

Lecture notes will be provided on the course website, but students may also consult the following books (or any other calculus textbook).

1. “Calculus II” by Jerrold Marsden and Alan Weinstein, Springer  
available for free at the Caltech website  
<https://www.cds.caltech.edu/~marsden/volume/Calculus/>

2. “Calculus” by James Stewart, Cengage

### Topics

	Marsden-Weinstein	Stewart (5th edition)
Part 1. Integration		
1.1 sigma notation	4.1	App. E
1.2 area	4.2	5.1
1.3 definite integral	4.3	5.2
1.4 fundamental theorem of calculus	4.4, 4.5	5.3, 5.4
1.5 work	9.5	6.4
1.6 improper integrals	11.3	8.8
1.7 arclength	10.3	9.1
1.8 surface area	10.3	9.2
1.9 center of mass	9.4	9.3
1.10 probability density functions		9.5
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Review as needed.		
R.1 substitution	7.2	5.5
R.2 integration by parts	7.4	8.1
R.3 trigonometric substitution	10.1	8.2, 8.3
R.4 partial fractions	10.2	8.4
R.5 hyperbolic functions	8.3	7.6
R.6 L'Hôpital's rule	11.2	7.7
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Part 2. Differential Equations		
2.1 1st order equations	8.2	10.1
2.2 exponential growth/decay	8.2	10.3, 10.4
2.3 logistic equation	8.5	10.5
2.4 Euler's method	8.5	10.2
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Part 3. Series		
3.1 sequences	11.4	12.1
3.2 series	12.1	12.2
3.3 convergence tests (integral, comparison)	12.2, 12.3	12.3, 12.4
3.4 alternating series	12.2	12.5
3.5 ratio test	12.3	12.6
3.6 power series	12.4	12.8, 12.9
3.7 Taylor series	12.5	12.10, 12.11
3.8 binomial series	12.5	12.12
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Additional Topics (time permitting)		
A.1 parametric curves	10.4	11.1
A.2 arclength and area in polar coordinates	10.5	11.2, 11.3
A.3 complex numbers	12.6	App. G
A.4 2nd order equations, oscillations	8.1	18.1, 18.2, 18.3