



PISCATAWAY TOWNSHIP SCHOOLS

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Creating Music with Technology

Content Area: Music
Grade Span: 9-12
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COURSE OVERVIEW

Description

Creating Music with Technology is a five (5) credit full year course designed for students who want to learn more about music technology. This course is designed for the student who wants to learn to use computers and MIDI keyboards for basic musical composition.

The course begins with an understanding of musical elements, and then students are introduced to advanced composing and recording techniques. Recording techniques include arranging for live performances, recording and editing live and digital performances, and creating music to accompany video segments.

Software that will be used includes: Sibelius, Sony Acid Music Studio, and Band in a Box.

Goals

Upon the completion of this course, students should be able to:

- Understand, read, and compose basic music notation (pitch, rhythm, harmonic structure).
- Use proper musical symbols in composition and arranging.
- Use and demonstrate knowledge of appropriate music and technology vocabulary.
- Demonstrate familiarity, knowledge, and basic skills on a piano keyboard.
- Perform notation on the keyboard using treble and bass clefs.
- Perform a simple composition with both hands at the same time on the keyboard.
- Demonstrate an understanding and familiarity with the MIDI computer workstation.
- Compose music in a variety of musical styles.
- Recognize and demonstrate a knowledge of form and structure in composition.
- Evaluate and analyze compositions, performances, and arrangements.
- Provide self & peer assessment in relation to compositions, arrangements, and recorded performances.
- Demonstrate awareness of and respect for copyright obligations, as well as general practices of the music industry.

Ultimately, students will combine all of their knowledge, skills, and experiences, to create a recorded, original composition – using music technology software and participating in real-world musical creation.

Scope and Sequence

Unit	Topic	Length
Unit 1	Music Theory	MP1
Unit 2	Keyboard Technique	MP2
Unit 3	Arranging and Composition with Computer Software	MP3
Unit 4	Music Industry	MP4

Resources

Suggested Resources:

What's MIDI? (2nd ed.), Jon Eiche, author

What's a Synthesizer? (2nd ed.), Jon Eiche, author
Fundamentals of Music Technology, Dennis Mauricio & Steve Adams, authors
Explaining Careers in Music, MENC
What's a Sequencer?, Greg Starr, author
Strategies for Teaching Technology, MENC
Technology Strategies for Music Educators, TI:ME
MIDI Basics, Lee Whitmore, author

Software:

Sibelius 5.1 (Notation Program)
Sony Acid (Looping Program)
Band in a Box (Music Composition Program)
Alfred Music Theory (Music Theory Program)
ECS (Music Tutorial Program)

ALL UNITS: INSTRUCTIONAL FOCUS

Summary and Rationale

Creating Music with Technology is a five (5) credit full year course designed for students who want to learn more about music technology. This course is designed for the student who wants to learn to use computers and MIDI keyboards for basic musical composition.

Unit 1- Music Theory

The purpose of Unit 1 is to create a musical foundation for the proceeding units of this course can build upon. For students to achieve the end goal- composing and recording their own music, they first need to learn the basics of music theory. That will allow students to write their own music, learn different composition software, and eventually combine the two to allow for fast, high quality feedback leading to faster and more musical decision making.

Unit 2- Keyboard Technique

The purpose of Unit 2 is to introduce piano techniques, reinforce music theory content, progress towards composition and gain an understanding of performance practice. Students spent the first marking period learning the foundations of music theory- notation, rhythm, chord structures, key signatures, etc. The piano is a visual representation of learned music theory content- the medium in which they apply their knowledge in order to take the next step towards composition and eventually performance.

Unit 3- Arranging and Composition using Computer Software

The purpose of Unit 3 is for students to apply their knowledge from Units 1 and 2 in order to compose and arrange their own music. Students will first learn to navigate various composition software and programs, including learning music technology vocabulary, functions, and applications. Composing through a software will give students the opportunity to think more creatively in their musical decision making, while also receiving immediate, high quality feedback. This unit also allows students to collaborate with one another to see their musical ideas come to fruition.

Unit 4: Music Industry

The purpose of Unit 4 is to learn about how their knowledge and learned skills can be used towards building a career. There are many possible careers paths that music lead to- business, performance, education, composition and arranging, production, and this unit will explore through all those possibilities. Students will have the opportunity to compose, perform, record, produce, and collaborate with one another to learn and apply 21st century musical skills.

State Standards

NJ Visual and Performing Arts Standards Music Composition and Theory

Anchor Standard 1: Generating and Conceptualizing Ideas

1.3B.12prof.Cr1a	Describe how sounds and short musical ideas can be used to represent personal experiences, moods, visual images, and/or storylines.
1.3B.12acc.Cr1a	Describe and demonstrate how sounds and musical ideas can be used to represent

	events, memories, visual images, concepts, texts, or storylines.
1.3B.12adv.Cr1a	Describe and demonstrate multiple ways in which sounds and musical ideas can be used to represent extended experiences or abstract ideas.
Anchor Standard 2: Organizing and Developing Ideas	
1.3B.12prof.Cr2a	Assemble and organize sounds or short musical ideas to create initial expressions of selected experiences, moods, images or storylines.
1.3B.12prof.Cr2b	Identify and describe the development of sounds or short musical ideas in drafts of music within simple forms (e.g., one part, cyclical, binary).
1.3B.12acc.Cr2a	Assemble and organize multiple sounds or musical ideas to create initial expressive statements of selected events, memories, images, concepts, texts, or storylines
1.3B.12acc.Cr2b	Describe and explain the development of sounds and musical ideas in drafts of music within a variety of simple or moderately complex forms (e.g., binary, rondo, ternary).
1.3B.12adv.Cr2a	Assemble and organize multiple sounds or extended musical ideas to create initial expressive statements of selected extended experiences or abstract ideas.
1.3B.12adv.Cr2b	Analyze and demonstrate the development of sounds and extended musical ideas in drafts of music within a variety of moderately complex or complex forms.
Anchor Standard 3: Refining and Completing Products	
1.3B.12prof.Cr3a:	Identify, describe and apply teacher-provided criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12prof.Cr3b	Share music through the use of notation, performance or technology, and demonstrate how the elements of music have been employed to realize expressive intent.
1.3B.12acc.Cr3a	Identify, describe and apply selected teacher-provided or personally developed criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12acc.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and describe how the elements of music and compositional techniques have been employed to realize expressive intent.
1.3B.12adv.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and explain how the elements of music, compositional techniques, and processes have been employed to realize expressive intent.
1.3B.12adv.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and explain how the elements of music, compositional techniques, and processes have been employed to realize expressive intent.
Anchor Standard 4: Selecting, Analyzing, and Interpreting Work	
1.3B.12prof.Pr4a	Identify and select specific excerpts, passages, or sections in musical works that express a personal experience, mood, visual image, or storyline in simple forms (e.g., one-part, cyclical, binary).
1.3B.12prof.Pr4b	Analyze how the elements of music (including form) of selected works relate to style

	and mood and explain the implications for rehearsal or performance.
1.3B.12prof.Pr4c:	Develop interpretations of works based on an understanding of the use of elements of music, style and mood, explaining how the interpretive choices reflect the creator's intent.
1.3B.12acc.Pr4a	Identify and select specific passages, sections or movements in musical works that express personal experiences and interests, moods, visual images, concepts, texts, or storylines in simple forms (e.g., binary, ternary, rondo) or moderately complex forms.
1.3B.12acc.Pr4b	Analyze how the elements of music (including form) of selected works relate to the style, function and context, and explain the implications for rehearsal and performance.
1.3B.12acc.Pr4c	Develop interpretations of works based on an understanding of the use of elements of music, style, mood, function, and context, explaining and supporting how the interpretive choices reflect the creator's intent.
1.3B.12adv.Pr4a	Identify and select specific sections, movements, or entire works that express personal experiences and interests, moods, visual images, concepts, texts, or storylines in moderately complex or complex forms.
1.3B.12adv.Pr4b	Analyze how the elements of music (including form), and compositional techniques of selected works relate to the style, function, and context, and explain and support the analysis and its implications for rehearsal and performance.
Anchor Standard 5: Developing and refining techniques and models or steps needed to create products.	
1.3B.12prof.Pr5a	Create rehearsal plans for works, identifying repetition and variation within the form
1.3B.12prof.Pr5b	Using established criteria and feedback, identify the way(s) in which performances convey the elements of music, style and mood.
1.3B.12prof.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of multiple works.
1.3B.12acc.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, and the style and historical or cultural context of the work.
1.3B.12acc.Pr5b	Using established criteria and feedback, identify the ways in which performances convey the formal design, style and historical/cultural context of the works.
1.3B.12acc.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of varied works.
1.3B.12adv.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, compositional techniques, and the style and historical or cultural context of the work.
1.3B.12adv.Pr5b	Using established criteria and feedback, identify the ways in which performances use compositional techniques and convey the formal design, style and historical/cultural context of the works.
1.3B.12adv.Pr5c	Identify, compare and implement strategies for improving the technical and expressive aspects of multiple contrasting works.

