



Berklee Online

Music Theory, Harmony & Ear Training

Digital Handbook



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Welcome!

Whether you're looking to jumpstart your career, realize your artistic aspirations, or connect with a musical community, we're excited for you to study with us! Check out the lessons and features in this handbook, and learn how Berklee Online can help you pursue your passion and build your musical future.

All the best,

A handwritten signature in white ink, appearing to read 'S. Hagon', is placed above the printed name.

Sean Hagon

Dean of Pre-College, Online, and Professional Programs

Study Music Online Anywhere, Anytime

With Berklee Online, you can study the renowned curriculum of Berklee College of Music from anywhere in the world, and in your own rhythm. Since 2002, more than 75,000 students from 144 countries have enhanced their creative output and marketability with Berklee Online's award-winning master's degree programs, bachelor's degree majors, certificate programs, and 250+ music courses. Through Berklee Online, you'll receive unparalleled instruction from music industry professionals and the same faculty members who teach at Berklee's Boston campus.



Just *Do It*: How to Learn Inner Hearing

By Allan Chase and Roberta Radley

From the Online Course
Ear Training 1

To help our inner hearing of melody and how melody notes function in a key, we'll use a system of naming the scale degrees in relation to the tonic—movable-*Do* solfège. This version of solfège has been widely used throughout English-speaking countries and some other cultures for more than 200 years, and similar systems exist in other languages and cultures. Movable-*Do* solfège is widely used in school choirs and music education. You may know it from a famous scene in *The Sound of Music*.

Think of the syllables as a kind of numbering system. Scale degree 1, the name of the key and the first note of its scale and root of its I chord, is always *Do* (whether you're in a major or minor key or a tonic mode—but in this course, we're just working with major keys). If you're in E major, *Do* is E; in A \flat major, *Do* is A \flat .

Note: This is a very different use of the syllables from fixed-*Do* solfège, which is simply the note names as said in Latin-based languages. (In fixed-*Do*, *Do* is always C or some kind of C: C \sharp , C \flat , etc. The syllables just name the notes, and letter names are not traditionally used in those languages.)

For some context, take a look at the scales on the following pages. There are examples written out in three different keys.

Chromatic Scale - Key of C

Do Di Re Ri Mi Fa Fi Sol Si La Li Ti Do

2

Do Ti Te La Le Sol Se Fa Mi Me Re Ra Do

Chromatic Scale - Key of F

Do Di Re Ri Mi Fa Fi Sol Si La Li Ti Do

2

Do Ti Te La Le Sol Se Fa Mi Me Re Ra Do

Chromatic Scale - Key of G

Do Di Re Ri Mi Fa Fi Sol Si La Li Ti Do

Do Ti Te La Le Sol Se Fa Mi Me Re Ra Do

In this lesson we'll work with just the major scale tones: *Do Re Mi Fa Sol La Ti*. The syllables are pronounced like Italian vowels (also like Spanish). Take a look at this solfège phonetic pronunciation key:

- **Do** = dough
- **Re** = ray
- **Mi** = me (myself, rhymes with tea)
- **Fa** = fah (rhymes with Ma and Pa)
- **Sol** = soul
- **La** = lah (rhymes with Fa)
- **Ti** = tea

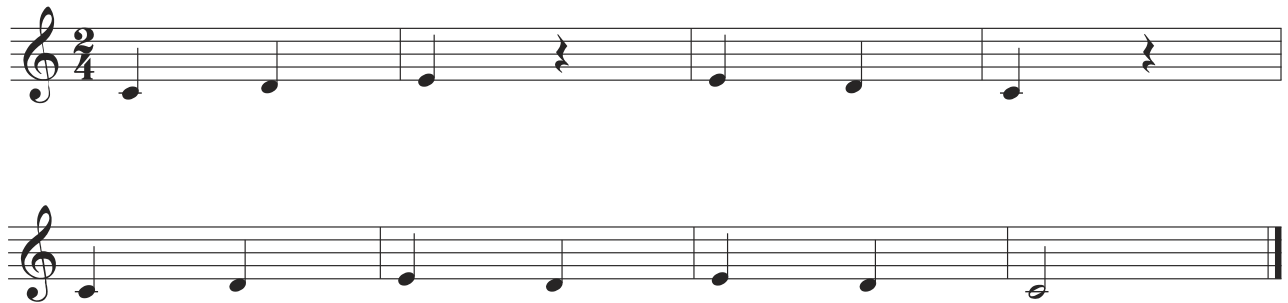
Let's get a feel for how movable-*Do* solfège works by singing some three-note phrases using only scale degrees 1, 2, and 3: *Do Re Mi*.

First, use a piano, keyboard, or online keyboard tool to get *Do*.

(We don't expect you to have perfect or absolute pitch! You can start with one reference pitch, *Do*, and let your inner hearing do the rest.)

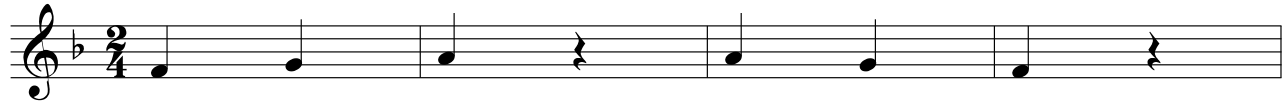
Then, sing *Do*, which is the first note in each of these examples, and use your memory of the sound of the major scale to guide you up and down the scale steps, following the notation.

Key of C



continued on next page

Key of F



Key of G



Do Re Mi Fa Sol



Do Re Mi Fa Mi Re Do

Each time you get ready to sing a melodic example in this lesson, first give yourself the tonic note, *Do* (only), as a reference.

But what if you don't have access to a piano and keyboard to help you find *Do*? Or what if you're in a performing situation where you don't have the time? Finding *Do* is more innate than you think. Next we'll talk about how you can train yourself to find *Do* easily.

