Math 105.451 Class Policies – Spring 2017

Instructor: Dr. Kurt Ludwick
Contact: keludwick@salisbury.edu / 410-543-6549
Office Hours: 108 Devilbiss hall; MWRF 11-12, T 2-3, and by appointment

Course Textbook: None – notes will be provided by the instructor

Class Meetings: MWRF, 2-2:50 PM, 001 Nanticoke Hall

Objective

To introduce students to some of the many connections between mathematics and music, and to explore mathematical questions that follow naturally from standard musical considerations such as intonation, melody, harmony, rhythm, and variation.

Tests:

There will be three midterms ("tests") and a final exam. Combined, the three tests will count for 60% of your semester grade going into the final exam. See below ("Evaluation") for details on how the final exam is factored into your grade.

To receive credit for a correct answer on a test, instructions must be followed, all necessary work must be shown, and your work must be neat and organized. For computational problems, you must show all of the necessary steps to arrive at your answer. You should practice this standard of writing mathematics when doing the homework (see below). For written responses, you should write neatly, and you should write in complete sentences with proper spelling, grammar and punctuation. This is not (strictly speaking) a writing class, but as a high school graduate and college student you are expected to have the ability to write reasonably well; therefore, shoddy writing is unacceptable and may affect your grade.

If you *cannot* be in class on a test date, please let me know as soon as possible – preferably well in advance of the test date – and be ready to provide written verification for your excuse if requested. If I accept your reason for missing the test, then I will attempt to arrange to have you take the test at an alternative time and location. If we are unable to make such arrangements, then your grade on the missed test will be determined by your performance on the final exam, other tests, homework assignments, and/or whatever others factors I determine to be appropriate.

Tentative test dates are listed below; any changes to these dates will be announced in class with as much advance notice as possible.
Test #1: Friday, February 24
Test #2: Wednesday, March 29
Test #3: Wednesday, April 26

The cumulative final exam will be given on Friday, May 19, at 4:15 PM (as per the Salisbury University Final Exam Schedule).

Homework, Quizzes, and Class Work

There will be frequent homework assignments, several of which will be graded.

- Recommended Homework: Not all homework will be collected. Homework that will be discussed in class, but not collected, will be referred to as "Recommended Homework". In particular, assigned readings will be included under "recommended homework." The recommended homework to intended to help you to prepare yourself for class discussions and tests. In particular, if there is anything in the recommended homework that confused you or seems very difficult, please ask about it!

- Collected Homework: Certain homework assignments will be collected and graded. The work you turn in for collected homework assignments is expected to be neat, legible and well organized. **If your collected homework is difficult to read and/or poorly organized, then it will be returned to you ungraded.** If more than one sheet of paper is being turned in, make sure your name is on each page, and fasten your pages together with a staple or clip. Collected homework will be graded using a "check system," which gives credit primarily for completing each assignment to the best of your ability. More details on how homework is graded will be provided in a separate handout.

  Collected homework will count for 20% of your semester average going into the final exam.

Late homework may or may not be accepted, at my discretion. In most such cases, your grade will be reduced as a result of handing in your homework late.

Quizzes & Class Work: I may occasionally give short quizzes on recently covered material. Quizzes may be given in class, or they may be given as take-home assignments to be turned in at the next class meeting. Quizzes may or may not be announced ahead of time. Any quizzes given during the semester will be scored similarly to tests, and quiz scores would be incorporated into your collected homework score.

Semester Project

You will be required to come up with and complete a project on a topic involving mathematics and music. The topic of your project must be improved by your instructor. The instructor will suggest some possible projects, but you may also propose your own ideas. This will be discussed in class later in the semester. This project will count for 20% of your semester average going into the final exam.

Attendance

As a student in this class, you will be expected to attend all class meetings. You are responsible for all material covered in class, including test dates and homework assignments. If you know that you must miss a particular class meeting, let me know ahead of time, and make sure to get the notes and assignments me or from a classmate.

