88 - 83% B	78 - 72% C	below 61%
92, 91% A-	82, 81% B-	71, 70% C-	not passing

# Calculus 132

## Spring 2014

Session	Date	Topic	study
1.	M. Feb. 3	Overview: Significance of Max&Min Optimization, EVT, Fermat, Def. of Critical #	3.1 #1 - #28
		3.1 ex 1, 2, 3, 4 3.7 ex 2	
2.	W. Feb. 5	Closed Interval method, critical numbers, graphical combination, remember implicit?	
		3.1 ex 10, ex 9, 3.7 ex 2 again, 3.7 ex 5	
<b>*1st assignment. Due Friday. 3.1 p200 (Sq 4) ex5&amp;ex6, (Sq 6), ex7, ex8, 3.1 #6; 3.7 ex 1</b>			
3.	F. Feb. 7	Fermat, Rolle, MVT	
		3.2 ex 1, 2, proof of MVT, ex 3, 4, 5; 3.7 #20	
4.	M. Feb. 10	Curves, Concavity, $f'$ $f''$ What do the derivatives tell us? Handout	study 3.2 #19-#25, not #22
		3.1 # 60 3.3 # 8 3.3 ex 1,2,3,7, # 41, 3.4 ex 11	3.3 #1 - #7
<b>*2nd assignment. Due Wednesday. 3.3 ex 6, # 10, # 34, # 42, # 46.</b>			
5.	W. Feb. 12	Curves with HA and VA	study 3.4 #1 - #4
		3.4 ex 3, ex4; 3.5 ex1 (according to handout) ex2, 3,	study 3.7 #7,8,9,11
6.	F. Feb. 14	More curves, Newton's Method, and Slant Asymptotes	study 3.5 #1-20
		3.4 # 50; 3.5 ex 4; 3.6 ex 1,2 3; 3.8 ex 1	
<b>*3rd assignment. Due Monday 3.4 #12, 51; 3.8 #7; 3.7 #12 solve only, NO a,b,c,d,e,f; 3.5 ex 2 in your own words</b>			
7.	M. Feb. 17	Family of Curves and Family of Functions from Antiderivatives	study 3.9 #21-40
		3.6 ex 5, # 27; 3.9 ex 2,3	
8.	W. Feb. 19	Antiderivatives, Acceleration and the Cliff	
		3.9 ex 6, ex 7, # 61, # 67; 3.7 # 60	
<b>*4th assignment. Due Friday 3.6 # 11, #20; 3.7 # 61; 3.9 ex 4, # 57, # 68</b>			
9.	F. Feb. 21	Practice; 3.7 #54, others <b>Practice Problems Due Monday: Review: # 1, 8, 13, 14, 16, 18, 20, 21, 29, 34, 36, 38, 40, 47, 48 b, 49 use Excel, 52 (graphical combination), 56, 58, 63</b>	
10.	M. Feb. 24	Review	

⇒ **11. W. Feb. 26 EXAM: Chapter 3** 100 pts.

12. F. Feb. 28 Chapter 4: Area and  $\sum$  and  $\int$  study  
 Picture p 287; definition 289, 290; (also distance) 4.1 #1-5  
 Adding areas of rectangles with Left, Right & Mid pts 4.2 #1-11  
 Appendix E #22, #30; Appendix E #1-30  
 4.1 ex 1; 4.1 # 2; 4.2 ex 4, # 39, 38 4.2 #33-51

13. M. March 3 P 298 T 4; 4.2 ex 2, ex 7 study  
 296 (sq 2);  $\Delta x$  and  $x^*$ , 4.2 #17-27  
 properties of  $\int$  p 303, 304, 305  
 4.2 ex 2, # 18. Appendix E ex 4, 5,

**\*5th assignment. Due Wednesday; 4.1 #17; 4.2 # 20, 34, 53.  
 Appendix E ex 6, 4.3 ex 1**

14. W. March 5 Sigma Proof and also Property 8. Study more  
 FTC part 2, p 315 Appendix E # 31, 4.2 #17-27  
 Appendix E, ex 5, ex 7, # 33

15. F. March 7 AREA IS... $\int$  study  
 the FTC parts 1 and 2 p312 & 315 & 317  $\square$   
 4.3 # 4, 5, 8, 16, 20, 22 4.3 ex 2, ex4, ex5, ex6  
 4.3 # 7 – 25 odds

**\*6th assignment. Due Monday 4.2 ex8 & 4.3 ex8; 4.3 ex2 & ex3 ; 4.3 #15, 38, 21, 26**

16. M. March 10 Using the FTC study  
 Indefinite or Net, 4.4 ex 3; 4.5 ex 2  
 Distance or Displacement  
 U substitution  
 4.4, p 321 red note, ex 1,2,4, 5, 6; 4.5 ex 1