Finding *Do*

How do we know which note is the tonic, *Do*? We've already done a lifetime of practice of this, subliminally; whether or not we use the music theory term "tonic," our ears are used to sorting out the sounds we hear in music. *Do* is the note the song is most likely to end on, the root of the last chord (usually), and the point of rest in the music.

Some of the things that help us orient our ear to the key and its tonic, *Do*, are:

- The opening notes of a song, and especially the last note and chord
- The duration and rhythmic placement of *Do* and notes of the I chord, *Do*, *Mi*, and *Sol* (on strong beats)
- Familiar patterns that establish the key, like the I chord and tendency tones that resolve to it

It's a lot easier to experience finding *Do* than it is to explain in words. Practice it by listening to songs; take your time and see if you can find *Do*. Some songs change key, so *Do* may change during the song.

For the exercises in this course, we'll give you *Do* as a reference pitch, we'll tell you the key when you're transcribing or listening, and since we're working only with major scales, the key signature will always tell you what major key we're in. For example, if the key has one flat, it's F major, and F is *Do*.

How to Practice Ear Training

The key to learning ear training is to exercise your inner hearing. It's like isolating a muscle: if you “cheat” and use an easier technique, you won't really get stronger. In ear training, that means using only a reference *Do*, and extrapolating all the other sounds from inner hearing.

If you play what you're trying to hear and sing, you switch to the echo memory, a short-term memory part of the brain that babies use to imitate words as they learn how to communicate. We sometimes

refer to this kind of instant copying or echoing as “parroting.” It doesn’t take skill or mental power. Instead of “peeking at the answer” by playing the melody before you sing it, use the skills we’ll teach you to figure out the notes on your own, building on the given *Do*. You can sing up or down the scale to identify a note.

If you play an instrument in ear training, always play *after* you’ve sung. When you’ve done your best to find the note with your inner hearing and voice, you can play to check yourself. By following this rule consistently, you’ll learn and progress much faster. And that should always be your goal!

Allan Chase and **Roberta Radley** are the authors of the Berklee Online course from which this lesson comes. Check out the interview with Allan on page 48, or learn more about the other lessons in this course by clicking the link below.

Want to explore this course even further?

[Learn More](#)



Instructor Spotlight:

Debbie Cavalier

Debbie Cavalier co-founded Berklee Online in 2002, and has been instrumental in transforming the online school of Berklee College of Music into the worldwide music education powerhouse that it is today. Debbie also leads the children's/family music group Debbie & Friends, and is a Grammy award-winning songwriter.

In addition to being the CEO of Berklee Online, Debbie instructs the online *Music Theory 101* course.

When did you first learn your music theory foundation?

I was a late bloomer with my music education. Although I took piano lessons on and off most of my life, starting at age five, I didn't really develop a solid foundation in music theory until I attended Berklee as an undergrad.

Do you notice that a certain music theory lesson gives your students an "a-ha" moment?

In lesson 10, they begin to apply their own creative approaches to music, using the voice leading skills they have learned. Basically, they are creating accompaniments to support a given melody and it's a huge leap forward for them. That is the lesson where my students start to say, "It sounds so good, I can't believe I wrote that!" It's very rewarding to witness.

What are some of your favorite parts about instructing *Music Theory 101*, while also being the CEO of Berklee Online?

First and foremost are the students. I love seeing their passion for music, their desire to learn more, and their growth and development throughout the semester.



Instructor Interview

A Close Encounter with Counterpoint

By Jonathan Feist

Beth Denisch teaches counterpoint both at Berklee Online and at Berklee's Boston campus. Counterpoint is one of the core subjects for anyone who creates music, and while some of the ways it is used have evolved over time, many of the basic contrapuntal principles

remain as relevant today as they were centuries ago. Beth's book *Contemporary Counterpoint: Theory & Application*, published by Berklee Press, presents the practical considerations for how to use and consider counterpoint in today's musical industry, whether you are writing rock songs, film scores, EDM tracks, or any type of music. She discusses all of this and more below.

What is counterpoint?

Counterpoint is two or more independent melodic lines working together to create music. This creates a polyphonic texture.

Music made mostly of chords creates a homophonic texture and a piece for solo flute makes monophony. It is a collection of musical techniques, and polyphony is a texture that music using counterpoint creates.

Why is counterpoint such a standard part of music education?

Composers develop many different skills for their toolbox. These include competencies in the rhythmic and pitch idioms common to their style choices. More than offering skill competency in the traditional contrapuntal styles, the technique provides a way of looking at writing music that can be applied to many different styles.

How can studying counterpoint improve your music?

Counterpoint's power and effectiveness as a creative technique provides musicians with the technical skills to more fully realize their musical ideas. Techniques fuel inspiration, and a well-equipped composer transforms that creative spark into an effective piece of music by using the tools of the craft.



Techniques fuel inspiration, and a well-equipped composer transforms that creative spark into an effective piece of music.

- Beth Denisch

Is traditional “species counterpoint” still relevant to contemporary music?

“Species counterpoint” is a specific pedagogy that has been used for centuries. It presents the basic elements of counterpoint in graduated exercises to produce competency in that historical style period.

What's new about counterpoint in contemporary styles, compared to how voices related to each other in classical music?

Traditionally, counterpoint was inseparable from the species pedagogy. Now, it can be taught as a collection of techniques applicable to many different styles of music both historic and contemporary.

For performers, rather than composers, what are the benefits of understanding counterpoint?

Performers in many contemporary idioms apply some level of improvisation in their music making from ornamentation and re-melodizing a pop vocal line to soloing over in an extended developmental manner as in jazz. Across this application of “making it your own,” contrapuntal techniques offer practical resources with which to manipulate one’s chosen musical parameters.

Counterpoint helps us musicians more fully respect our musical ideas by enhancing our understanding of how these ideas can be revisited and transformed.

Can you share some favorite examples, both in a classical style and then in a contemporary one?

