Math 154 Calculus II

This course involves applications and techniques of integration, including substitution, by parts, trigonometric substitution, and by partial fractions. The course also introduces improper integrals, numerical integration, sequences and series, geometric series formula, criteria for convergence, power series, and Taylor expansion.
(Pre-requisites: Math 151 or Math 153)

Course Learning Outcomes:

By the end of the course, students will be able to:

1. Apply the appropriate definite integrals in geometric context.
2. Apply the appropriate series/ sequence test to decide the convergence or divergence of series/ sequences.
3. Solve and interpret definite or improper integrals using a variety of integrating techniques.
4. Calculate and present results related to definite integrals and series using numerical approximations and software.

Textbook & Course Materials:

- Calculus by James Stewart, 8th Edition (2015) ISBN 978-1285740621 Cengage.

Course Content:

1. Areas between curves.
2. Volumes by Cylindrical Shells.
3. Hyperbolic Functions
4. Intermediate Forms and l'Hopital's Rule
5. Integration by parts.
6. Trigonometric integrals
7. Integration of rational functions by partial fractions
8. Improper Integrals
9. Curves defined by parametric equations
10. Calculus with parametric curves
11. Polar coordinates
12. Sequences
13. Infinite Series
14. Integral Test
15. The Comparison Tests
16. Alternating Series
17. Absolute Convergence and the Ratio and Root Tests
18. Power Series
19. Taylor and Maclaurin series Review