Anchor Standard 6: Conveying Meaning Through Art	
1.3B.12prof.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music are used to convey intent.
1.3B.12acc.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music and compositional techniques are used to convey intent.
1.3B.12adv.Pr6a	Share live or recorded performances of works (both personal and others') and explain and/or demonstrate understanding of how the expressive intent of the music is conveyed.
Anchor Standard 7: Perceiving and Analyzing Products.	
1.3B.12prof.Re7a	Apply teacher-provided criteria to select music that expresses a personal experience, mood, visual image, or storyline in simp
1.3B.12prof.Re7b	Analyze aurally and/or by reading the elements of music (including form) of musical works, relating them to style, mood and context, and describe how the analysis provides models for personal growth as a composer, performer and/or listener.
1.3B.12acc.Re7a	Apply teacher-provided or personally developed criteria to select music that expresses personal experiences and interests, moods, visual images, concepts, texts, or storylines in simple or moderately complex forms, and describe and defend the choices as models for composition.
1.3B.12adv.Re7a	Apply researched or personally developed criteria to select music that expresses personal experiences and interests, visual images, concepts, texts, or storylines in moderately complex or complex forms, and describe and justify the choice as models for composition.
Anchor Standard 9: Applying criteria to evaluate products.	
1.3B.12prof.Re9a	Describe the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating an understanding of the fundamentals of music theory.
1.3B.12prof.Re9b	Describe the way(s) in which critiquing others' work and receiving feedback from others can be applied in the personal creative process.
1.3B.12acc.Re9a	Explain the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating understanding of music theory as well as compositional techniques and procedures.
1.3B.12acc.Re9b	Describe ways in which critiquing others' work and receiving feedback from others have been specifically applied in the personal creative process.
1.3B.12adv.Re9a	Evaluate the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating an understanding of theoretical concepts and complex compositional techniques and procedures.
NJ Visual and Performing Arts Standards Music Technology	
Anchor Standard 1: Generating and Conceptualizing Ideas	

1.3E.12prof.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools.
1.3E.12acc.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools and resources.
1.3E.12adv.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions and improvisations that incorporate digital tools and resources.
Anchor Standard 2: Organizing and Developing Ideas	
1.3E.12prof.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.
1.3E.12acc.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity and variety using digital and/or analog tools.
1.3E.12adv.Cr2a	Select, develop and organize multiple melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity, variety, complexity, and coherence using digital and/or analog tools and resources.
Anchor Standard 3: Refining and Completing Products	
1.3E.12prof.Cr3a	Drawing on feedback from teachers and peers, develop and implement strategies to improve and refine the technical and expressive aspects of draft compositions and improvisations
1.3E.12prof.Cr3b	Share compositions or improvisations that demonstrate musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.
1.3E.12acc.Cr3a	Develop and implement varied strategies to improve and refine the technical and expressive aspects of draft compositions and improvisations.
1.3E.12acc.Cr3b	Share compositions and improvisations that demonstrate musical and technological craftsmanship as well as the use of digital and/or analog tools and resources in developing and organizing musical ideas.
1.3E.12adv.Cr3a	Develop and implement varied strategies and apply appropriate criteria to improve and refine the technical and expressive aspects of draft compositions and improvisations.
Anchor Standard 6: Conveying Meaning Through Art	
1.3E.12prof.Pr6a	Using digital tools, demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.
1.3E.12prof.Pr6b	Demonstrate an understanding of the context of music through prepared and improvised performances.
1.3E.12acc.Pr6a	Using digital tools and resources, demonstrate technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, and genres
1.3E.12adv.Pr6a	Integrating digital and analog tools and resources, demonstrate an understanding and attention to technical accuracy and expressive qualities of the music in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, genres, and historical periods
Anchor Standard 7: Perceiving and Analyzing Products	
1.3E.12prof.Re7a	Cite reasons for choosing music based on the use of the elements of music, digital and electronic aspects, and connections to interest or purpose.

1.3E.12prof.Re7b	Explain how knowledge of the structure (e.g., repetition, similarities, contrasts), technological aspects, and purpose of the music informs the response.
1.3E.12acc.Re7b	Explain how an analysis of the structure, context and technological aspects of the music informs the response.
Anchor Standard 9: Applying criteria to evaluate products.	
1.3E.12prof.Re9a	Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.
1.3E.12acc.Re9a	Apply criteria to evaluate music based on analysis, interpretation, artistic intent, digital, electronic, and analog features, and musical qualities
1.3E.12adv.Re9a	Develop and justify the evaluation of a variety of music based on established and personally developed criteria, digital, electronic and analog features, and understanding of purpose and context.
Anchor Standard 10: Synthesizing and relating knowledge and personal experiences to create products.	
1.3B.12prof.Cn10a	Demonstrate how interests, knowledge, and skills relate to personal choices and intent when creating, performing, and responding to music.
1.3B.12acc.Cn10a	Demonstrate how interests, knowledge and skills relate to personal choices and intent when creating, performing and responding to music.
1.3B.12adv.Cn10a	Demonstrate how interests, knowledge and skills related to personal choices and intent when creating, performing and responding to music.
Anchor Standard 11: Relating artistic ideas and works within societal, cultural, and historical contexts to deepen understanding.	
1.3B.12prof.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts and daily life.
1.3B.12acc.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.
1.3B.12adv.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.
NJ Visual and Performing Arts Standards Music Harmonizing Instruments	
Anchor Standard 2: Organizing and Developing Ideas	
1.3D.12nov.Cr2a	Use standard notation or audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of simple melodies as well as chordal accompaniments for given melodies.
1.3D.12int.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of melodies over specified chord progressions or AB /ABA forms as well as two-to-three-chord accompaniments for given melodies.
1.3D.12prof.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of improvisations, compositions (e.g., theme and variation, 12-bar blues), as well as three-or-more- chord accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).

1.3D.12acc.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of compositions (e.g., rounded binary, rondo), improvisations, accompaniment patterns in a variety of styles, as well as harmonization for given melodies.
Anchor Standard 3: Refining and Completing Products	
1.3D.12nov.Cr3a	Apply teacher or student-provided criteria to critique, improve and refine drafts of simple melodies as well as chordal accompaniments for given melodies.
1.3D.12nov.Cr3b	Share final versions of simple melodies and chordal accompaniments for given melodies, demonstrating an understanding of how to develop and organize personal musical ideas.
1.3D.12int.Cr3a	Apply teacher or student-provided criteria to critique, improve and refine drafts of melodies over specified chord progressions or AB/ABA forms as well as two-to-three-chord accompaniments for given melodies.
1.3D.12int.Cr3b	Share final versions of melodies over specified chord progressions or AB/ABA forms as well as two-to-three-chord accompaniments for given melodies, demonstrating an understanding of how to develop and organize personal musical ideas.
1.3D.12prof.Cr3a	Develop and apply criteria to critique, improve and refine drafts of improvisations, compositions (e.g., theme and variation, 12-bar blues), as well as three-or-more-chord accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, fingerpicking patterns).
1.3D.12acc.Cr3a	Develop and apply criteria to critique, improve and refine drafts of compositions (e.g., rounded binary, rondo), improvisations, accompaniment patterns in a variety of styles, and harmonization for given melodies.
Anchor Standard 4: Selecting, Analyzing, and Interpreting Work	
1.3D.12nov.Pr4a	Describe and demonstrate how a varied collection of music that includes melodies, repertoire pieces, and chordal accompaniments is selected, based on personal interest, music reading skills, technical skill, and the performance context.
1.3D.12nov.Pr4c	Demonstrate and describe an understanding of the context and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces and chordal accompaniments.
1.3D.12int.Pr4a	Describe and demonstrate how a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments is selected, based on personal interest, music reading skills, identified technical challenges that need to be addressed, and the performance context
1.3D.12int.Pr4c	Demonstrate and describe an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces and chordal accompaniments.
1.3D.12prof.Pr4a	Explain the criteria used when selecting a varied collection of music for individual or small group performances that include melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).
1.3D.12prof.Pr4c	Demonstrate and describe an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).

