*Approved: November 2023 Effective: Fall 2024*

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| **TOPICS** | **SECTIONS FROM TEXT** | **RECOMMENDED**  **TIME LINE** |
| Applications of Definite Integrals: areas, volumes, volumes by cylindrical shells, work, average value of a function.  **Math 18B Support Topics**  Additional support for Applications of Definite Integrals: areas, volumes, volumes by cylindrical shells, work, average value of a function. | 6.1 – 6.5 | **Math 181:**  7.5 Hours  **Math 18B:**  4 hours |
| Techniques of integration: integration by parts, partial fractions, trig integrals, trig substitution, hyperbolic trig substitutions, tables and computer algebra systems, numerical integration, improper integrals.  **Math 18B Support Topics**  Additional support for Techniques of integration: integration by parts, partial fractions, trig integrals, trig substitution, hyperbolic trig substitutions, tables and computer algebra systems, numerical integration, improper integrals. | 7.1 – 7.8 | **Math 181:**  13 Hours  **Math 18B:**  7 hours |
| Further Applications of Integration: Arc length, surface areas of revolution, fluid force, moments and centers of mass.  **Math 18B Support Topics**  Additional support for Further Applications of Integration: Arc length, surface areas of revolution, fluid force, moments and centers of mass. | 8.1 – 8.3 | **Math 181:**  5 Hours  **Math 18B:**  2.5 hours |
| Differential Equations: Modeling with differential equations, separable differential equations, population growth and other applications.  **Math 18B Support Topics**  Additional support for Differential Equations: Modeling with differential equations, separable differential equations, population growth and other applications. | 9.1, 9.3 | **Math 181:**  2.5 Hours  **Math 18B:**  1.125 hours |
| Parametric equations, polar coordinates, graphing in polar coordinates, areas and lengths in polar coordinates.  **Math 18B Support Topics**  Additional support for Parametric equations, polar coordinates, graphing in polar coordinates, areas and lengths in polar coordinates. | 10.1 – 10.4 | **Math 181:**  7 Hours  **Math 18B:**  3.5 hours |
| Infinite sequences and series: sequences, infinite series, integral test, comparison tests, ratio and root tests, alternating series, absolute and conditional convergence, power series, Taylor and Maclaurin series, convergence of Taylor series: error estimates, applications of power series.  **Math 18B Support Topics**  Additional support for Infinite sequences and series: sequences, infinite series, integral test, comparison tests, ratio and root tests, alternating series, absolute and conditional convergence, power series, Taylor and Maclaurin series, convergence of Taylor series: error estimates, applications of power series. | 11.1 – 11.11 | **Math 181:**  17 Hours  **Math 18B:**  8 hours |
| Total Time: |  | **Math 181:**  52 hours  **Math 18B:**  26.125 hours |

**All hours listed are face-time; i.e. breaks are administered by the instructor separately**

**and are in addition to the hours listed.**

**Math 181 (4 units): 57.5 hours + 2.5-hour final exam = 60 hours (a portion of these hours is testing)**

**Math 18B (2 units): 30 hours**

### **Math 18B: The outline does not include time for exams. Exams in the support course are at the**

### **discretion of the professor.**

### **Math 18B is a 15-week course. The corequisite course does not meet during finals week.**

**NOTES:**

1. It is expected that a student leaving this course will have had experience with a computer algebra system. A

minimum of two computer assignments is needed.

1. A computer algebra system student handout is available at the Math/CS computer lab.
2. At least 25% of the grade should be based on student performance without the aid of a graphing calculator or computer.
3. Practice exams can indicate types of problems but actual problems should be substantially different.

**Submitted by:** Griffith, Guth, Khoddam, Kojima, Nguyen, Tran

Math Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html>