Yes, first, from the Classical/Baroque era, we have Barbara Stozzi's "Canto di bella bocca." Listen for the two vocal lines working together to create an overall sound while each voice also maintains its melodic independence. Then the other one is in a contemporary pop/neo-soul style: "Floetic" (Marsha Ambrosius, Natalie Stewart, and Floetry). Listen to the intertwining of the ostinatos, samples, synthesized melodic lines, and vocal melodic lines: both sung and spoken/chanted. The primary texture of this composition is polyphonic. The continually moving lines direct the listener to a linear rather than vertical focus.



Instructor Spotlight:

Gaye Tolan Hatfield

Gaye Tolan Hatfield is a professor in Berklee’s Ear Training department. Her compositions can be heard on television shows such as *CSI NY*, *The Good Wife*, and *The Young and the Restless* (for which she earned Daytime Emmy nominations in 2015 and 2016) and a number of films, including *Dear John* and *What To Expect When You’re Expecting*.

At Berklee Online, Gaye authored *Ear Training 2* and co-authored *Music Foundations*.

How did you first become interested in ear training?

Playing piano by ear as a youngster brought me joy and a sense of pride in my musical self. Fortunately, I was raised in a school system that valued music education and offered ear training and theory classes in high school.

What is your favorite mnemonic device for remembering something musical?

Ernie Gave Bert Dead Fish.

When you were first starting to learn ear training, which came easiest to you: rhythm, melody, or harmony?

Melody has always come easier, having played piano, flute, and a variety of other melodic instruments. Rhythms beat me up pretty bad in middle school, but my skills improved throughout high school and beyond. Harmony has always been the most difficult. A lot of harmonic hearing education starts with hearing the bass. Being a soprano/alto, it was impossible for me to sing along with the bass. This experience has influenced the way I teach harmonic hearing—using multiple approaches, as opposed to root identification first and foremost.

Master the Basics of Rhythm

By Paul Schmeling

From the Online Course
Music Theory 101

Rhythm is the aspect of music relating to time—when musical events happen (notes and other sounds) in relation to other musical events.

A regular pulse is fundamental to music and some pulses or beats are emphasized more than others. Say the word “alligator.” Notice that “al” has the strongest emphasis. The strongest beat is beat 1 (“al”) and is called the downbeat. Beat 3 (“ga”) is also considered a strong beat, although not as strong as beat 1. Say “alligator” over and over, keeping the beat regular and on each syllable. Notice how the beats are grouped into sets of four. Now, say “crocodile” over and over. Here, the beats are grouped into sets of three. The downbeat is on the syllable “croc.” Next, say “lizard” over and over—this word has two beats, with the downbeat being on the syllable “liz.”

What are some other examples of 2-, 3-, or 4-pulse words?

What about a 5-pulse word? Which syllable has the downbeat?

When beats are grouped together, the pulse is said to be in meter. Most music has a regular underlying meter. Each group of beats is called a measure or bar. In music notation, meter is indicated by a

time signature. A time signature usually has two numbers, one above the other. The top number indicates how many beats are in each measure. For example:

 $\frac{4}{4}$

In this time signature, there are four beats per measure.

 $\frac{3}{4}$

In this time signature, there are three beats per measure.

 $\frac{2}{4}$




In this time signature, there are two beats per measure.

Let's focus on the 4/4 time signature, or as it is also called, common time (C). This is the most common meter in popular and jazz music.



Bar lines separate measures, and the music ends with a final bar line—a thin and thick line. Notes are the building blocks of any piece of music, and can last for any number of beats—we will refer to this as the note's duration or value. Each note value represents

a rhythmic attack. Let's look at three common types of note values: whole, half, and quarter notes:

-  **Whole notes** last for a whole measure in 4/4 time, which is four beats. The symbol for a whole note is an open notehead.
-  **Half notes** last for half as long as whole notes: two beats. Their symbol is an open notehead with a vertical line (stem).
-  **Quarter notes** last for a quarter of a whole note, which is one beat. Their symbol is a closed notehead with a stem.

Anyone who has ever seen a piece of sheet music (and even many who haven't!) will likely recognize these symbols. As part of the core foundation of musical notation, they've become—along with the treble clef and a few others—part of the globally-understood graphic representation of music.

On the next page, we'll cover rests. Each note value has a corresponding rest symbol, which indicates silence (or a break in playing) for that value.

In the list below, let's look at three types of rests: whole, half, and quarter rests:

- **Whole rests** are small, solid rectangles that hang down from a staff line. They represent four beats of silence. If the whole measure is silent, a whole rest is also used, regardless of the time signature.
- **Half rests** are rectangles that lie on top of a staff line. These last for two beats.
- ⌋ **Quarter rests** look like a sideways W with a thick middle area. They last for one beat.

Let's end this lesson with an exercise. Since you now know how long each note lasts, and how long each rest lasts, let's think about setting words to music. Take the phrase: "Yesterday is history; tomorrow a mystery." Which syllables should be stressed? What meter would they best fit into? How many measures would be required? Try writing the phrase out underneath a musical staff, and try filling in a note and/or rest for each syllable.

In a Berklee Online course, we'd be able to go over your answers for the "Yesterday is History" exercise together. However, in this handbook format, it's not as easy to showcase all of the combinations of notes and rests that you could come up with to notate this phrase. It just goes to show you that the possibilities for expressing yourself musically are limitless.

Now that you understand some of the basics of rhythm, you can begin to experiment with writing out your own compositions. You have the tools at your disposal, now start plugging them into those limitless possibilities, and make these concepts work for you!

Paul Schmeling is the author of the Berklee Online course from which this lesson comes. Read about his origins with Berklee Online on the following pages, or learn more about the other lessons in this course by clicking the link below.

Want to explore this course even further?

[Learn More](#)



Instructor Spotlight:

Paul Schmeling

Paul Schmeling is a master pianist, interpreter, improviser, and arranger who has taught countless students since he began teaching at Berklee College of Music in 1961. He has performed or recorded with jazz greats such as Clark Terry, Rebecca Parris, George Coleman, Carol Sloane, Frank Foster, Herb Pomeroy, and more.