17. W. March 12 U Substitution & more FTC study  
 4.5 ex3, ex4, ex5, ex6 two ways, 4.5 all examples

**\*7th assignment. Due Friday 4.4 # 50, 56; 4.5 ex 2, ex7, 4.5 # 29, #36**

18. F. March 14 Symmetry, more FTC1, and other details  
 p 333 ex 5, ex 7, 8, 9; p 339 #8, 4.3 #49

**\*8th assignment. Due Monday, Writing Assignment: p 329  
 1 page, 2 to 4 paragraphs, IN YOUR OWN WORDS.**

19. M. March 17 Practice study: 4.5 1-12, 35-48

**Practice Problems due Wednesday: Review p 338 exercises:  
#2 a, b, c, # 5, 7, 8, 10, 12, 13, 15, 22, 24, 33, 36, 40, 44, 45, 47, 48, 49**

20. W. March 19 review

**⇒21. F. March 21 EXAM: Chapter 4**

BBB**BREAK**BBB

22. M. March 31 e, ln, logs & 3 rules Concepts from 6.2 – 6.4  
suggested examples to study: p 397 sq 8, 6.2 ex 2, 3, ex 8,9; pp 381-416  
6.3 ex 1, 4, 5; 6.4 ex 1, 2, 3, page 413 sq 3 sq4, ex 8, 9,10 study p 337 # 67-78  
page 415, sq 6 sq 7, ex 12, 13,

23. W. April 2 Using concepts from 6; 5.1 AREA between curves study  
5.1 ex 1,2,4; # 1, # 4, # 8 5.1 #1-13 odds

24. F. April 4 Area and Volume with dy or dx study  
5.1 # 11, # 51, 5.2 ex 2, ex 3; 5.2 #1-9

**\*9th assignment, Due Monday, p320 #73, 74, 77; p329 #72; 5.1 ex6, 5.1 #1**

25. M. April 7 Volume slices or washers & shifts study  
5.2 ex 4, ex 5, ex 6 5.2 #19-30

26. W. April 9 Volume with Shells study  
5.2 #15; p 364 bottom box, 5.3 # 1, 5.3 ex 2, 3, 4 5.3 #3-19

**\*10th assignment Due Friday 5.1 # 47, 50, 55; 5.2 #10 with shells & slices; 5.3 ex 1**

27. F. April 11 Volume WITHOUT rotation  
5.2 ex 7, # #56, 57, 59

**\*11th assignment Due Monday p420 #85, 86; 5.2 #21, 26 either shells or slices; 5.3 # 8**

28. M. April 14 Volume practice  
5.2 ex 1, shells & slices, Handout for Volume of solids.

**Practice Problems due Wednesday: p378 1, 2, 3, 6, 7, 8, 10,  
12 & 14 (set up only) 15a,b,c, 16a,b,c, 23, 24, p368 #41, #45 with shells and with slices**

29. W. April 16 Volume/Area review 5.1, 5.2, 5.3

**⇒30. F. April 18 EXAM part of Chapters 5 and 6**

31. M. April 21 Work and Springs study 5.1  
5.4 ex 4, ex 2, ex 3(springs) #5, # 13, 16(bucket) #7-17 (not # 12)
32. W. April 23 More work & Average Value study  
5.4 ex 5; # 21, #17; 5.5 ex 1, ex 2 5.5 #1-10  
**\*12th assignment Due Friday, 5.4 ex 1, # 1, 2, 8, 15; 5.5 #8**
33. F. April 25 More work & Average Value 5.4 and 5.5  
5.4 # 20; 5.5 # 15
34. M. April 28 Curves, Optimization, Antiderivatives, Area, Volume,  
Work and Average Value  
**\*13th assignment Due Wednesday 5.5 # 10, 14; 5.4 10, 16, 17, 19,**
35. W. April 30 Practice Whatever  
5.5 # 23
36. F. May 2 practice  
p 379 # 31

**Practice Problems due Monday: p378 #24, 25, 26a, 27, 28, 29,a, 32a,b,c,d;  
5.1 #3, 29, 44, 53; 5.2 #58, p367 #37&38 set up only, p368 #45, p420 #84, 88**

37. M. May 5 review

**⇒38. W. May 7 4<sup>th</sup> EXAM Chapter 5**

- \*14th assignment Due Friday**  
work 5 "good problems" that illustrate optimization, curve sketching, using integration for finding area,  
volume and work. Also state and explain the FTC parts 1 and 2
39. F. May 9