Preparation for Calculus - CNS

Texts: Abramson, Algebra and Trigonometry, ISBN 978-1-947172-10-4 (Units 1-3)

Abramson, Precalculus, ISBN 978-1-947172-06-7 (Unit 4)

Responsible Parties: Amanda Hager, December 2017

Prerequisite and degree relevance: the minimum required score on the mathematics placement exam. Credit for M305G may NOT be earned after a student receives credit for any calculus course (e.g. M408C, M408K, M408N, M408R, or equivalent) with a grade of at least C-. Only one of M305G and any college-level trigonometry course may be counted. M301, M305G and equivalent courses may not be counted toward the major requirement for the Bachelor of Arts, Plan I, degree with a major in mathematics or toward the Bachelor of Science in Mathematics degree.

Course description: The purpose of this course is to prepare students for calculus courses. Some students are taking this course as a review, many because they did not scored high enough on the mathematics placement exam to enter calculus directly. The course emphasis is on techniques needed in calculus, with an emphasis on rigorous algebraic practice and on recognizing and interpreting graphs. It is assumed that the students have had at least three and a half years of high school mathematics.

Timing and optional sections: The following table contains suggestions as of timing of topics and includes 36 class hours of content. Allowing for in-class exams, there remains 3-5 class hours for review or optional topics.

Topic	Section	Number of class hours
Unit 1: Algebra and function basics, 9 hours		
Exponents	1.2	0.5
Quadratic Formula	2.5	0.5
Absolute Value Eq	2.6	0.5
Absolute Value Ineq	2.7	0.5
Quadratic, Rat'l Ineq	2.7	1
Functions, Notation, D/R	3.1/3.2	0.5
Graph Types (Toolbox Functions)	3.1	0.5
Increasing/Decreasing/Pos/Neg	3.3	1
Transformations	3.5	2
Algebra and Composition of Fcns	3.4	1
Domains of Compositions, Sums, etc.	3.4	1
Unit 2: Exponential and logarithmic functions, 8 hours		
One-to-one, invertible fcns	3.7/5.7	1
Exponential functions	6.1	0.5
Graphs of exponential functions	6.2	0.5
Logarithmic functions	6.3	1
Graphs of logarithmic functions	6.4	1
Properties of logs and exp fcns	6.5	1
Solving exp/log equations	6.6	2
Modeling with exp/log	6.7	1
Unit 3: Trigonometry, 12 hours		
Angles/triangles/radians	7.1	1
Unit circle trigonometry	7.3/7.4	1
Graphing sine/cosine, amplitude/period	8.1	1
Graphing tangent	8.2	1
Transformations of trig graphs	8.1/8.2	1
Solving trig equations	9.5	2
Solving right triangles, angles of elevation	7.2	2
Identities/trig identities	9.1/9.2	2
Inverse trig functions	8.3	1
Unit 4: Limits, 7 hours (uses Precalculus text)		
PW defined functions	1.2	1
Limits via graphs, tables	12.1	2
Limits formally	12.2	2
Limits at infinity, infinite limits, cont.	12.2/12.3	2