At Berklee Online, Paul authored the college's very first online course with *Music Theory 101*. He also authored *Berklee Keyboard Method* and *Music Theory 301*.

You are the author of the first Berklee Online course. What was it like to translate your course into this new mode in the early 2000s?

At the time, I was thinking it would be great if every student who came to Berklee knew this stuff before they started. That was how I approached it originally.

What would you say to a student who is thinking about learning music theory for the first time?

I would encourage them to become more of a complete musician. For example, many things in *Music Theory 101* would prepare them to communicate their music better to other musicians.

Is there a lesson in your course where you think the most students have an “a-ha” moment?

I think it would be in the lesson that involves major scales where for the first time, many of them see the reason why major scales are constructed the way they are. Most students will bring to the course some knowledge of major scales, and then when they see the theory of how they’re built, it all makes sense.



Student Stories

Even Professionals Need Music Theory

By Talia Smith

In the history of excuses for not turning in an assignment on time, **Sushant KC**'s has got to be one of the most excusable. In 2021, Sushant performed a sold-out show at the biggest outdoor venue in Nepal.

“The energy interchange with the audience is what I live for,” says Sushant. “I was filled with immense joy after the event.”

He is pursuing his bachelor’s in Songwriting and Producing Music, and had Berklee Online CEO Debbie Cavalier as his instructor for *Music Theory 101*. Needless to say, she gave him an extension on his assignment, and a big congratulations.

“I was so excited for him!” says Debbie. “The photos and videos of the concert looked like a dream come true. Students should not have to choose between their career goals and their education. There should be give and take and accommodations made.”

Sushant is a self-taught musician from Kathmandu, and studying at Berklee Online has been his first formal music training.

“I didn’t have any prior knowledge about music theory before Berklee,” says Sushant. “Everything I did was basically ‘hit and trial’ based on my taste in music. I created whatever sounded right to me rather than what was technically and theoretically correct.”

Sushant first started writing music and playing guitar after finishing his A-levels in school (a test for students ages 16 and over). After recording his first album, he knew he wanted to pursue music professionally, though he knew he'd face hardships.



Now I find myself sitting in front of a keyboard very often; making new melodies, experimenting with chords.

- Sushant KC

“In Nepal, every parent wants their child to be either a doctor, engineer, lawyer, businessman or woman, or at most, an athlete, but no one wants their young ones to be a musician,” he says. “The value of art and artists is less. It is not a prestigious job as per the social system.”

He says that his parents are supportive of his career path, but that it is culturally rare. The concern is that it is hard for musicians to

sustain themselves in Nepal solely by pursuing music. With this in mind, Sushant decided to enroll in business school in Sydney, Australia.

“Financial stability is important, but that is what is interesting about musicians and artists is we don’t care about all that and we want to do what we love,” says Sushant. “In the past few years, it has been proven that music or art can actually yield good financial returns as the whole world is adapting to independent artistry.”

Sushant KC is an excellent example of this. His YouTube videos have millions of views, and he says that the royalties actually sustained him through business school.

“I didn’t have to work a single day when I was in Sydney studying business, just because I had my royalties coming from YouTube and other streaming platforms,” he says.

With knowledge of the music business and a fan following already in place, Sushant enrolled at Berklee Online so that he could round out his capabilities in songwriting, production, and musicianship.

“I only played guitar before, but now I find myself sitting in front of a keyboard very often; making new melodies and experimenting with different chords,” says Sushant. “I find it so easy to write melodies now, from building the 7th chords to reading notations and lead sheets.”

In addition to his classes, Sushant KC is currently collaborating with David Guetta and Nepalese rapper Uniq Poet. He is also working on his next album.

“The music theory class has enabled me to understand what I was doing in the past and has pointed the right way forward,” says Sushant.



Instructor Spotlight:

Yumiko Matsuoka

Yumiko Matsuoka is a Berklee graduate and a professor in the Ear Training department. She has also taught vocal writing in the Contemporary Writing and Production department. Yumiko is the founder of the Boston-based a cappella quintet Vox One, whose albums have won multiple awards from the Contemporary A Cappella Society of America (CASA).

At Berklee Online, Yumiko co-authored the course *Music Foundations*.

When did you first learn your music theory foundation?

My first piano teacher (when I was three or four) gave us ear training, where we heard melodies and chords and identified them. Without knowing what it was for, it gave me a very strong foundation in understanding chords. It wasn't until after college in Japan that I started taking music theory lessons.

What would you say to a musician who is interested in formal music theory training, after getting by with a good ear for most of their music career?

I would say that even though a good ear is ultimately what one needs, having a theory background could save time when writing or performing music.

Who are the musicians/musical groups who inspire you the most?

Fred Hersch, Dave Grusin, and Billy Barber for the ways they write (especially the chords and chord progressions they use); Singers Unlimited and Take 6 for inspiring me to pursue a cappella as my specialty; and Claude Debussy for his compositions.

Understanding Reharmonization

By Steve Rochinski

From the Online Course
Reharmonization Techniques

When the late jazz guitar legend Tal Farlow explained his motivation to reharmonize standard tunes, he replied with this twist on an old adage: “If it ain’t broke, fix it anyway.”

And so it goes. In the world of artists of all mediums and disciplines, the musician is most audacious when it comes to altering another’s creation. Imagine an artist taking a palette of paints and a brush to the Museum of Fine Arts and painting an extra nose on a Picasso masterpiece? Or someone putting a hat on Rodin’s timeless bronze and marble sculpture *The Thinker*? Scandalous, to say the least . . . and possibly resulting in some jail time!

However, the history of jazz performance and arranging, as well as European classical tradition, as exemplified by *Rhapsody on a Theme of Paganini* by Rachmaninoff, is filled with players and writers whose creative intention could be distilled down to Tal’s response.

There are instances in which the reharmonized song is considered so superior to the original chord changes that the new version becomes the standard harmonic form—which, in turn, becomes subjected to further variation. The Victor Young classic “Stella by Starlight” and the Burke/Van Heusen standard “Like Someone in Love” are excellent examples of “new” standards.

