Student Name: _____

Form S1: Pre-unit Survey

Please read the following statements. For each item express your level of agreement with the statement by checking the appropriate box. Please pay careful attention to these statements and think carefully before you mark your agreement.

Start each of the following sentences with the words "In this class…	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1. I focus on technological design					
2. I use mathematics to support my work on the technology design challenge					
3. I do science experiments to support my work on the design challenge					
4. I use web sites to find relevant information					
5. I communicate my ideas through the use of verbal, written or electronic forms					
6. I collect and analyze data					
7. I learn about the cost and benefit of technology					
8. I work with other students collaboratively					
9. I have to draw my models to scale					
10. I'm encouraged to consider the pros and cons of different design alternatives					

Student Name: _____

Form S2: Pre-test
Music in the Digital World

1. In the description of the design challenge for this module, the limitation that the designed instrument "must be either wind or string" is an example of design:

    (a) criteria
    (b) constraints
    (c) optimization
    (d) all of the above

2. Sound waves are a form of:
    (a) mechanical energy
    (b) kinetic energy
    (c) acoustic energy
    (d) all of the above

3. The use of sine waves to describe the properties of sound waves is an example of the use of the:
    (a) modeling process
    (b) optimization process
    (c) design process
    (d) all of the above

4. The loudness of sound waves is related to which of the following?
    (a) the amplitude of a sine wave
    (b) the decibel scale
    (c) the variation in air pressure
    (d) all of the above

5. The harmonic components of a sound wave are:
    (a) analog signals
    (b) digital signals
    (c) multiple frequencies
    (d) all of the above

6. The same note played on different musical instruments sounds different because of differences in:
    (a) acoustics
    (b) harmonics
    (c) fundamental notes
    (d) all of the above

7. The FFT option in the sound analysis software is designed to provide a tool for:
    (a) measuring sound loudness
    (b) determining frequency spectra
    (c) analog to digital conversion
    (d) all of the above

Student Name: _____

8. The sound box of a string instrument is needed to enhance which aspect of instrument design?
   (a) increasing harmonic components
   (b) improving amplification
   (c) adding overtones
   (d) all of the above

9. The length of the air columns of wind instruments is related to which property of sine wave representations of sound waves:
   (a) frequency
   (b) wavelength
   (c) period
   (d) all of the above

10. The first step of the digitizing process is:
   (a) digital coding
   (b) determining the number of bits needed
   (c) sampling rate
   (d) all of the above

11. Which of the following is/are reason(s) for the transition from analog to digital music systems?
   (a) simpler and cheaper equipment
   (b) easier to eliminate digital noise
   (c) able to use error correction techniques
   (d) all of the above

12. Digitally stored music must be converted back to analog format because of the nature of:
   (a) human hearing
   (b) speaker design
   (c) the design of playback systems
   (d) all of the above

Student Name: _____

Form S3: Post-unit Survey

Please read the following statements. For each item express your level of agreement with the statement by checking the appropriate box. Please pay careful attention to these statements and think carefully before you mark your agreement.

Start each of the following sentences with the words "In this class…	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1. I focus on technological design					
2. I use mathematics to support my work on the technology design challenge					
3. I do science experiments to support my work on the design challenge					
4. I use web sites to find relevant information					
5. I communicate my ideas through the use of verbal, written or electronic forms					
6. I collect and analyze data					
7. I learn about the cost and benefit of technology					
8. I work with other students collaboratively					
9. I have to draw my models to scale					
10. I'm encouraged to consider the pros and cons of different design alternatives					
Your opinion on the unit:					
11. The module was interesting					
12. I learned how to better use the Internet					
13. The module was difficult for me					
14. The KSBs helped me to better understand the content					
15. I understand the technology design cycle better than when I began this course					
16. I would recommend this unit to other students in school					

Student Name: _____

Form S4: Post-test
Music in the Digital World

1. In the description of the design challenge for this module, the limitation that the designed instrument "must be either wind or string" is an example of design:
    (a) criteria
    (b) constraints
    (c) optimization
    (d) all of the above

2. Sound waves are a form of:
    (a) mechanical energy
    (b) kinetic energy
    (c) acoustic energy
    (d) all of the above

3. The use of sine waves to describe the properties of sound waves is an example of the use of the:
    (a) modeling process
    (b) optimization process
    (c) design process
    (d) all of the above

4. The loudness of sound waves is related to which of the following?
    (a) the amplitude of a sine wave
    (b) the decibel scale
    (c) the variation in air pressure
    (d) all of the above

5. The harmonic components of a sound wave are:
    (a) analog signals
    (b) digital signals
    (c) multiple frequencies
    (d) all of the above

6. The same note played on different musical instruments sounds different because of differences in:
    (a) acoustics
    (b) harmonics
    (c) fundamental notes
    (d) all of the above

7. The FFT option in the sound analysis software is designed to provide a tool for:
    (a) measuring sound loudness
    (b) determining frequency spectra
    (c) analog to digital conversion
    (d) all of the above

Student Name: _____

8. The sound box of a string instrument is needed to enhance which aspect of instrument design?
    (a) increasing harmonic components
    (b) improving amplification
    (c) adding overtones
    (d) all of the above

9. The length of the air columns of wind instruments is related to which property of sine wave representations of sound waves:
    (a) frequency
    (b) wavelength
    (c) period
    (d) all of the above

10. The first step of the digitizing process is:
    (a) digital coding
    (b) determining the number of bits needed
    (c) sampling rate
    (d) all of the above

11. Which of the following is/are reason(s) for the transition from analog to digital music systems?
    (a) simpler and cheaper equipment
    (b) easier to eliminate digital noise
    (c) able to use error correction techniques
    (d) all of the above

12. Digitally stored music must be converted back to analog format because of the nature of:
    (a) human hearing
    (b) speaker design
    (c) the design of playback systems
    (d) all of the above

Student Name: _____

S5: Tell Us What You Think

Name:_____
Class: _____
Gender: _____
Current science class: _____
Current math class: _____
Current technology class: _____
Main language spoken at home:_____

What did you like best about this unit?

What was the most difficult activity in this unit?

What would you recommend be done differently next time?