

MATH-102 — Calculus II

Prof. Kevin TeBeest, Ph.D.

Summer 2019

Course Learning Objectives:

1. Recognize and apply various integral formulas to find anti-derivatives for use in both definite and indefinite integral situations.
2. Use change of variable substitutions to convert more complicated functional expressions and their integrals into simpler forms so that the direct formulas of 1 may be applied.
3. Know the definition of the Riemann Integral and to acquire a substantial working knowledge of the evaluation and application of definite integrals, including numerical approximations.
4. Have a reasonably good intuitive understanding of the relationship between the definite integral and anti-derivatives as given by the Fundamental Theorem.
5. Be functionally competent in the evaluation of improper integrals.
6. Have a formal understanding of sequences and series and demonstrate a substantial knowledge of computations and related tests for convergence of series and of the algebra and calculus of power series.
7. Evaluate integrals using MuPad.

APPROXIMATE LECTURE SCHEDULE ^{1,2}

Week	Sections
1	Introduction App. E — Sigma (summation) Notation 4.9 — Antiderivatives
2	5.1 — Approximating Areas and Distances (Riemann Sums) 5.2 — The Definite Integral 5.3 — Fundamental Theorems of Calculus
3	5.4 — Indefinite Integrals & Net Change 5.5 — Integration by Substitution
4	EXAM 1 (tentative) 6.1 — Areas between Curves in the Plane 6.2 — Volumes by Disks and Washers
5	6.5 — Average (Mean) Value of a Function 7.1 — Integration by Parts
6	7.2 — Integrating Powers of trig Functions 7.3 — Integration by Trig Substitution
7	EXAM 2 (tentative) 7.4 — Integration by Partial Fraction Decomposition (pfd) 7.7 — Approximate Integration (Trapezoidal Rule) ³ 7.8 — Improper Integrals
8	11.1 — Sequences 11.2 — Series 11.3 — The Integral Test and p -series
9	11.5 — Alternating Series 11.6 — Absolute Convergence and Ratio Test
10	EXAM 3 (tentative) 11.8 — Power Series
11	11.10 — Taylor Series and Maclaurin Series Finish any remaining material FINAL EXAM to be scheduled by the Registrar's Office

¹ This schedule is approximate as some sections will take longer to cover than others. You should refer to the "Course Web Site" daily for actual assignments.

² Maple assignments, quizzes, and supplemental application problems will be scattered throughout the material.

³ If time allows.