Can you imagine what a cocktail pianist, who has been on the same five-night-a-week gig for 10 years, would have to endure if they weren't able to take some kind of harmonic liberty with the repertoire? Maybe reharmonization contributes to good mental health for the performer. No matter how you frame it, reharmonization has a long-standing tradition in the world of jazz and popular music.

So we know that reharmonization keeps boredom at bay, but why else do we reharmonize? Occasionally, there is a need to use material from the standard repertoire where reharmonization can place the ordinary into an extraordinary setting. There may also be situations in which the melody and chords may not be in vertical agreement—a change in the harmony may be called for.

For the improvising player, reharmonization is regarded as improvising harmonies to a fixed melody line—the opposite of melodic improvisation. For the improviser who is soloing melodically within the standard framework of the chord changes of a tune, the various substitution and approach techniques—that you will learn later in this course—and superimposed against the rhythm section accompaniment can be applied to great effect.

To reharmonize means to alter the underlying harmonic form, while maintaining the original melodic structure. It is essentially an arrangement change that puts the focus on the harmony.

Reharmonization alters the mood of a song by:

- Increasing tension and release through substitution and approach techniques
- Prolonging expectations for resolution of nontonic functions
- Creating a more, or in some cases, less active harmonic stream
- Enhancing the bass line

For a reharmonization to be acceptable to the listener, there are two relatively absolute conditions:

- ① The melody must be recognizable.
- ② The harmony must be logical and familiar.

This means that little or no melodic embellishment is used and the harmony is resourced from common practice chord patterns of standard popular repertoire. There will always be exceptions to these conditions, but until further notice, these will be absolutes.

Depending on their listening experiences, the average non-musician has a catalog of common, internalized harmonic progressions that may be more limited than those of the professional musician. The more experienced the listener, the more complex a reharmonization will be acceptable. Ultimately, for the listener to accept the new harmonization as valid, arbitrary chord choices must be avoided.

There are several levels on which to measure the effects of reharmonization. One of three outcomes can be expected with reharmonization relative to the harmonic rhythm:

- ① The original harmony will be substituted through structural conversion and with chords of a similar function—in most cases, there's no change in the harmonic rhythm. (There will be exceptions.)

continued on next page

- ② The original harmony will have approach chords added that have either a functional or a structural relationship with an original target chord—the harmonic rhythm becomes faster.
- ③ The original harmony will be modified by removing chords—the harmonic rhythm may become slower.

Here are several versions of a popular birthday song originally titled “Good Morning To You.”

Let’s start with the first version, which is (obviously) harmonized with the original chords. Take a look at the notation here:

The musical notation shows the first version of the song. It is written in G major (one sharp) and 3/4 time. The melody is on a treble clef staff. The first line of music has five measures with chords D, G, D, D, and G above them. The second line has six measures with chords G, D, C, G, D, and G above them.

The second version is reharmonized with simple, substitute diatonic chords. There's no change in the harmonic rhythm.

D G D D G

G Bm Am D G

The third version is reharmonized with approach chords, along with 6th and 7th chords to enrich the triads, resulting in a more active harmonic rhythm.

D7 G A7 D7 / / F#7 G6

Dm7 G7 Cmaj7 C6 Gmaj7 Dsus G6

This final version uses both substitute and approach treatments. This creates a very active and colorful harmonic support with the majority of the melody notes harmonized with a different chord.

Am7 A \flat 7 Gmaj7 E \flat 7 D7 Bm7 B \flat 7 Am7 D7 C \sharp m7(\flat 5) Cm7

Bm7 Cmaj7 C \sharp 7 Gmaj7/D C9 F9 Bm7 B \flat 7 Am7 E \flat maj7 A \flat maj7 G 6_9

Play these melodies, and really take in the emotional differences between them. Now try reharmonizing some of your favorite songs!

Steve Rochinski is the author of the Berklee Online course from which this lesson comes. Learn more about the other lessons in this course by clicking the link below.

Want to explore this course even further?

[Learn More](#)



Instructor Spotlight:

Steven Kirby

Steven Kirby's jazz compositions have won numerous awards from the likes of the International Songwriting Competition, the *Billboard* Song Contest and *Downbeat*. He is a graduate of Berklee College of Music and has a Master's degree in Jazz Composition and Arranging from the University of Massachusetts (Amherst).

At Berklee Online, Steven co-authored *Harmony 2* with George Russell Jr. (see page 70). He's also an instructor for *Music Theory 101* and *Music Theory and Composition 1* and 2.

Do you have a go-to chord that you always play when you first pick up a guitar?

I do like to play voicings on guitar which combine higher fretted notes with open strings. I love the timbre this produces on guitar and it allows you to get more close intervals that are not so easily possible when all notes are fretted. It's also a great way to get the sense of how a guitar sounds and how well intonated it is.

What's your favorite reharmonization of a well-known song?

I love Billy Childs' arrangement of the Peter Gabriel classic "In Your Eyes." I love this arrangement because it retains the core elements of the song and its vibe, while adding layers of complexity and harmonic nuance but in a seamless and organic way that it never feels forced or like Billy is showing off his prodigious harmonic chops. It just sounds like a natural reinterpretation.

Would you like to teach the world to sing in perfect harmony?

Well I'm not much of a singer so I don't know if I could help much with the vocal technique part, but I would like to help everyone understand, and be able to do more with harmony and music in general (including helping myself, because the learning never ends).



Instructor Interview

'Ear Training is 100 Percent Learned'

By Berklee Online

Allan Chase was the Chair of the Ear Training department at Berklee from 2008 through 2021. At Berklee Online, he authored and teaches the courses *Ear Training 1* and *Ear Training for Live Performance*. A saxophonist and composer, he has appeared as

a soloist on more than 40 jazz, pop, and classical recordings, in addition to several movie scores. Chase has taught a wide range of college courses in ear training, transcription and analysis, harmony, counterpoint, music theory, and music history, as well as ensembles and private lessons. He began his teaching career at Berklee in 1981, and has also taught at Tufts University and New England Conservatory, where he served as chair of jazz studies and dean of the faculty. From 1992 to 2000, he performed and recorded with avant garde drummer, Rashied Ali, who is best known for his playing with John Coltrane. Chase has also been a member of Your Neighborhood Saxophone Quartet since 1981. In this interview, we start with him at his musical beginnings.

