

SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
 SYLLABUS (*Tentative*)
 MATH 105: *Liberal Arts Mathematics: Music and Mathematics*

OBJECTIVES: To introduce students to some of the many connections between mathematics and music.

INTENDED FOR: Liberal Arts Majors, particularly those with an interest in music.

PREREQUISITES: High School Algebra II or a college algebra course.

TEXT: “The Math Behind the Music,” by Leon Harkleroad; Cambridge University Press, First Edition, 2006.

TECHNOLOGY: A basic scientific calculator (not a graphing calculator) that handles exponents and logarithms. (This type of calculator usually costs between \$10 and \$20.)

Topics	Weeks
Pitch <i>Frequency; octaves and other intervals; overtones</i>	1
Intonation <i>The twelve-tone scale; Pythagorean tuning; just intonation; equal-tempering; alternate divisions of the octave</i>	3
Variations <i>Transpositions; retrogrades; inversions; musical operations and groups</i>	3
Bells and Groups <i>Change-ringing; permutations; patterns and cosets</i>	2
Counting <i>Combinations and permutations; various counting problems in music</i>	2
Additional Topics (as time permits) <i>Patterns in music; randomized music; music and geometry; sonification</i>	1
Tests, Review & Other Activities	2

EVALUATION

Tests	30-50%
Final Exam	20-40%
Homework, Class Work & Quizzes	20-40%