If you miss class more than once per two weeks on average, or are late more than once per week on average, then your grade going into the final exam *may* be lowered by as much as one letter grade, at my discretion. If you are at risk of a grade penalty due to attendance and/or late arrivals, you will receive a warning before any such penalty is applied. Extenuating factors (illness, family emergencies, etc.) will be taken into consideration.

Evaluation
Your semester average up to, but not including, the final exam, will be a weighted average based on your test scores (60% total), project (20%), and homework (20%).

Once your semester average is calculated, your grade for the course is determined by your letter grade on the final exam, as indicated by the Course Grade Table (see below). On the table, your semester average (not including the final) indicates your row of the table; your letter grade on the final exam then determines your overall grade for the course.

Here is a list of possible final exam grades, with explanations as needed. All percentage ranges/estimates take into account any "curve" that may be used in scoring the exams.

- A+ – requires a 100% score (curved) on the final exam
- A – 90-99% score
- B – 80-89%
- C – 70-79%
- D – 60-69%
- "D-minus" – 40-59%. This is technically a failing grade for the exam itself, but for the purpose of calculating course grades, I distinguish between an D- (which indicates *some* degree of preparation and understanding of course content, even if not at a passing level) and an F.
- F – less than 40%. This grade is given to a student who demonstrates a complete lack of preparation. This is counted as the equivalent of not showing up for the final exam at all.

COURSE GRADE TABLE

	COURSE GRADE			
Average going into the final exam	A	B	C	D
High A (95%-100%)	C	D-	F	---
Low A (90%-94%)	B	D-	F	---
High B (85%-89%)	A	D	D-	F
Low B (80%-84%)	A+	C	D-	F
High C (75%-79%)	---	B	D	D-
Low C (70%-74%)	---	A	D	D-
High D (65%-69%)	---	A+	C	D-
Low D (60%-64%)	---	---	B	D
High F (50%-59%)	---	---	---	D
Low F (0% - 49%): F for the semester, regardless of final exam grade.				

Examples:
- Suppose you had an 83% average going into the final. This would put you in the "Low B" row of the table, which means (reading across that row of the table) that you would earn an A for the course by getting an A+ on the final. If you did not get an A+ on the final, then you would need at least a C on the final exam to get a B for the course. If you did not get a C or better on the final, then a D- on the final exam would give you a C for the course. The "F" in the next

column indicates that if you failed the final, you would still get a D for the semester.

- Suppose you had a 99% average going into the final. This puts you in the "High A" row of the table. This row indicates that you would get an A for the course as long as you earned a C or better on the final exam. However, if somehow you didn't get a C or better on the final exam, then a D- or better on the final would still give you a B for the course. An F on the final would drop you all the way down to a C for the course.

- Suppose you had a 72% average going into the final. The "Low C" row of the table indicates that an A on the final exam would give you a B for the course; otherwise, a grade of D or better on the final would give you a C for the course. If you didn't get a D or better on the final exam, then an E on the final would give you a D for the course. An F on the final exam would result in an F for the course.

See me if you have any questions about how to read the course grade table.

Grade Notification

Your grades on midterms, homework assignments and the final exam will be posted on MyClasses. To find out where you stand in the course, consult MyClasses or come to my office to discuss your grades confidentially. (I prefer not to discuss grades over email unless absolutely necessary.)

Collaboration

Students are encouraged to form study groups, and to discuss non-graded homework. However, for graded assignments, you should be working on your own. The standard that applies to any writing-intensive course applies here as well: if you turn in an assignment with *your* name on it, you are asserting that what you have turned in is entirely *your* own work.

Academic Integrity

Unless specifically instructed otherwise in class, you are to *do your own work* on all tests, collected homework assignments and quizzes. A student who is caught cheating on any graded assignment will receive a zero on that assignment, and may (at my discretion) receive an F for the course as well. If you receive an F for the course due to academic dishonesty, you will not be permitted to withdraw from the course to avoid the F on your transcript. Additionally, all occurrences of academic dishonesty will be reported to the Office of Academic Affairs (as per the Salisbury University Academic Integrity Policy). Consult the Student Code of Conduct to learn more about the potential consequences of such a report.