1.3D.12acc.Pr4a	Develop and apply criteria for selecting a varied collection of music for individual and small group performances that include melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles.
1.3D.12acc.Pr4c	Demonstrate and explain an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles.
Anchor Standard 6: Conveying Meaning Through Art	
1.3D.12nov.Pr6a	Perform with expression and technical accuracy a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments, while demonstrating an understanding of the audience and the context.
1.3D.12int.Pr6a	Perform with expression and technical accuracy a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12prof.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns), while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12acc.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12adv.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music for performance programs that includes melodies, repertoire pieces, stylistically appropriate accompaniments, and improvisations in a variety of contrasting styles, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).

UNIT 1: Music Theory Review

Summary and Rationale

The purpose of Unit 1 is to create a musical foundation for the proceeding units of this course can build upon. For students to achieve the end goal- composing and recording their own music, they first need to learn the basics of music theory. That will allow students to write their own music, learn different composition software, and eventually combine the two to allow for fast, high quality feedback leading to faster and more musical decision making.

Learning Goals:

- Read and understand basic music notation- including pitch, rhythm, and harmonic structure
- Understand and implement proper musical symbols in assigned composition and arranging exercises
- Use and demonstrate knowledge of appropriate music and notation vocabulary
- Apply knowledge of notation and vocabulary into beginning compositions

Suggested Learning Activities:

Reading the Staff

The goal is for students to be able to show fluency in identifying pitches on the treble and bass clef. This is practiced in class with the use of, worksheets, Alfred music theory software, Essentials of Music, and other software either on the computer or student iPad.

Applying Note Values

Students are tasked with learning about time signatures and their relation to all rhythmic values. They will work together to identify what a time signature is and how it affects the amount of structured time they have per measure. This will allow students to make deeper musical choices when it comes to creating their own compositions. Sibelius will be introduced as a way to practice writing music notation.

Composition

At this point, students have a strong foundation of pitch identifying and rhythmic values. They will begin to use that knowledge to compose basic melodies on Sibelius using both treble and bass clefs, as well as different time signatures. Using Sibelius will allow students to receive immediate feedback as their composing so they can make as many changes as they want to ensure that they are confident with what their composition sounds like.

Symbols and Markings

Students work to practice identifying various musical symbols such as dynamic markings, tempo, and articulations. By doing this, students learn that music is more than notes and rhythms, and that there are deeper musical choices that can be made to create more contrast and more musical interest. By incorporating the symbols and markings into their compositions, this will help the performer better understand the meaning of the composition. Finally, students will present their composition to a performer.

Assessment:

Teacher-based rubrics as well as student-created rubrics will be used for performance assessments. Peer and self-reflection will be used as a feedback mechanism throughout the creative process.

Recommended Pacing

State Standards

**NJ Visual and Performing Arts Standards
Music Composition and Theory**

Anchor Standard 2: Organizing and Developing Ideas

1.3B.12prof.Cr2a	Assemble and organize sounds or short musical ideas to create initial expressions of selected experiences, moods, images or storylines.
1.3B.12prof.Cr2b	Identify and describe the development of sounds or short musical ideas in drafts of music within simple forms (e.g., one part, cyclical, binary).
1.3B.12acc.Cr2a	Assemble and organize multiple sounds or musical ideas to create initial expressive statements of selected events, memories, images, concepts, texts, or storylines
1.3B.12acc.Cr2b	Describe and explain the development of sounds and musical ideas in drafts of music within a variety of simple or moderately complex forms (e.g., binary, rondo, ternary).
1.3B.12adv.Cr2a	Assemble and organize multiple sounds or extended musical ideas to create initial expressive statements of selected extended experiences or abstract ideas.

Anchor Standard 3: Refining and Completing Products

1.3B.12prof.Cr3a:	Identify, describe and apply teacher-provided criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12prof.Cr3b	Share music through the use of notation, performance or technology, and demonstrate how the elements of music have been employed to realize expressive intent.
1.3B.12acc.Cr3a	Identify, describe and apply selected teacher-provided or personally developed criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12acc.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and describe how the elements of music and compositional techniques have been employed to realize expressive intent.
1.3B.12adv.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and explain how the elements of music, compositional techniques, and processes have been employed to realize expressive intent.

Anchor Standard 9: Applying criteria to evaluate products.

1.3B.12prof.Re9a	Describe the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating an understanding of the fundamentals of music theory.
1.3B.12prof.Re9b	Describe the way(s) in which critiquing others' work and receiving feedback from others can be applied in the personal creative process.
1.3B.12acc.Re9a	Explain the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating understanding of music theory as well as

	compositional techniques and procedures.
1.3B.12acc.Re9b	Describe ways in which critiquing others' work and receiving feedback from others have been specifically applied in the personal creative process.
1.3B.12adv.Re9a	Evaluate the effectiveness of the technical and expressive aspects of selected music and performances, demonstrating an understanding of theoretical concepts and complex compositional techniques and procedures.

**NJ Visual and Performing Arts Standards
Music Technology**

Anchor Standard 1: Generating and Conceptualizing Ideas

1.3E.12prof.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools.
1.3E.12acc.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools and resources.
1.3E.12adv.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions and improvisations that incorporate digital tools and resources.

Anchor Standard 2: Organizing and Developing Ideas

1.3E.12prof.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.
1.3E.12acc.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity and variety using digital and/or analog tools.
1.3E.12adv.Cr2a	Select, develop and organize multiple melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity, variety, complexity, and coherence using digital and/or analog tools and resources.

Anchor Standard 7: Perceiving and Analyzing Products

1.3E.12prof.Re7a	Cite reasons for choosing music based on the use of the elements of music, digital and electronic aspects, and connections to interest or purpose.
1.3E.12prof.Re7b	Explain how knowledge of the structure (e.g., repetition, similarities, contrasts), technological aspects, and purpose of the music informs the response.
1.3E.12acc.Re7b	Explain how an analysis of the structure, context and technological aspects of the music informs the response.

Instructional Focus

Unit Enduring Understandings

- Students will understand that
- Music notation is essential to any music related field, or any music genre.
 - The higher their understanding of music theory, the higher level product they can produce.
 - Music theory has a direct relationship with music recording and editing.

Unit Essential Questions

- What is a time signature?
- How does it relate to rhythmic values?
- What are the most common rhythmic symbols used in music notation?

- What are the treble and bass clef?
- What is the purpose of a clef?
- How can you determine what a specific note is on either staff?
- How is music organized as far as pitch, rhythm, tempo, speed, etc.?
- How do tempo, dynamics, articulations, etc. affect/emphasize a composition?
- How are tempo and rhythm related to recording and editing?

Objectives

Students will know:

- The essential elements of music notation in order to begin composing.
- Essential music technology vocabulary to navigate various software and applications.
- Proper use of music theory specific terminology such as: half note, key signature, meter, allegro, rhythm, forte, etc.
- How time signatures apply to different rhythmic values in a piece or composition.
- How to identify pitches as defined by their placement on both the treble and bass clef.

Students will be able to:

- Apply learned technology vocabulary to navigate “Sibelius” in order to create their musical compositions.
- Use knowledge of pitch identifying and rhythmic values to begin composing basic melodic lines on “Sibelius.”
- Use proper musical symbols such as crescendos, accents, etc., as they pertain to “Sibelius” music notation software to create deeper interest in their compositions.
- Define those terms necessary for understanding how to use music software and electronic equipment.
- Make any necessary changes to their compositions as they receive feedback from “Sibelius” to ensure their work is musically gratifying.
- Work collaboratively to define vocabulary, navigate software and equipment, as well as give constructive suggestions on each other’s compositions.

Resources

Suggested Resources:

Fundamentals of Music Technology, Dennis Mauricio & Steve Adams, authors
 Strategies for Teaching Technology, MENC
 Technology Strategies for Music Educators, TI:ME

Software:

Sibelius 5.1 (Notation Program)
 Alfred Music Theory (Music Theory Program)
 ECS (Music Tutorial Program)

UNIT 2: Basic Keyboard Technique

Summary and Rationale

The purpose of Unit 2 is to introduce piano techniques, reinforce music theory content, progress towards composition and gain an understanding of performance practice. Students spent the first marking period learning the foundations of music theory- notation, rhythm, chord structures, key signatures, etc. The piano is a visual representation of learned music theory content- the medium in which they apply their knowledge in order to take the next step towards composition and eventually performance.