How did you first become interested in ear training and identifying the notes and/or rhythms you were hearing?

I had an interest in it, and started trying to write down melodies I liked, around eighth grade, age 13. I still have a notebook with some parts from “I’m a Man” by Chicago in it—my very first attempt. I got it right, but it took effort and I’ve never felt I had a gift for it. It was just effort and gradually increasing skill.

What percent of ear training would you say is training, and what percent is just having the gift of perfect pitch?

Research in recent decades—including some great work by our colleague Dr. Susan Rogers with alumnus Dr. Daniel Levitin—has shown that perfect pitch is not a gift, but it’s something that many people have. It’s very possible that every child has the potential for it, but it’s one of the many neurological connections that are pruned if they aren’t used as the brain is developing. So some children retain absolute pitch (long-term memory for specific frequencies), usually due to early music training, while most in our culture don’t. I would say ear training is 100 percent learned, whether or not a child retains so-called “perfect pitch.” And anyone can learn relative pitch very well. It helps to start young, if you have that opportunity, but adults can and do learn it extremely well. We’ve watched—and helped—literally tens of thousands of students go from beginner to advanced. It just takes practice. It’s important to start at the right level and move at the right pace.

I like how you say “so-called ‘perfect pitch.’” It seems like you’re suggesting we need to demystify this a little bit.

In ear training, we work on relative pitch: Given one pitch as a reference, you can learn to hear all the pitches. A person with

excellent relative pitch who has heard or played one note is in about the same place as a musician as someone with absolute pitch (perfect pitch). They know what all the notes are and can follow what's happening, even through complex chords and key changes. It's a matter of degree, but you can't really tell a musician with perfect pitch from one without it by listening to them play or sing.



We've watched—and helped—literally tens of thousands of students go from beginner to advanced. It just takes practice.

- Allan Chase

What was the last piece of music that you heard that you just had to write down?

Last night, I transcribed George Benson's movie theme "The Borgia Stick," which I've always liked. We're playing it on Sunday. A lot of my transcribing these days is to bring fresh repertoire to my jazz groups.

When you were first starting to learn ear training, which came easiest to you: rhythm, melody, or harmony?

My parents listened to a lot of interesting music, including modern jazz, when I was a child, and they had friends who were jazz musicians. I think that music, especially seeing and hearing it live, contributed to a feeling for rhythm which my teachers identified when I was pretty young. Then, playing saxophone from age nine led to a melodic ear and a clear connection of sound with notation. I loved harmony, especially modern and dissonant harmony, but didn't really understand it until later because we didn't have a keyboard until I was 17 and had decided to major in music theory and composition, and also began to take playing jazz seriously. I remember playing my first chords on that Wurlitzer electric piano, figuring out what a D minor 9th chord sounded like. It took a few years of practice before I really heard chords well and could pick up changes during a gig, for example.

What is your favorite mnemonic device for remembering something musical?

At some point, I had to memorize the order of sharps as “fat cows go down and eat breakfast.” Additionally, the circle of 5ths is a

wonderful image and tool. I love this interactive web version of it that software engineer Rand Scullard put on his website:

www.randscullard.com/CircleOfFifths

Have you had any experiences where somebody you worked with just blew you away with their ear for music?

Countless times, really. I've worked with so many great jazz musicians who can hear anything, read anything, and/or remember thousands of tunes and play them in any key.

One person who opened this field up for me was a fellow student in my first year of college at Arizona State University, Steve Huff. He played piano in our first small jazz group, a quartet with me on saxophone. We loved Keith Jarrett's albums. Steve would transcribe the complex, unusual tunes accurately, and we played them on gigs. His father was a regionally famous choir director and educator so he got a lot of musical education at a young age. He's a professor of German at Oberlin, but also still plays Brazilian music and jazz professionally sometimes. He showed me what I could learn to do. I believe just about anyone can learn it. We like helping them do that!

What do you find is the element of ear training that takes the most training? What is the hardest concept for students to grasp?

Each student comes to us with a unique profile of strengths and weaknesses or areas that need time and attention. It often has to do with their experience: those who don't play chords may find it harder to hear chords, for example, and others may find reading or writing rhythms more challenging, or singing accurately if they haven't worked on connecting their inner hearing to their voice before.

World-Class Courses

With Berklee Online, you have more than 250 courses to choose from, including more than 30 courses focusing on music theory, harmony, and ear training. The offerings include:

- **Music Theory 101** [↗](#)
- **Getting Inside Harmony** [↗](#)
- **Basic Ear Training** [↗](#)
- **Counterpoint** [↗](#)
- **Music Theory 201: Harmony and Function** [↗](#)
- **Reharmonization Techniques** [↗](#)





Instructor Spotlight:

Suzanne Clark

Suzanne M. Clark is a professor in the Harmony department at Berklee College of Music, and also teaches songwriting and performance health courses. Suzanne is a bassist, and throughout the years has played and recorded in a variety of genres including jazz, musical theater, and contemporary music. She has also guest lectured at Harvard.

At Berklee Online, Suzanne co-authored the courses *Music Theory and Composition 1* and *Music Theory and Composition 2*.

When did you first learn your music theory foundation?

My earliest music foundations go back to music classes in grade school where we learned to read music in treble and bass clefs, major scales, and key signatures with a little sight singing as well.

Do you notice that a certain music theory lesson gives your students an “a-ha” moment?

I think everyone has different experiences with music, so it could be any topic, but I do see when folks have that awakening. I’ve had the pleasure of working with different students over a few semesters and it’s often breathtaking to see the changes in their understanding and writing.

Why is it important for musicians to learn music theory?

