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| **MATH 150 + MATH 15 OUTLINE** |
| **TRIGONOMETRY with SUPPORT** |
| TEXT: Trigonometry, 12th Edition, Lial, Hornsby, Schneider, and Daniels |
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| *Approved: June 4, 2021* |  *Effective: Summer 2021* |
| **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **TIME LINE** |
| **Math 150 Topics:** Rectangular coordinate system, angles, trigonometric functions, fundamental identities.**Math 15 Topics:** Angle relationships and similar triangles. | 1.1, 1.3, 1.41.2 | **Math 150:**2.5 hours**Math 15:**3 hours |
| **Math 150 Topics:** Right triangle trigonometry, trigonometric functions of acute and non-acute angles, solving right triangles, applications, special triangles**Math 15 Topics:** Definition and properties of functions. Pythagorean formula and other properties of triangles. Properties of parallelograms. | 2.1 - 2.5 | **Math 150:**4.5 hours**Math 15:**3 hours |
| **Math 150 Topics:** Radian Measure, arc length, area of a sector, unit circle and circular functions, linear and angular speed.**Math 15 Topics:** Unit conversions (dimensional analysis). Area of arc length relationships in a circle. | 3.1 - 3.4 | **Math 150:**3.5 hours**Math 15:**3 hours |
| **Math 150 Topics:** Basic graphs of trigonometric functions, amplitude, reflection, period, graphing using vertical translation and phase shift, equations from graphs, combinations of functions. (**optional: Harmonic motion**)**Math 15 Topics:** Linear transformations. | 4.1 - 4.4 (**4.5 optional**) | **Math 150:**5 hours**Math 15:**3 hours |
| **Math 150 Topics:** Identities, proving identities, sum and difference formulas, double-angle formulas, half-angle formulas.**Math 15 Topics:** Simplifying algebraic expressions. Algebraic proofs. | 5.1 - 5.6 | **Math 150:**5 hours**Math 15:**4.5 hours |
| **Math 150 Topics:** Inverse circular functions, solving trigonometric equations, equations with half angles and multiple angles.**Math 15 Topics:** Properties of inverse functions and their graphs. Solving linear, quadratic, rational, and radical (including substitution method for solving equations). | 6.1 - 6.3 | **Math 150:**5 hours**Math 15:**4 hours |
| **Math 150 Topics:** Law of sines, ambiguous case, law of cosines, area of a triangle, vectors, operations with vectors, dot product, applications of vectors. **Math 15 Topics:** Properties of parallelograms. | 7.1 - 7.5 | **Math 150:**6.5 hours**Math 15:**4.5 hours |
| **Math 150 Topics:** Complex numbers, trigonometric form of complex numbers, products/quotients in trigonometric form, De Moivre's Theorem, powers and roots of complex numbers, polar equations and graphs. **(It is recommended to introduce polar equations and graphs before complex numbers.**)**Math 15 Topics:** Complex numbers in standard form. | 8.1 - 8.5 | **Math 150:**6.5 hours**Math 15:**3.75 hours |
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| All hours listed are face-time; i.e. breaks are administered by the instructor separately and are in addition to the hours listed.  Math 150: hours total 42.5 (15 x 2 hours 50 minutes) – 4 hours for exams + 2.5 hour final hour Math 15: hours total 30 (15 x 2 hours ) 0 hours subtracted for exams  Math 15: The outline does not include time for exams. Exams in the support course are at the  discretion of the professor. Math 15 is a 15-week course. The corequisite course does not meet during finals week. Math 15 Note: Math 15 is a Pass/No Pass course and is not subject to department grading policy |
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| COURSE POLICY: |  |  |
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|  1. Students should be tested on the core material (see below) without the aid of a calculator  or note card. |
|  2. Professors are allowed to supply a note card to students in order to test their application  skills. Student-generated note cards are not allowed. |
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| CORE MATERIAL: |  |  |
|  Definitions and graphs of basic trig functions: reciprocal, ratio, and Pythagorean identities; double-angle, half-angle, and sum/difference formulas; sine, cosine, and tangent values of all quadrantal angles and "key" reference angles; correct sign of each trig function in each quadrant; recognition of equivalent forms of quadrantal and "key" reference angles in degrees and radians. The laws of sines and cosines. The law of sines (ambiguous case) need not be emphasized. |
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Submitted by: Abbott, Chan, Chavez, Hall, Loyd, Kaljumagi, Kojima, Lai, McMullin, Morales, Perez, Summers

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