Learning Goals:

- Demonstrate familiarity, knowledge, and basic skills on a piano keyboard.
- Perform assigned exercises and compositions on the keyboard using treble and bass clefs.
- Compose and perform a short melodic work with both hands at the same time on the keyboard
- Demonstrate an understanding and familiarity with the MIDI computer workstation.

Suggested Learning Activities:

Finger Numbers and Key Names

Students will work to identify the names of the keys on the piano and it's correspondence to finger numbers, using visual aids and keyboard reference materials. Working together, students will practice using an online keyboard software to check for accuracy. This allows for collaboration to check each other's understanding and progress.

Clef Reading (Grand Staff)

Students will practice playing musical examples (aided by sheet music and keyboard programs) to gain fluency and proficiency utilizing both hands. The ultimate goal of this practice is to play music on the grand staff, utilizing a two-handed playing technique. These individual pieces will culminate in classroom performances or a short "recital."

Playing Intervals and Chords

Students will build on their previous knowledge and practice by learning and playing chords. Students will begin by playing two notes separately and then together, gradually adding a third note to make a chord. They will then focus on reading chords on the grand staff, using their knowledge from Unit 1. Their "two hand" technique will focus on playing chords in their left hand while playing a melody in their right hand.

Reflection/Exposure to Performance

This section starts with listening to recordings and watching videos of professional keyboard musicians. Have the students assess the musical impact of the performance and discuss how the performance might impact how the student will approach the piece of music they are working on at the time.

Composition

Students will then combine their knowledge from Unit 1 and what they have practiced in this unit to prepare a piece of music that is written on the grand staff. This will involve a performance with both hands simultaneously. It will also allow for students to practice "Performance practice" with an audience of peers. Constructive feedback from each other will allow students to gain a better understanding and deeper appreciation of the "performing" aspect of the arts.

Assessment:

Teacher-based rubrics as well as student-created rubrics will be used for performance assessments. Peer and self-reflection will be used as a feedback mechanism throughout the creative process. Written assessments of knowledge will also be given.

Recommended Pacing

Marking Period 2

State Standards

NJ Visual and Performing Arts Standards Music Composition and Theory

Anchor Standard 3: Refining and Completing Products

1.3B.12prof.Cr3a:	Identify, describe and apply teacher-provided criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12prof.Cr3b	Share music through the use of notation, performance or technology, and demonstrate how the elements of music have been employed to realize expressive intent.
1.3B.12acc.Cr3a	Identify, describe and apply selected teacher-provided or personally developed criteria to assess and refine the technical and expressive aspects of evolving drafts leading to final versions.
1.3B.12acc.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and describe how the elements of music and compositional techniques have been employed to realize expressive intent.
1.3B.12adv.Cr3b	Share music through the use of notation, solo or group performance, or technology, and demonstrate and explain how the elements of music, compositional techniques, and processes have been employed to realize expressive intent.

Anchor Standard 4: Selecting, Analyzing, and Interpreting Work

1.3B.12prof.Pr4a	Identify and select specific excerpts, passages, or sections in musical works that express a personal experience, mood, visual image, or storyline in simple forms (e.g., one-part, cyclical, binary).
1.3B.12prof.Pr4b	Analyze how the elements of music (including form) of selected works relate to style and mood and explain the implications for rehearsal or performance.
1.3B.12prof.Pr4c:	Develop interpretations of works based on an understanding of the use of elements of music, style and mood, explaining how the interpretive choices reflect the creator's intent.
1.3B.12acc.Pr4a	Identify and select specific passages, sections or movements in musical works that express personal experiences and interests, moods, visual images, concepts, texts, or storylines in simple forms (e.g., binary, ternary, rondo) or moderately complex forms.
1.3B.12acc.Pr4b	Analyze how the elements of music (including form) of selected works relate to the

	style, function and context, and explain the implications for rehearsal and performance.
1.3B.12acc.Pr4c	Develop interpretations of works based on an understanding of the use of elements of music, style, mood, function, and context, explaining and supporting how the interpretive choices reflect the creator’s intent.
1.3B.12adv.Pr4a	Identify and select specific sections, movements, or entire works that express personal experiences and interests, moods, visual images, concepts, texts, or storylines in moderately complex or complex forms.
1.3B.12adv.Pr4b	Analyze how the elements of music (including form), and compositional techniques of selected works relate to the style, function, and context, and explain and support the analysis and its implications for rehearsal and performance.
NJ Visual and Performing Arts Standards Music Technology	
Anchor Standard 2: Organizing and Developing Ideas	
1.3E.12prof.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.
1.3E.12acc.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity and variety using digital and/or analog tools.
1.3E.12adv.Cr2a	Select, develop and organize multiple melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity, variety, complexity, and coherence using digital and/or analog tools and resources.
Anchor Standard 3: Refining and Completing Products	
1.3E.12prof.Cr3a	Drawing on feedback from teachers and peers, develop and implement strategies to improve and refine the technical and expressive aspects of draft compositions and improvisations
1.3E.12prof.Cr3b	Share compositions or improvisations that demonstrate musical and technological craftsmanship as well as the use of digital tools and resources in developing and organizing musical ideas.
1.3E.12acc.Cr3a	Develop and implement varied strategies to improve and refine the technical and expressive aspects of draft compositions and improvisations.
1.3E.12acc.Cr3b	Share compositions and improvisations that demonstrate musical and technological craftsmanship as well as the use of digital and/or analog tools and resources in developing and organizing musical ideas.
1.3E.12adv.Cr3a	Develop and implement varied strategies and apply appropriate criteria to improve and refine the technical and expressive aspects of draft compositions and improvisations.
NJ Visual and Performing Arts Standards Music Harmonizing Instruments	
Anchor Standard 2: Organizing and Developing Ideas	
1.3D.12nov.Cr2a	Use standard notation or audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of simple melodies as well as chordal accompaniments for given melodies.

1.3D.12int.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of melodies over specified chord progressions or AB /ABA forms as well as two-to-three-chord accompaniments for given melodies.
1.3D.12prof.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of improvisations, compositions (e.g., theme and variation, 12-bar blues), as well as three-or-more- chord accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).
1.3D.12acc.Cr2a	Use standard notation and audio/video recording to document melodic, rhythmic and harmonic ideas for drafts of compositions (e.g., rounded binary, rondo), improvisations, accompaniment patterns in a variety of styles, as well as harmonization for given melodies.
Anchor Standard 3: Refining and Completing Products	
1.3D.12nov.Cr3a	Apply teacher or student-provided criteria to critique, improve and refine drafts of simple melodies as well as chordal accompaniments for given melodies.
1.3D.12nov.Cr3b	Share final versions of simple melodies and chordal accompaniments for given melodies, demonstrating an understanding of how to develop and organize personal musical ideas.
1.3D.12int.Cr3a	Apply teacher or student-provided criteria to critique, improve and refine drafts of melodies over specified chord progressions or AB/ABA forms as well as two-to-three-chord accompaniments for given melodies.
1.3D.12int.Cr3b	Share final versions of melodies over specified chord progressions or AB/ABA forms as well as two-to-three-chord accompaniments for given melodies, demonstrating an understanding of how to develop and organize personal musical ideas.
1.3D.12prof.Cr3a	Develop and apply criteria to critique, improve and refine drafts of improvisations, compositions (e.g., theme and variation, 12-bar blues), as well as three-or-morechord accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, fingerpicking patterns).
1.3D.12acc.Cr3a	Develop and apply criteria to critique, improve and refine drafts of compositions (e.g., rounded binary, rondo), improvisations, accompaniment patterns in a variety of styles, and harmonization for given melodies.
Anchor Standard 4: Selecting, Analyzing, and Interpreting Work	
1.3D.12nov.Pr4a	Describe and demonstrate how a varied collection of music that includes melodies, repertoire pieces, and chordal accompaniments is selected, based on personal interest, music reading skills, technical skill, and the performance context.
1.3D.12nov.Pr4c	Demonstrate and describe an understanding of the context and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces and chordal accompaniments.
1.3D.12int.Pr4a	Describe and demonstrate how a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments is selected, based on personal interest, music reading skills, identified technical challenges that need to be addressed, and the performance context
1.3D.12int.Pr4c	Demonstrate and describe an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces and chordal accompaniments.
1.3D.12prof.Pr4a	Explain the criteria used when selecting a varied collection of music for individual or small group performances that include melodies, repertoire pieces, improvisations, and chordal

	accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).
1.3D.12prof.Pr4c	Demonstrate and describe an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns).
1.3D.12acc.Pr4a	Develop and apply criteria for selecting a varied collection of music for individual and small group performances that include melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles.
1.3D.12acc.Pr4c	Demonstrate and explain an understanding of the context (e.g., social, cultural, historical) and expressive intent in a varied collection of music selected for performance that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles.