You’ll understand so much more about music and it will improve your musicianship more quickly and efficiently. You’ll have so many more tools that you will be able to apply quickly and effectively and that can open the door to so many more opportunities that otherwise might not have been available to you.

The Intricacies of the 7th Chord

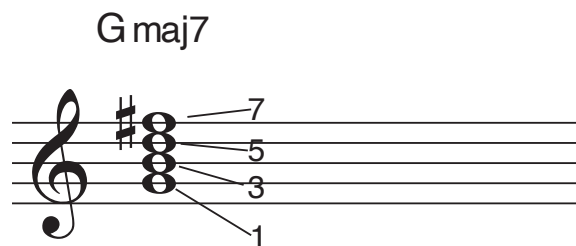
By Michael Rendish

From the Online Course
Getting Inside Harmony 1

Beyond the basic 1–3–5 triad, how can we further add spice to our harmonies? How do all those jazz musicians create such interesting and groovy sounds?

The answers to these questions lie in 7th chords, a vital part of your harmonic vocabulary. The 7th chord forms an essential harmonic “ribcage” for your music, as we’ll see. Since 7th chords come in several different varieties, each serves a distinct musical function.

Think of a 7th chord as an upward extension of a triad. The chord members, then, are the root, 3rd, 5th, and 7th.



Picture what kind of 3rd, what kind of 5th, and what kind of 7th occur above the root when the chord is in close, root position.

There are four kinds of 7th chords found on the degrees of the major scale: major 7th, minor 7th, dominant 7th, and minor 7th (5). See the chart on the following page.

Chord Type	Symbol	3rd	5th	7th
Major 7th	Gmaj7	major	perfect	major
Minor 7th	Gm7	minor	perfect	minor
Dominant 7th	G7	major	perfect	minor
Minor 7(b5)	Gm7(b5)	minor	diminished	minor

Let's see what kind of 7th chords we find on each degree of the major scale. Building a diatonic 7th chord above each scale degree in C major, we get:

I maj7	II mi7	III mi7	IV maj7	V 7	VI mi7	VII mi7(b5)
C maj7	D m7	E m7	F maj7	G 7	A m	B m7(b5)

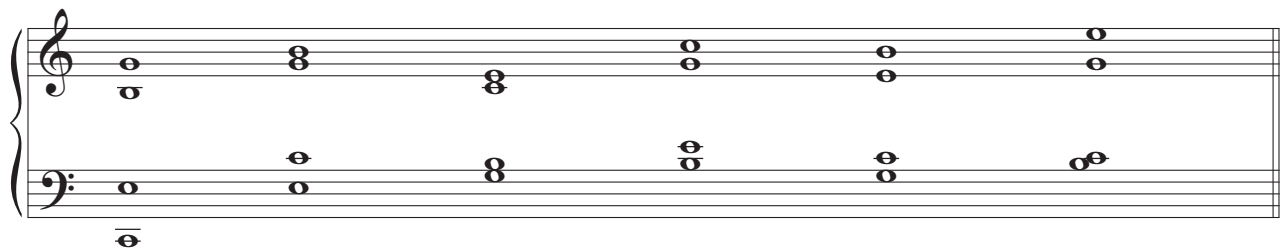
Using a piano, keyboard, or online keyboard, try playing these 7th chords to get a feel for their major, minor, diminished, dominant, and minor 7(b5) sounds. When you listen, what patterns do you notice?

In summary, then, we find the following types of 7th chords diatonic to the major scale:

- Major 7th on I and IV
- Minor 7th on II, III, and VI
- Dominant 7th on V
- Minor 7(\flat 5) on VII

Why might the term *position* rather than *inversion* be more appropriate when referring to any of the various ways a chord's notes can be arranged?

The notes of any standard chord (triad or 7th) are defined. A Cmaj7 will always contain a C, an E, a G, and a B. However, those notes may be positioned a number of different ways. Look at the following:



All of what you see at the end of the previous page are Cmaj7 chords. All of these versions (and many others) are used all the time. It's an important part of your chord recognition skill to be able to identify 7th chords in whatever order the notes may appear.

And, as with triads, identifying 7th chords is simply a matter of reordering the note names until you get a sequence of 3rds—this time, three consecutive 3rds. You then have the chord in root position, so it's now merely a matter of noting the kind of 3rd, 5th, and 7th in order to identify the chord. With all this in mind, good luck spicing up your compositions!

Michael Rendish is the author of the Berklee Online course from which this lesson comes. Learn more about the other lessons in this course by clicking the link below.

Want to explore this course even further?

[Learn More](#)



Instructor Spotlight:

Tom Hojnacki

Tom Hojnacki is the assistant chair of the Harmony department at Berklee College of Music, where he teaches theory, composition, piano, and conducting. As a pianist, Tom has worked with the national touring productions of the Big Apple Circus, *A Chorus Line*, *Beautiful!*, and *Matilda*, and has performed with the Cab Calloway Orchestra and Aretha Franklin.

At Berklee Online, Tom authored the courses *Music Theory and Composition 3* and *Music Theory and Composition 4*.

What music theory concept unlocked the most doors for you when you first learned it?

Understanding harmonic function is the key to everything!

Do you notice that a certain music theory lesson gives your students an “a-ha” moment?

This can happen at any moment in a student’s progress: a young piano student who learns to transpose, a songwriting student who learns about the expressive power of modal interchange, etc. I’ve been teaching for a long time and have been present for a lot of a-ha’s!

Who are some contemporary artists who you admire for their deep understanding of music theory?

Stevie Wonder, Donald Fagen, Dirty Loops, Regina Spektor, Tori Amos, Esperanza Spalding, and Robert Glasper (Kendrick Lamar’s music director). Also Chick Corea and Herbie Hancock.

Overall, why is it important for musicians to put in the work and learn music theory?

Let me put it to you this way: Who would willingly be illiterate in their native language? ‘Nuff said, don’t you think?!



