*Approved: November 2023*   *Effective:* FALL 2024

|  |  |  |
| --- | --- | --- |
| **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **TIME LINE** |
| **Math 140 Topics:** Algebra concepts**Math 14 Topics:** Additional support for Algebra concepts | A1, A2, 1.1 – 1.4 | **Math 140:**6 hours**Math 14:**3 hours |
| **Math 140 Topics:** Limits; One-sided limits; continuity**Math 14 Topics:** Additional support for Limits; One-sided limits; continuity | 1.5 & 1.6 | **Math 140:**4 hours**Math 14:**2 hours |
| **Math 140 Topics:** Definition of derivative; Techniques of differentiation including product, quotient, and chain rules; Higher-order derivatives; Marginal analysis; Implicit differentiation; Related rates (Focus on Business applications) **Math 14 Topics:** Additional support for Definition of derivative; Techniques of differentiation including product, quotient, and chain rules; Higher-order derivatives; Marginal analysis; Implicit differentiation; Related rates (Focus on Business applications) | 2.1 – 2.6 | **Math 140:**9 hours**Math 14:**5.5 hours |
| **Math 140 Topics:** Increasing/decreasing functions; Relative extrema; Concavity and points of inflection; Optimization, Business and additional applied problemsOptional: Rational function curve sketching**Math 14 Topics:** Additional support for Increasing/decreasing functions; Relative extrema; Concavity and points of inflection; Optimization, Business and additional applied problems. Optional: Rational function curve sketching | 3.1 – 3.5 | **Math 140:**9.5 hours**Math 14:**5.5 hours |
| **Math 140 Topics:** Exponential and logarithmic functions; Differentiation of exponential and logarithmic functions and their applicationsOptional: Curve sketching**Math 14 Topics:** Additional support for Exponential and logarithmic functions; Differentiation of exponential and logarithmic functions and their applications. Optional: Curve sketching | 4.1 – 4.4 | **Math 140:**5 hours**Math 14:**3 hours |
| **Math 140 Topics:** Indefinite integration; Integration by substitution; The definite integral and the Fundamental Theorem of Calculus; Applications of the definite integral including area between curves and average value of a function; Additional business applications Optional: Differential equations; Additional applications of integration to the life and social sciences**Math 14 Topics:** Additional support for Indefinite integration; Integration by substitution; The definite integral and the Fundamental Theorem of Calculus; Applications of the definite integral including area between curves and average value of a function; Additional business applications. Optional: Differential equations; Additional applications of integration to the life and social sciences | 5.1 – 5.5Optional: 5.6 | **Math 140:**10 hours**Math 14:**5.5 hours |
| **Math 140 Topics:** Integration by parts; Improper integration (only over intervals of a constant to infinity), applicationsOptional: Integration Tables, Numerical integration**Math 14 Topics:** Additional support for Integration by parts; Improper integration (only over intervals of a constant to infinity), applications. Optional: Integration Tables, Numerical integration | 6.1 & 6.3 Optional: 6.2 | **Math 140:**5 hours**Math 14:**3 hours |
| **Math 140 Topics:** Functions of several variables and its domain; Partial derivatives; Optimizing functions of two variables and applications Optional: The method of Lagrange multipliers; Double integrals; Least-squares regression**Math 14 Topics:** Additional support for Functions of several variables and its domain; Partial derivatives; Optimizing functions of two variables and applications. Optional: The method of Lagrange multipliers; Double integrals; Least-squares regression | 7.1 – 7.3 Optional: 7.4 - 7.6 | **Math 140:**5 hours**Math 14:**3 hours |

All hours listed are face-time; i.e. breaks are administered by the instructor separately and are in addition to the hours listed.

2-unit class: hours total 30 (30 x 1 hours) 0 hours subtracted for exams

4-unit class: hours total 57.5 (30 x 1 hours 55 minutes) – 4 hours for exams + 2.5 hour final exam

* Math 140: The outline allows for 4 hours of exams excluding the 2.5-hour final exam.
* Professors are asked to emphasize that students use correct units when stating answers.
* Math 14: The outline does not include time for exams. Exams in the support course are at the discretion of the professor.
* Math 14 is a 15-week course. The corequisite course does not meet during finals week.
* Corequisite courses are Pass/No Pass grading.

###

**Math 14 Instructor Notes:**

* Worksheets for some support topics are available online at <https://mtsac.instructure.com/courses/33990/files/>
* Math 14 is not subject to department grading policy.
* Math Department Policy can be found at: <https://mtsac.instructure.com/courses/33990/files?preview=8920380>

Submitted by: Edwards, Nguyen, Summers, Takashima, Wohlgezogen