Anchor Standard 6: Conveying Meaning Through Art

1.3D.12nov.Pr6a	Perform with expression and technical accuracy a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments, while demonstrating an understanding of the audience and the context.
1.3D.12int.Pr6a	Perform with expression and technical accuracy a varied collection of music that includes melodies, repertoire pieces and chordal accompaniments, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12prof.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of patterns (e.g., arpeggio, country and gallop strumming, finger picking patterns), while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12acc.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music that includes melodies, repertoire pieces, improvisations, and chordal accompaniments in a variety of styles, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).
1.3D.12adv.Pr6a	Perform with expression and technical accuracy, individually and in small groups, a varied collection of music for performance programs that includes melodies, repertoire pieces, stylistically appropriate accompaniments, and improvisations in a variety of contrasting styles, while demonstrating sensitivity to the audience and an understanding of the context (e.g., social, cultural, historical).

Instructional Focus

Unit Enduring Understandings

Students will understand that:

- Basic keyboard technique is essential to successful understanding and advancement in the music technology field.
- A clear understanding of how the “grand staff” functions, is necessary to be able to play a keyboard with two hands.
- Proper hand position is essential to good keyboard technique.
- Knowledge of how a keyboard is set up will increase the student’s ability to play the instrument with some facility.

- Knowledge of the keyboard also allows for a more ergonomic and achievable composition.
- The art of Performing needs to be practiced.

Unit Essential Questions

- What is the proper numbering of the fingers – to play a keyboard?
- What are the letter names of the keys on a keyboard?
- How do the keys on a keyboard relate to the notes on a grand staff?
- Which hand typically corresponds to which clef?
- What is considered a good hand position for playing a keyboard?
- What are the proper fingerings for the different keys on a keyboard?
- What makes an achievable composition?
- What makes a quality performance?
- How does one give constructive feedback?
- What makes for quality collaboration?

Objectives

Students will know:

- The fingerings needed to play a keyboard, based on a numbering system used in keyboard composition.
- Every key on a keyboard is identified by a specific pitch name.
- How to identify the keys of a keyboard as they relate to the notes on a grand-staff.
- Which hand belongs to which clef typically.
- What the proper hand position is to play a keyboard more effectively.

Students will be able to:

- Identify the keys on a keyboard.
- Use the finger numbering system to play a keyboard properly.
- Demonstrate proper hand position and posture.
- Play the notes in both the treble and bass clefs. (Grand Staff)
- Play a simple composition with both hands at the same time.

Resources

Suggested Resources:

Fundamentals of Music Technology, Dennis Mauricio & Steve Adams, authors
 Strategies for Teaching Technology, MENC
 Technology Strategies for Music Educators, TI:ME

Software:

Sibelius 5.1 (Notation Program)
 Alfred Music Theory (Music Theory Program)
 ECS (Music Tutorial Program)

UNIT 3: Arranging and Composition with Computer Assisted Software

Summary and Rationale

The purpose of Unit 3 is for students to apply their knowledge from Units 1 and 2 in order to compose and arrange their own music. Students will first learn to navigate various composition software and programs, including learning music technology vocabulary, functions, and applications. Composing through a software will give students the opportunity to think more creatively in their musical decision making, while also receiving immediate, high quality feedback. This unit also allows students to collaborate with one another to see their musical ideas come to fruition.

Learning Goals:

- Demonstrate fluency of the treble and bass clefs.
- Perform a simple composition with both hands at the same time while reading the grand staff.
- Demonstrate an understanding of the MIDI computer workstation.
- Recognize and demonstrate a knowledge of form and structure in composition.
- Evaluate and analyze compositions, performances, and arrangements.
- Compose music using a variety of mediums.
- Provide self & peer assessment in relation to compositions, arrangements, and recorded performances.

Suggested Learning Activities:

Introduction to Basic Electronic Equipment and Software

The goal is for students to acquire a basic understanding of the various types of electronic equipment that will be used in class. Students will engage in “hands on” practice to gain understanding and experience with the varied pieces of equipment and software programs.

Arranging, Composition, and Performance

The goal is for students to actively create music through Sibelius and Sony Acid. Students will create original compositions and arrangements of pre-existing music. Students will select their own music, gearing it to specific audience. Then, students will input the information into the appropriate software program so that it can be formatted for performers. The final product will result in a successful performance of students’ music.

Piano Composition

This is a culmination of Units 1-3. Students will prepare a piece of music that is written for piano. Once students reach a reasonable level of proficiency, they will perform it for their peers.

Band in a Box Composition

Using the “Band in a Box” software, students will find a style of music that they prefer. Once they choose their style of music, they will select an ensemble, create a structure (form), and choose soloists. Then, they will create their very own piece of music with Band in a Box as the accompaniment. This allows for student choice and self-accountability.

Ensemble Composition

Each student will choose an ensemble that they would like to write for (string quartet, concert band, saxophone quartet, etc.). They will then create a piece of music, enter it into Sibelius notation software, print out parts, and

set up a performance of the piece, using fellow classmates. Collaboration is key for this as they will need to learn how to communicate their wants and needs for a successful composition and performance.

Assessment:

Teacher-based rubrics as well as student-created rubrics will be used for performance assessments. Peer and self-reflection will be used as a feedback mechanism throughout the creative process.

Recommended Pacing

Marking Period 3

State Standards

**NJ Visual and Performing Arts Standards
Music Composition and Theory**

Anchor Standard 1: Generating and Conceptualizing Ideas

1.3B.12prof.Cr1a	Describe how sounds and short musical ideas can be used to represent personal experiences, moods, visual images, and/or storylines.
1.3B.12acc.Cr1a	Describe and demonstrate how sounds and musical ideas can be used to represent events, memories, visual images, concepts, texts, or storylines.
1.3B.12adv.Cr1a	Describe and demonstrate multiple ways in which sounds and musical ideas can be used to represent extended experiences or abstract ideas.

Anchor Standard 2: Organizing and Developing Ideas

1.3B.12prof.Cr2a	Assemble and organize sounds or short musical ideas to create initial expressions of selected experiences, moods, images or storylines.
1.3B.12prof.Cr2b	Identify and describe the development of sounds or short musical ideas in drafts of music within simple forms (e.g., one part, cyclical, binary).
1.3B.12acc.Cr2a	Assemble and organize multiple sounds or musical ideas to create initial expressive statements of selected events, memories, images, concepts, texts, or storylines
1.3B.12acc.Cr2b	Describe and explain the development of sounds and musical ideas in drafts of music within a variety of simple or moderately complex forms (e.g., binary, rondo, ternary).
1.3B.12adv.Cr2a	Assemble and organize multiple sounds or extended musical ideas to create initial expressive statements of selected extended experiences or abstract ideas.
1.3B.12adv.Cr2b	Analyze and demonstrate the development of sounds and extended musical ideas in drafts of music within a variety of moderately complex or complex forms.

Anchor Standard 5: Developing and refining techniques and models or steps needed to create products.

1.3B.12prof.Pr5a	Create rehearsal plans for works, identifying repetition and variation within the form
1.3B.12prof.Pr5b	Using established criteria and feedback, identify the way(s) in which performances convey the elements of music, style and mood.
1.3B.12prof.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of multiple works.