Student Stories

Refugees Develop Their Musicianship

By Pat Healy

Dorcas Mungusa had never played any instruments before she began taking Berklee Online's *Developing Your Musicianship* course. She sings in her church choir, and had been hoping to learn piano, but she had to flee the violence in her home country of the Democratic

Republic of the Congo. She came to Cape Town, South Africa as an asylum seeker.

Now, just a few years later, she is one of six students gathering in front of a computer to greet their instructor. Studying this beginner-level Berklee Online curriculum on the grounds of the Scalabrini Center—a nonprofit in Cape Town that provides services for refugees and migrants—Dorcas says the course has been therapeutic.

“Music has helped me in difficult times in my life,” she says.

“Whenever I feel down or something isn’t going well in my life I can just listen to music and I always feel much better and strengths come back.”

The Berklee Online course is offered in collaboration with Southern New Hampshire University’s Global Education Movement (GEM) program. Dorcas is working towards her Bachelor of Arts in Management with a focus in Logistics and Operations, via SNHU.

“What I would like the world to know about my situation is that being a refugee doesn’t mean that I must be limited,” she says.

“As human beings, we shouldn’t limit other people. Whether you are a citizen or a refugee, opportunity should be given to everyone.”

George Russell Jr. is the chair of harmony and jazz composition at Berklee College of Music, and the author and instructor of this course. He has taught *Developing Your Musicianship* to millions of students through Coursera. But he says the six students in this pilot program are special.



Being a refugee doesn’t mean that I must be limited.

- Dorcas Mungusa

“I’m wondering with all the things that are going on in their lives, how they have the mind space to take on something like this,” says Russell. “They’re smiling and they’re engaged. I have no idea what they must be going through, the kind of uncertainty and instability they have to deal with on a daily basis that we don’t necessarily have to deal with here.”

The majority of Russell's students are refugees from the Democratic Republic of the Congo (one student is from Zimbabwe, another is from Rwanda). Though DRC won independence from Belgium in 1960, there has been ongoing fighting throughout the country ever since, even after the end of a civil war in 2003. According to the UN Refugee Agency, approximately one million people have fled the DRC to neighboring countries in recent years. But you'd never know it by looking at the *Meet and Greet* portion of the course, where students get to know each other and their instructor through a series of introductory questions, such as "who is your favorite musician?" There is something overwhelmingly hopeful in the music they pick. Artists like Bob Marley, Lionel Richie, and Enrique Iglesias come up frequently.

Ben Musumb, also from the DRC, cites "A New Day Has Come" by Celine Dion as an inspirational song to him.

"It helps me and it inspires me to believe that tomorrow might be better and everything will be alright," he says.

Though the subtext of their refugee journey is there, the students are very much focused on their studies.

“Being at school and being part of this program creates a different context,” says Mishka Reddy, who is the bachelor academic support program manager at the Scalabrini Center. “Students can see themselves as students, and not only the rhetoric around what it means to be a refugee. They each see themselves as somebody who is succeeding, who is sometimes tired of assignments, who met their friends and had lunch. It’s like the story is that ‘I’m getting to learn music and these are the positive things around music that I’ve experienced in my life.’”



Instructor Spotlight:

George Russell Jr.

George W. Russell Jr. is a performer, composer, and the Chair of the Harmony and Jazz Composition Department at Berklee College of Music. As a performer, he is comfortable leading a large ensemble, or playing solo piano, always with the aim of stirring listeners' souls. As an educator he has been recognized with the highest award that Berklee gives to faculty, the Most Distinguished Faculty Award.

At Berklee Online, George teaches *Music Theory and Composition 1*, and co-authored *Harmony 2* with Steven Kirby (see page 46).

What first sparked your interest in music?

The feeling that it gave me when I heard it, and the excitement that I got when I realized that I could reproduce what I was hearing. Growing up, there was an organ in my home, and when I sat down at it, I realized, “Wow, that sound! I made that song!” . . . Whenever I play music, I heal. I did a gig a few days ago—and I hadn’t done one in a long time—and I was reminded how just *everything*, from my body, to my mind, to my spirit, were healed by playing music.

What were the first steps you took to learn harmony on that organ, and the chords beyond major and minor?

Once I started studying the harmonic movements with jazz theory, it became a lot more exciting, because I knew that there was some kind of formula that would allow me to arrive at that point a lot sooner than if I had to figure it all out every time I played. It gave me the excitement that I could reproduce it at will because I knew what it was, and I could do it in different keys.

What keeps you excited about music?

You have the opportunity to grow, no matter how much you know, because you’ll never know it all. That can also be the frustrating thing about music, but the beauty is that you’re constantly learning.

Your Career Path

Ever wonder what kinds of careers exist in music theory, harmony, and ear training? There's more to it than you might think. The potential opportunities include roles such as:

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Instructor Spotlight:

Joe Mulholland

Joe Mulholland is a professor in the Harmony department at Berklee College of Music, and was formerly the chair of the department from 2005–2015. An accomplished pianist, recording artist, composer, and teacher, Joe has released five albums of original music and has composed electronic scores for Boston-area dance companies.

At Berklee Online, Joe co-authored *Music Foundations* and authored *Jazz Composition*. He also instructs *Music Theory and Composition 1*.

When did you first learn your music theory foundation?

When I was 8–10 years old, as part of my piano lessons.

Much of music theory is memorizing in order to implement the concepts quickly in a real-world music setting. Is there a memorization technique that you find to be easy and helpful for a certain lesson?

For learning scales: choose one scale for the week, then five times during the day, play or sing that scale while saying the note names. Then write the scale in bass and treble clef. This takes less than 10 minutes a day.

What would you say to a musician who is interested in formal music theory training, after getting by with a good ear for most of their music career?

I would say “Congratulations! Now here is a way to make sense of all those unrelated sounds you hear.”

Who are some modern artists that you admire for their deep understanding of music theory?

In Brazilian music, Chico Buarque. In American music, Stevie Wonder.

Customize Your Own Path to Success

Whether you're looking to advance your career or just take your skills to the next level, Berklee Online has you covered. Our music theory, harmony, and ear training offerings include:

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