Living and Learning Community

As LLC students, part of your first-year experience is to share out-of-class educational experiences as a group. Your LLC Resident Assistant and I will organize one or more such activities during the spring semester. I will discuss scheduling with the class as soon as possible, to make sure as many students as possible are able to participate. Just as with regular class meetings, you are required to participate in all LLC field trips.

IMPORTANT NOTE: If you absolutely *cannot* participate in an LLC activity for reasons beyond your control, an alternative assignment or activity will be required in lieu of participation. **Your course grade will be lowered by one letter grade for each LLC activity missed without a valid excuse, or for which the alternative assignment is not satisfactorily completed.**

Tutoring

The Math and Computer Science Department offers free tutoring for its courses; however, note that this course, "Music & Mathematics," is a very specialized course, and the tutors are not (necessarily) musicians, so it's unlikely that they'll be able to help with topics that are specific to this course. However, you may visit the tutors for help with any of the *mathematical* content of this course - for example, if you need help with something like exponents, logarithms, or arithmetic involving fractions. For most questions, though, you should ask me and/or your classmates for help.

Electronic Device Policy

I neither encourage nor forbid the use of computers during class meetings (unless a test is being given, in which case they are prohibited). Any usage of a laptop, tablet, or other handheld computer must be appropriate to the classroom environment (e.g. taking notes, or finding a web page that is relevant to current class discussion). If your activity is inappropriate in any way that is distracting to me, you, or any of your classmates (e.g. Facebook, Twitter, chat, email, random surfing), then you will be told to discontinue using the computer for the rest of the class meeting.

Any other device capable of receiving calls, text messages, etc. (e.g. your call phone) is to be turned off and kept out of sight during class meetings - *particularly* during tests.

I reserve the right to lower a student's semester average based on violations of the electronic device policy and/or any other disruptive behavior during class meetings.

Copyright Notice

Syllabus (tentative)

The following schedule includes the set of topics which I intend to cover, organized by week, as well as test dates. I'll stick to this schedule as much as possible; any significant deviations will be pointed out in class. Much more detail – including supplemental notes, homework assignments, etc. - will be provided as the course progresses.

Date	Content / Activity
Week 1	Intro to Tuning – pitch; intervals; frequency ratios; pentatonic scales
Week 2	Pythagorean tuning system; just intonation
Week 3	Equal temperament; "cents" measurement of intervals
Week 4	Rational approximation via continued fractions; Review for Test #1
Feb. 24	Test #1 (tuning systems)
Week 5	Variations – Transpositions, retrogrades, inversions; Introduction to Modular Arithmetic
Week 6	Introduction to Modular Arithmetic; Music "by the numbers;" connecting modular arithmetic to variations;
Week 7	Introduction to Group Theory; Application of group theory to variations

Week 8	Subgroups; Cosets; Review for Test #2
Mar. 29	Test #2 (variations; modular arithmetic; group theory)
Week 9	Change ringing; permutations; cycle notation
Week 10	Application of group theory to change ringing ("permutation groups"); Intro to Counting Problems
Week 11	Counting continued: permutations, combinations, Pascal's Triangle
Week 12	Counting (continued) – various applications and examples; Review for Test #3
Apr. 26	Test 3 (groups; permutations; change ringing; counting)
Week 13	Sequences and Recursion; Fibonacci's Sequence
Week 14	Recursion (continued); Project Presentations
May 19	Final Exam – cumulative

If you have any questions about the class policies or about the course in general, please **send me an email** or drop by my office to ask. In particular, please address any questions or concerns about the class policies during the drop-add period (i.e. the first week of classes).

Last modified: 1/29/17
Kurt Ludwick (keludwick@salisbury.edu)