1.3B.12acc.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, and the style and historical or cultural context of the work.
1.3B.12acc.Pr5b	Using established criteria and feedback, identify the ways in which performances convey the formal design, style and historical/cultural context of the works.
1.3B.12acc.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of varied works.
1.3B.12adv.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, compositional techniques, and the style and historical or cultural context of the work.
1.3B.12adv.Pr5b	Using established criteria and feedback, identify the ways in which performances use compositional techniques and convey the formal design, style and historical/cultural context of the works.
1.3B.12adv.Pr5c	Identify, compare and implement strategies for improving the technical and expressive aspects of multiple contrasting works.
Anchor Standard 6: Conveying Meaning Through Art	
1.3B.12prof.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music are used to convey intent.
1.3B.12acc.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music and compositional techniques are used to convey intent.
1.3B.12adv.Pr6a	Share live or recorded performances of works (both personal and others') and explain and/or demonstrate understanding of how the expressive intent of the music is conveyed.
Anchor Standard 7: Perceiving and Analyzing Products.	
1.3B.12prof.Re7a	Apply teacher-provided criteria to select music that expresses a personal experience, mood, visual image, or storyline in simp
1.3B.12prof.Re7b	Analyze aurally and/or by reading the elements of music (including form) of musical works, relating them to style, mood and context, and describe how the analysis provides models for personal growth as a composer, performer and/or listener.
1.3B.12acc.Re7a	Apply teacher-provided or personally developed criteria to select music that expresses personal experiences and interests, moods, visual images, concepts, texts, or storylines in simple or moderately complex forms, and describe and defend the choices as models for composition.
1.3B.12adv.Re7a	Apply researched or personally developed criteria to select music that expresses personal experiences and interests, visual images, concepts, texts, or storylines in moderately complex or complex forms, and describe and justify the choice as models for composition.
NJ Visual and Performing Arts Standards Music Technology	
Anchor Standard 1: Generating and Conceptualizing Ideas	

1.3E.12prof.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools.
1.3E.12acc.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools and resources.
1.3E.12adv.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions and improvisations that incorporate digital tools and resources.
Anchor Standard 2: Organizing and Developing Ideas	
1.3E.12prof.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.
1.3E.12acc.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity and variety using digital and/or analog tools.
1.3E.12adv.Cr2a	Select, develop and organize multiple melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity, variety, complexity, and coherence using digital and/or analog tools and resources.
Anchor Standard 6: Conveying Meaning Through Art	
1.3E.12prof.Pr6a	Using digital tools, demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.
1.3E.12prof.Pr6b	Demonstrate an understanding of the context of music through prepared and improvised performances.
1.3E.12acc.Pr6a	Using digital tools and resources, demonstrate technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, and genres
1.3E.12adv.Pr6a	Integrating digital and analog tools and resources, demonstrate an understanding and attention to technical accuracy and expressive qualities of the music in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, genres, and historical periods
Anchor Standard 9: Applying criteria to evaluate products.	
1.3E.12prof.Re9a	Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.
1.3E.12acc.Re9a	Apply criteria to evaluate music based on analysis, interpretation, artistic intent, digital, electronic, and analog features, and musical qualities
1.3E.12adv.Re9a	Develop and justify the evaluation of a variety of music based on established and personally developed criteria, digital, electronic and analog features, and understanding of purpose and context.
Instructional Focus	
Unit Enduring Understandings	
Students will understand that	
<ul style="list-style-type: none"> • There are many different types of music software for notation, composing, and arranging. • There are many different types of electronic equipment including keyboards, synthesizers, interfaces, sequencers, sound modules, etc. that are integral to music composition and arranging with computer software. • There are many different styles of music that one can compose for. 	

- There are many different kinds of ensembles (size, instrumentation, etc.) that one can compose for.
- The use of computers and MIDI keyboards (MIDI workstation) is essential to making composing and arranging both faster and easier.

Unit Essential Questions

- What are the different types of music software available, and what are their functions?
- What are the different types of electronic equipment available, and what are their functions?
- What are the various functions of a MIDI workstation that are necessary for arranging and composing music?
- How can the various types of music software help in the arranging and composition of music?
- What kinds of ensembles can be formed to compose music for?
- What kinds of musical styles exist who's repertoire can be expanded on?

Objectives

Students will know:

- The skills needed to input melodies and rhythms, using a MIDI workstation.
- How to utilize computer technology to arrange pre-existing melodies.

Students will be able to:

- Recognize and identify the different parts of the computer and MIDI workstation.
- Identify and interpret standard, non-standard and graphic musical notation.
- Communicate with each other to form ensembles.
- Compose music for various ensembles.
- Communicate to give constructive feedback on each other's compositions and performances.

Resources

Suggested Resources:

What's MIDI? (2nd ed.), Jon Eiche, author
 What's a Synthesizer? (2nd ed.), Jon Eiche, author
 Fundamentals of Music Technology, Dennis Mauricio & Steve Adams, authors
 Explaining Careers in Music, MENC
 What's a Sequencer?, Greg Starr, author
 Strategies for Teaching Technology, MENC
 Technology Strategies for Music Educators, TI:ME
 MIDI Basics, Lee Whitmore, author

Software:

Sibelius 5.1 (Notation Program)
 Sony Acid (Looping Program)
 Band in a Box (Music Composition Program)
 Alfred Music Theory (Music Theory Program)
 ECS (Music Tutorial Program)

UNIT 4: Music Industry

Summary and Rationale

The purpose of Unit 4 is to learn about how their knowledge and learned skills can be used towards building a career. There are many possible careers paths that music lead to- business, performance, education, composition and arranging, production, and this unit will explore through all those possibilities. Students will have the opportunity to compose, perform, record, produce, and collaborate with one another to learn and apply 21st century musical skills.

Learning Goals:

- Understand, read, and compose basic music notation (pitch, rhythm, harmonic structure).
- Use proper musical symbols in composition and arranging.
- Use and demonstrate knowledge of appropriate music and technology vocabulary.
- Demonstrate familiarity, knowledge, and basic skills on a piano keyboard.
- Perform notation on the keyboard using treble and bass clefs.
- Perform a simple composition with both hands at the same time on the keyboard.
- Demonstrate an understanding and familiarity with the MIDI computer workstation.
- Compose music in a variety of musical styles.
- Recognize and demonstrate a knowledge of form and structure in composition.
- Evaluate and analyze compositions, performances, and arrangements.
- Provide self & peer assessment in relation to compositions, arrangements, and recorded performances.
- Demonstrate awareness of and respect for copyright obligations, as well as general practices of the music industry.

Suggested Learning Activities:

Recording Live Musical Performances

Students' task is to utilize the computer, recording equipment, and microphones to record a live musical performance. They will record an original composition that will be played by student performers. This recording will be played for the performers and peers to assess its quality.

Editing, Mixing, and Mastering Recordings

Students will produce a CD of a live recording. To do this, they will have to utilize sequencing, recording, and audio editing software. Making a CD that the listener will approve of involves manipulating the original recording so that the quality of the recording is of the highest level. Their final project should result in a recording of a live performance that has been re-mastered so that the listener can enjoy it.

Music/Video Synchronization

Student's task is to create a music video. They will create video that is appropriate with the music they chose, edit the music so that it fits the length of the video, and find key points in the video that will "synch" with key moments in the music. The final outcome should result in a product where the music and the video are one cohesive idea.

Professional Applications in the Music Business Field

Students will explore “fair-use” copyright laws, publishing opportunity, copyright protection of original compositions, as well as gain an awareness of music industry training available at the college level. Students will engage in a discussion about opportunities in music business and connections/opportunities will be suggested based on student-voiced interests.

Music Industry Reflection

Listen to a piece of music that was produced by a successful producer in the music field. This allows for an open discussion for students to reflect on how much input the producer had toward the success of the recording

Copyright Debate

Engage the students in a debate regarding copyright laws. Be sure that the primary issues are addressed, such as performer protection, internet distribution, financial obligation, and application for copyright requests.

Music Business Presentation

Each student will choose a branch of the music business industry. They will give a presentation to the class on the topic they chose. Their presentation will include pertinent items such as possible forms of training – including college, work-study programs, internships, etc. Other items to cover might be various avenues one can take within the music discipline they are presenting – and the difficulties of each path.

Copyright Application

The students will apply for copyright protection for a piece of music that they have written over the course of the class. This will require research on the type of protection needed, the cost, and filling out the proper paperwork to apply.

Assessment:

Teacher-based rubrics as well as student-created rubrics will be used for performance assessments. Peer and self-reflection will be used as a feedback mechanism throughout the creative process. Students will participate in inquiry-based learning as well as collaborative, student-led learning.

Recommended Pacing

Marking Period 4

State Standards

**NJ Visual and Performing Arts Standards
Music Composition and Theory**

Anchor Standard 1: Generating and Conceptualizing Ideas

1.3B.12prof.Cr1a	Describe how sounds and short musical ideas can be used to represent personal experiences, moods, visual images, and/or storylines.
1.3B.12acc.Cr1a	Describe and demonstrate how sounds and musical ideas can be used to represent events, memories, visual images, concepts, texts, or storylines.
1.3B.12adv.Cr1a	Describe and demonstrate multiple ways in which sounds and musical ideas can be used to represent extended experiences or abstract ideas.

