Weekly Schedule:

W1: Proof techniques, mathematical induction;
W2: Sequences, convergence, finite limits; monotone sequences;
W3: Cauchy sequences, subsequences;
W4: Applications of limits, transcendental number e;
W5: Limits of functions, sided limits;
W6: Continuity, properties of continuous functions;
W7: Uniform continuity;
W8: Applications of continuity, compact sets;
W9: Derivatives, properties of differentiable functions;
W10: Mean value theorems;
W12: Higher-order derivatives, L'Hopital's rule;
W13: Taylor's theorem and applications;
W14: Approximation of derivatives, convex functions.

Grading System:

Exams: 2 midterms (20 points each, possibly take-home); 1 (cumulative) final (30 points). Four quizzes based on homework assignments. You get maximum 10 points for each quiz, the best 3 count towards the grade. So, 30 points for Quizzes, 20 points for each Midterm Exam, 30 points for Final Exam, and 100 points altogether. The resulting score determines the letter grade according to the following table:

<table>
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<th>Letter Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
</tr>
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<tbody>
<tr>
<td>Score</td>
<td>100</td>
<td>92</td>
<td>87</td>
<td>82</td>
<td>73</td>
<td>68</td>
<td>63</td>
<td>58</td>
<td>53</td>
<td>48</td>
</tr>
</tbody>
</table>

Course Policies:

Closed-book policy: No use of calculators, or books will be allowed during in-class tests/quiz.

Policy related to make-up exams or other work: There will be no opportunities to make up work not submitted. However, if a student provides a legitimate excuse well in advance, a change of due date may be arranged. Work with due date should be turned in at the beginning of class on the stated due date. Late work will not be accepted and will be deemed work not submitted.

Policy on class attendance: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: https://catalog.ufl.edu/ugrad/cumen/regulations/info/attendance.aspx.

University's honesty policy: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/honor/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

For students with disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Students' evaluations of the course: Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at https://evaluations.ufl.edu.
Homework problems for Advanced Calculus I Fall 2017

Section 1.3: 2, 3, 5;
Section 1.4: 1, 2, 4, 5;
Section 1.7: 1, 2, 3, 5, 11, 13--16;
Section 1.9: 13--17, 26--29, 32--34;
Section 2.1: 2, 3, 5, 7, 10, 12, 14--17, 19--21;
Section 2.2: 3, 5, 8, 11, 15--17, 19, 21;
Section 2.3: 2, 3, 5, 7, 10, 11, 14, 16;
Section 2.4: 4--7, 9, 11, 13, 16, 17;
Section 2.5: 2, 3, 5--7, 11, 13, 15, 17--19;
Section 2.6: 2, 4, 5, 7, 9;
Section 2.7: 1--4, 6--8, 12--19, 22, 27, 28, 30--32, 35, 39, 42, 43, 45, 48, 50;
Section 3.1: 4, 5, 7, 8, 10, 11, 15;
Section 3.2: 1, 3, 8, 9, 13, 15;
Section 3.3: 4, 5, 8, 9, 10, 12, 13, 15;
Section 3.4: 1--7, 15, 17, 23, 24, 26, 41--43;
Section 4.1: 1, 2, 3, 5, 6, 9, 10;
Section 4.3: 1, 3, 7, 13, 14, 17, 18;
Section 4.4: 1, 2, 5, 10, 13, 14.

Section 5.2: 1, 3, 6, 7, 12, 13;
Section 5.3: 1, 2, 4, 6, 7, 10--13, 15, 17, 19, 21, 22, 24, 26, 27, 28;
Section 5.4: 1, 3, 4, 5, 6, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 39.

For the final exam (Chapters 1-4):

Theorems to know (with proof):

Binomial Theorem 1.3.7
Theorem 1.7.10 (sets $\mathbb{Q}$ and $\mathbb{I}$ are dense in $\mathbb{R}$)
Theorem 2.1.11 (convergent sequences are bounded)
Theorem 2.2.6 (squeeze for sequences)
Theorem 2.3.7 (ratio test)
Theorem 2.4.4 (monotone sequences)
Theorem 2.5.4 (Bolzano-Weierstrass for sets)
Theorem 2.5.9 (Cauchy=convergent)
Theorem 2.6.4 (Bolzano-Weierstrass for sequences)
Theorem 4.3.5 (extreme value)
Theorem 4.3.6 (Intermediate value)
Theorem 4.4.6 (continuous on closed bdd set $\Rightarrow$ uniform continuous)
Theorem 5.3.1 (Rolle's theorem)
Theorem 5.3.3 (Lagrange's Mean Value theorem)

Definitions:

Limit of a sequence
Inf/Sup/Min/Max of a set
Accumulation point
Limit of a function
Sided limits
Limits at infinity
Infinite limits
Continuity
Uniform continuity

Homework problems for Advanced Calculus II Spring 2018

Section 5.3: 1, 2, 4, 6, 7, 9--11, 15, 17, 19, 21, 27, 29;
Section 5.4: 2, 5, 8--10, 21--23, 27, 29, 30;
Section 5.5: 1, 6--8, 12, 13, 15;
Section 5.6: 2, 4, 7, 9, 10, 15, 19, 22, 25, 35, 41, 51, 52;
Section 6.1: 3, 4, 6, 8, 10;
Section 6.2: 1, 2, 5--8, 10, 11, 13, 14;
Section 6.3: 2, 4, 8, 11, 13, 14;
Section 6.4: 7, 10, 11, 13, 14, 18, 22;
Section 6.5: 9, 10, 16, 17, 20, 24;
Section 7.1: 1--5, 9, 10, 14, 16, 18;
For the final exam, you will need to review the following:

Theorems/Lemmas (statements and proofs): 5.3.1, 5.3.3, 5.4.8, 6.1.5, 6.2.2, 6.2.4, 6.3.3, 6.3.8, 6.3.10, 6.4.2, 6.4.4, 7.2.1, 7.2.10, 7.3.3, 7.4.2, 8.3.1, 8.3.5, 8.5.8.
(statements only): 6.5.16, 6.5.17, 7.6.2, 7.6.10, 8.3.6, 8.3.7, 8.4.6, 8.4.11, 8.4.13, 8.4.14, 8.4.15.

Definitions (with examples and counterexamples): Taylor’s polynomial, Riemann integrable functions, Riemann integral, improper Riemann integral, absolute and conditional convergence of series, pointwise and uniform convergence, power series, radius and interval of convergence.