First created: May 21, 2019; Last Modified: August 12, 2019

Schedule of Topics for Fall 2019

Textbook: *Biocalculus: calculus, probability and statistics for the life sciences*, by James Stewart and Troy Day

Date (2019)	Topics
1. Sept 4 to Sept 6	review of course outline, four ways to represent a function (1.1)
2. Sept 9 to 13	a catalog of essential functions (1.2), intervals, inequalities and absolute value functions (appendix A)
3. Sept 16 to 20	circles, lines, parallel and perpendicular lines, parabolas (appendix B), solving linear systems and defining matrices (section 9.1 of Newhauser textbook)
4. Sept 23 to Sept 27	trigonometry (Appendix C), new functions from old functions (1.3)
5. Sept 30 to Oct 4	exponential functions (1.4), logarithms (1.5)
omit from ch 1: the growth of malarial parasites (1.4), exponential growth* (1.4), HIV density and exponential decay* (1.4), graph and growth of the natural logarithm (1.5), semilog plots (1.5), log-log plots (1.5), sequences and difference equations (1.6); *exponential growth and decay is discussed in (3.6)	
6. Oct 7 to Oct 11	limits of functions at infinity (2.2), limits of functions at finite numbers (2.3)
Oct 14 to 18	Reading Week
7. Oct 21 to Oct 25	limits: algebraic methods (2.4), continuity (2.5)
omit from ch 2: limits of sequences (2.1), the monod growth function (2.2), approximating discontinuous functions by continuous ones (2.5), intermediate value theorem (2.5)	
Fall in-class test, Sunday, October 27, 2019 from 11am to 12:10pm	Fall in-class test will aim to cover ch1 (including solving linear systems + defining matrices) and the following sections from chapter 2: 2.2, 2.3. and 2.4
8. Oct 28 to Nov 1	derivatives and rates of change (3.1), the derivative of a function (3.2)
9. Nov 4 to Nov 8	basic differentiation formula (3.3), the product and quotient rules (3.4), chain rule (3.5)
10. Nov 11 to Nov 15	exponential growth and decay (3.6), derivatives of logarithmic and inverse tangent functions (3.7),
omit from ch 3: measuring the rates of increase of blood alcohol concentration (3.1), derivative of $\csc, \cot, \sec$ (3.4), how to prove the chain rule (3.5), newton's law of cooling (3.6), linear approximations and Taylor polynomials (3.8), newton's method (3.8)	
11. Nov 18 to Nov 22	maximum and minimum values (4.1), how derivatives affect the shape of a graph (4.2)
12. Nov 25 to 29	L'hospital's rule (4.3), optimization problems (4.4), antiderivatives (4.6)
omit from ch 4: mean value theorem (4.2), recursions: equilibria and stability (4.5)	
All projects and case studies in the above chapters will not be covered.	
13. Dec 2 to 3	Review or catch up as needed!
Dec exam period (Dec 5 to 20)	December midterm exam to cover ch1 (including solving linear systems+defining matrices), ch2, ch3, and ch4.

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Tentative Schedule of Topics for Winter 2020
For Instructors Only

Textbook: *Biocalculus: calculus, probability and statistics for the life sciences*, by James Stewart and Troy Day

Date (2020)	Topics
1. Jan 6 to Jan 10	areas (5.1), sigma notation (appendix F), the definite integral (5.2)
2. Jan 13 to Jan 17	fundamental theorem of calculus (5.3), substitution rule (5.4)
3. Jan 20 to 24	integration by parts (5.5), improper integrals (5.8)
omit from ch 5: distance problem (5.1), pathogenesis (5.1), midpoint rule (5.2), comparison properties of integrals (5.2), partial fractions (5.6), integration using tables and computer algebra systems (5.7)	
4. Jan 27 to Jan 31	areas between curves (6.1), averages values (6.2), principles of counting (12.1)
omit from ch 6: projects and case studies, cerebral blood flow (6.1), further applications to Biology (6.3), volumes (6.4)	
5. Feb 3 to Feb 7	principles of counting (12.1, continued)
omit all of chapters 7, 8, 9, 10 and 11	
Winter In-Class Test, Sunday, February 9, 2020 from 11am to 12:10pm	Winter in-class test will aim to cover ch5 and ch6.
6. Feb 10 to Feb 14	what is probability? (12.2)
Feb 17 to 21	Reading Week
7. Feb 24 to Feb 28	conditional probability (12.3)
8. Mar 2 to Mar 6	conditional probability (12.3, continued), discrete random variables (12.4)
9. Mar 9 to Mar 13	discrete random variables (12.4, continued), continuous random variables (12.5)
10. Mar 16 to Mar 20	continuous random variables (12.5, continued), the sampling distribution (13.1, time permitting)
11. Mar 23 to Mar 27 (time permitting)	confidence intervals (13.2), hypothesis testing (13.3)
12. Mar 30 to Apr 3 (time permitting)	hypothesis testing (13.3, continued)
omit from ch 13: contingency table analysis (13.4)	
All projects and case studies in the above chapters will not be covered.	
Exam period (Apr 7 to 25)	April final exam to cover Ch1 (including solving linear systems+defining matrices), ch2, ch3, ch4, ch5, ch6, ch12, and ch13, but there will be a greater emphasis on ch5, ch6, ch12 and ch13.