Anchor Standard 2: Organizing and Developing Ideas	
1.3B.12prof.Cr2a	Assemble and organize sounds or short musical ideas to create initial expressions of selected experiences, moods, images or storylines.
1.3B.12prof.Cr2b	Identify and describe the development of sounds or short musical ideas in drafts of music within simple forms (e.g., one part, cyclical, binary).
1.3B.12acc.Cr2a	Assemble and organize multiple sounds or musical ideas to create initial expressive statements of selected events, memories, images, concepts, texts, or storylines
1.3B.12acc.Cr2b	Describe and explain the development of sounds and musical ideas in drafts of music within a variety of simple or moderately complex forms (e.g., binary, rondo, ternary).
1.3B.12adv.Cr2a	Assemble and organize multiple sounds or extended musical ideas to create initial expressive statements of selected extended experiences or abstract ideas.
1.3B.12adv.Cr2b	Analyze and demonstrate the development of sounds and extended musical ideas in drafts of music within a variety of moderately complex or complex forms.
Anchor Standard 5: Developing and refining techniques and models or steps needed to create products.	
1.3B.12prof.Pr5a	Create rehearsal plans for works, identifying repetition and variation within the form
1.3B.12prof.Pr5b	Using established criteria and feedback, identify the way(s) in which performances convey the elements of music, style and mood.
1.3B.12prof.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of multiple works.
1.3B.12acc.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, and the style and historical or cultural context of the work.
1.3B.12acc.Pr5b	Using established criteria and feedback, identify the ways in which performances convey the formal design, style and historical/cultural context of the works.
1.3B.12acc.Pr5c	Identify and implement strategies for improving the technical and expressive aspects of varied works.
1.3B.12adv.Pr5a	Create rehearsal plans for works, identifying the form, repetition and variation within the form, compositional techniques, and the style and historical or cultural context of the work.
1.3B.12adv.Pr5b	Using established criteria and feedback, identify the ways in which performances use compositional techniques and convey the formal design, style and historical/cultural context of the works.
1.3B.12adv.Pr5c	Identify, compare and implement strategies for improving the technical and expressive aspects of multiple contrasting works.
Anchor Standard 6: Conveying Meaning Through Art	
1.3B.12prof.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music are used to convey intent.
1.3B.12acc.Pr6a	Share live or recorded performances of works (both personal and others') and explain how the elements of music and compositional techniques are used to convey intent.

1.3B.12adv.Pr6a	Share live or recorded performances of works (both personal and others') and explain and/or demonstrate understanding of how the expressive intent of the music is conveyed.
Anchor Standard 7: Perceiving and Analyzing Products.	
1.3B.12prof.Re7a	Apply teacher-provided criteria to select music that expresses a personal experience, mood, visual image, or storyline in simp
1.3B.12prof.Re7b	Analyze aurally and/or by reading the elements of music (including form) of musical works, relating them to style, mood and context, and describe how the analysis provides models for personal growth as a composer, performer and/or listener.
1.3B.12acc.Re7a	Apply teacher-provided or personally developed criteria to select music that expresses personal experiences and interests, moods, visual images, concepts, texts, or storylines in simple or moderately complex forms, and describe and defend the choices as models for composition.
1.3B.12adv.Re7a	Apply researched or personally developed criteria to select music that expresses personal experiences and interests, visual images, concepts, texts, or storylines in moderately complex or complex forms, and describe and justify the choice as models for composition.
NJ Visual and Performing Arts Standards Music Technology	
Anchor Standard 1: Generating and Conceptualizing Ideas	
1.3E.12prof.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools.
1.3E.12acc.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions or improvisations using digital tools and resources.
1.3E.12adv.Cr1a	Generate melodic, rhythmic and harmonic ideas for compositions and improvisations that incorporate digital tools and resources.
Anchor Standard 2: Organizing and Developing Ideas	
1.3E.12prof.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.
1.3E.12acc.Cr2a	Select melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity and variety using digital and/or analog tools.
1.3E.12adv.Cr2a	Select, develop and organize multiple melodic, rhythmic and harmonic ideas to develop into a larger work that exhibits unity, variety, complexity, and coherence using digital and/or analog tools and resources.
Anchor Standard 6: Conveying Meaning Through Art	
1.3E.12prof.Pr6a	Using digital tools, demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.
1.3E.12prof.Pr6b	Demonstrate an understanding of the context of music through prepared and improvised performances.

1.3E.12acc.Pr6a	Using digital tools and resources, demonstrate technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, and genres
1.3E.12adv.Pr6a	Integrating digital and analog tools and resources, demonstrate an understanding and attention to technical accuracy and expressive qualities of the music in prepared and improvised performances of a varied repertoire of music representing diverse cultures, styles, genres, and historical periods
Anchor Standard 9: Applying criteria to evaluate products.	
1.3E.12prof.Re9a	Evaluate music using criteria based on analysis, interpretation, digital and electronic features, and personal interests.
1.3E.12acc.Re9a	Apply criteria to evaluate music based on analysis, interpretation, artistic intent, digital, electronic, and analog features, and musical qualities
1.3E.12adv.Re9a	Develop and justify the evaluation of a variety of music based on established and personally developed criteria, digital, electronic and analog features, and understanding of purpose and context.
Anchor Standard 10: Synthesizing and relating knowledge and personal experiences to create products.	
1.3B.12prof.Cn10a	Demonstrate how interests, knowledge, and skills relate to personal choices and intent when creating, performing, and responding to music.
1.3B.12acc.Cn10a	Demonstrate how interests, knowledge and skills relate to personal choices and intent when creating, performing and responding to music.
1.3B.12adv.Cn10a	Demonstrate how interests, knowledge and skills related to personal choices and intent when creating, performing and responding to music.
Anchor Standard 11: Relating artistic ideas and works within societal, cultural, and historical contexts to deepen understanding.	
1.3B.12prof.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts and daily life.
1.3B.12acc.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.
1.3B.12adv.Cn11a	Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.
Instructional Focus	
Unit Enduring Understandings	
<p>Students will understand that</p> <ul style="list-style-type: none"> • There are many different aspects and angles to recording live performances. • Musical performances that have been recorded can, and should, be edited in order to create a “final draft” of a recording. • The composer, recording engineer, and performers, all have specific roles when it comes to making a recording. • There must be a cohesive interaction between the composer, recording engineer, and the performers, when it comes to making a recording. • When adding original music to a video, synchronization is a key element for success. • In the music business, respect and awareness of copyright laws is essential. 	

<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • What are the most important concerns when recording live performances? • What are the benefits to editing a recording of a live performance, before making the “final draft?” • What are the various roles of a composer, recording engineer, and performer, when producing a recording? • What are the key elements to video synchronization? • What are some of the copyright laws that must be adhered to when recording and producing music?
<p>Objectives</p> <p>Students will know:</p> <ul style="list-style-type: none"> • The various types of equipment needed to record live performances. • That self- and peer-assessment is essential to a successful recording project. • Knowledge of each person’s role in a recording project is paramount. • That synchronization of music and video is essential to a successful video project. • There are many copyright laws that must be followed when working in the music business field. <p>Students will be able to:</p> <ul style="list-style-type: none"> • Recognize and identify parts of the computer, MIDI workstation, interfaces, microphones, amplifiers, and mixers. • Demonstrate appropriate use and care of recording equipment, technology equipment, and internet capabilities. • Provide self- and peer-assessment of compositions, arrangements, and recorded performances, through comparison to similar exemplary models. • Demonstrate awareness of and respect for copyright obligations.
<p>Resources</p>
<p>Suggested Resources: What’s MIDI? (2nd ed.), Jon Eiche, author What’s a Synthesizer? (2nd ed.), Jon Eiche, author Fundamentals of Music Technology, Dennis Mauricio & Steve Adams, authors Explaining Careers in Music, MENC What’s a Sequencer?, Greg Starr, author Strategies for Teaching Technology, MENC Technology Strategies for Music Educators, TI:ME MIDI Basics, Lee Whitmore, author</p> <p>Software: Sibelius 5.1 (Notation Program) Sony Acid (Looping Program) Band in a Box (Music Composition Program) Alfred Music Theory (Music Theory Program) ECS (Music Tutorial Program)</p>

Vocabulary

Attack: In music, it is the period between the note being struck, and its peak in terms of sound pressure level. It could be described as being a sound's initial transient.

Attenuate/Attenuation/Attenuator: In sonic terms, this means reducing the level of something. An attenuator is a device which reduces the level of a signal.

Audio Frequency: Frequency which falls within the range of human hearing, and measured in Hertz (20Hz-20,000Hz). See frequency for fuller explanation.

Autolocator: Feature of some tape machines which enable a specific location on a tape to be stored, so that later, the tape machine may locate the same cue point.

Azimuth (alignment): Degree of alignment between tape head and tape. Perfect azimuth alignment is when the tape head and the tape are both making a perfect 100% contact with each other. When this is the case, alignment is said to be at its "zenith," and it is exactly 90 degrees between the tape-head gap, and the longitudinal axis of the tape. Good azimuth alignment is vital to the sound quality produced by any kind of tape machine, with poor quality alignment, a tape machine will often sound muffled, and somewhat lacking in "top end." Poor azimuth alignment is largely responsible for the inferior sound quality produced by many cassette recorders.

Bandwidth: Generally, this is the amount of information which may be carried by a specific device, eg. a modem may carry a maximum of x amount of bits per second, and that is said to be its "bandwidth."

In music and sound, "bandwidth" may be the difference or "spread" between the lowest and highest frequencies that are capable of being produced by a piece of sonic circuitry (e.g. amplifier, computer soundcard, etc.) or musical instrument, where the "spread" between the frequencies corresponding to the lowest and highest notes would be regarded as the "bandwidth" of the instrument.

In the case of radio, however; one could also speak in terms of the bandwidth that is capable of being received (as opposed to produced). This could be illustrated by saying that a radio that is capable of receiving signals within the bandwidth between 88 and 108 Mhz could be described as being an "F.M." radio.

Bus: In recording parlance, a bus is one of the main outputs of a mixer, which may be connected to one of the inputs of a recorder, amplifier, or signal processor. In computing parlance, it is the means by which data is transported between one part of a computer (e.g. central processing unit) to another (e.g. hard disk). A computing type of bus may be separated into two parts, an address bus, and a data bus, and is measured in terms of its "width" in terms of bits (how many bits of data it can move at one time).

Chorus: Signal processing which creates an electronic simulation of a chorus by combining a signal with a delayed copy of itself. Often, the delay time and level of the copy is continuously varied in the interests of added "reality." This part of the process is known as flanging, often used as an effect in itself.

Circuit: When electrical components (e.g. transistors, resistors, capacitors, etc., are connected in a way that utilizes the central electrical/electronic concepts of current (see below), voltage, and resistance to perform some task, this is a circuit.

Circuit Board: Convenient, flat layer on which the electronic components that make up a circuit may be placed, often containing metallic, conductive strips to connect the components together.

Clipping: When the amplitude of a signal exceeds the maximum possible level of a device, the part of the waveform which is excessive is “clipped” resulting in a distortion of the sound. If clipping is harsh and prolonged, this can result in damage to the device in question. See also “Headroom.”

Condenser Microphone: Microphone which works on the principles of Capacitance and the Capacitor. When the diaphragm of the capacitor vibrates in response to soundwaves, the Capacitor’s ability to hold charge varies. This measured change is the transduction of sound waves into electrical signal. As the plates of the Capacitor need to be fed with charge every time the mic is in use (an exception to this is the “electric condenser” see below), an external source of power is required, usually a supply of up to 48 volts DC, which is also known as “phantom” power, as the power is carried through the same cable as the audio signal.

Condenser microphones offer the greatest fidelity in terms of transducing soundwaves into an electrical signal, however, they do have the disadvantages mentioned above, as well as a great sensitivity to picking up hums/ground loops, etc., and a delicacy which renders many of them more suitable for studio, rather than stage use. Even then, many of them have to be used in conjunction with a special “cradle” which inhibits interference from external sources. However, there is no substitute for the fidelity and beauty of sound as rendered by a great “large-plate” condenser microphone.

Dynamic Microphone: Microphone which works through a diaphragm being attached to a coil which operates within a strong magnetic field. The diaphragm vibrates in response to soundwaves, which, in turn stimulates motion of the coil. The magnetic field causes an electric current to flow through the coil, with a voltage which varies in sympathy with the motion of the diaphragm. This measured change is the transduction of sound waves into an electrical signal. Not as good in terms of fidelity as a condenser type of microphone but sturdier and less prone to noise interference, hence it’s wide use on stage, or where a certain kind of grittiness is required.

Dynamic Range: Difference in signal level between the loudest and quietest parts of a performance/recording, etc. It is measured in decibels. Incidentally, the dynamic range of the human ear is said to be @ 130dB.

Frequency: The amount of times that a wave repeats per second, measured in Hertz (which are cycles per second) after Heinrich R. Hertz, the man who devised this form of measurement. Or to put it another way, if a soundwave vibrates the air x amount of times a second, this could be said to be its frequency in Hertz. However, as we get older and/or abuse our hearing listening to loud music etc. this may gradually roll off so that an older person/Death-Metal fan may only be able to hear sounds up to the frequency of 16,000 Hz for example. Our ears become progressively less sensitive to sounds below 500 Hz, and they are at the most sensitive to sounds which have a frequency of @ 3-5kHz.

Impedance: At its most general electronic level, impedance is the amount of resistance and/or reactance offered by an electronic circuit or device to the (AC) current which flows through it. It is commonly represented by the mathematical symbol “Z,” and is measured in Ohms. Some people may have had an unwelcome brush with the laws of impedance when they attempt to wire several speakers to each channel of their amplifier, then witness the scene of expensive electronic carnage which usually follows!

Keeping with speakers and amplifiers, impedance, in terms of Ohms, is usually measured nominally (an average of the various levels of impedance measured throughout the scale of sound frequencies (e.g. a typical loudspeaker

with a nominal impedance of 8 Ohms may vary in impedance between 3 and 30 Ohms!) a speaker with a lower nominal impedance (say 4 Ohms as opposed to 8) will offer less opposition to the power which the amplifier provides. Amplifiers will also have a specified minimum impedance rating, which is the lowest load (in terms of Ohms) that the amplifier is capable of driving. The lower the nominal impedance of the load, the higher the power (in terms of Watts) delivered to the speaker.

If you connect 4 speakers with a nominal impedance of 8 Ohms each to one channel of your amplifier, collectively, they will have a nominal impedance load of 2 Ohms, which is beyond the range of most domestic amps. However, if it is capable of driving this load comfortably, the amp will deliver a much higher wattage than it would to an 8 Ohm load. However, finally, this must be qualified by reminding readers that nominal impedance is merely an average (see above), so some “margin of error” is required when matching speakers with an amp which may be operating at the limits of its impedance “envelope.” So as they used to say in a famous TV cop program- “be careful out there!”

Loop: At its most basic, a loop is a series of instructions (computing) or beats/notes/chords (music) that is capable of constant repetition, consistently having the same result. Musically this will usually be a short piece measured in terms of a bar or more, which will seamlessly repeat without any musical/tempo inconsistencies, annoying clicks, etc.

“MIDI”: Musical Instrument Digital Interface “protocol” launched in 1982 which allowed electronic instruments to “talk” with each other digitally through three standardized ports which utilized the existing “DIN” standard connector: A network of musical instruments/effects, etc. may be created provided each instrument is compatible with this protocol. The ports are...

1. MIDI IN – Receives MIDI information from another device.
2. MIDI OUT – Transmits MIDI information to another device.
3. MIDI THRU – Allows data to pass through unaltered, which enables many instruments to be connected in series.

(see also MIDI sequencing)

“General” MIDI (GM): Standard set of sounds for use within MIDI system (MIDI keyboards, MIDI compatible soundcards, etc.) which are designed to ensure compatibility for the playback of MIDI files. A sound set of 128 sounds is the standard.

GS MIDI: An extension to the general MIDI system (see above) created by the Roland corporation. Improvements over the standard GM include reverb/chorus effects, panning controls, and the capability of expanding the standard GM set of 128 sounds up to a maximum of over 16,000.

MIDI Sequencer: A piece of digital hardware/software that can instruct a compatible instrument to switch notes on/off at whatever velocity they were “recorded.” Rather than recording sound or “audio” however, it records the parameters of the note. The sounds triggered are dependent on the MIDI instrument or sampler supplying the sound. There are up to 16 channels per MIDI loop operating within increments of 0-127. MIDI instructions are known as “events.”

MIDI + Audio Sequencer: Software running on modern microcomputers that takes advantage of modern processing power/storage capacity to run sequences of digitally recorded audio alongside the MIDI messages mentioned above.

XG (MIDI): An extension to the General MIDI system (see above) similar to the Roland “GS” system with extra sounds, effects, etc., only this system was developed by Yamaha, rather than Roland.

Multitrack Recording: Ability to record and process several separate streams or tracks of audio, either together, or at different times, to be played back as a synchronous whole, then probably “mixed down” to a stereo (two track) master for replay on ordinary systems.