

Classical guitar

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The Modern Classical Guitar



Modern Classical Guitars Spruce & Cedar Tops from left to right.

[String instrument](#)

[Playing range](#)



The **classical guitar** is the member of the [guitar](#) family used in [classical music](#). It is an acoustical wooden guitar with six [classical guitar strings](#) as opposed to the metal strings used in acoustic and electric guitars designed for popular music.

In addition to the instrument, the phrase "classical guitar" can refer to two other concepts:

- The instrumental finger technique common to classical guitar—individual strings plucked with the fingernails or, rarely, fingertips
- The instrument's classical music repertoire

The shape, construction, and material of classical guitars vary, but typically they have a *modern classical guitar* shape, or *historic classical guitar* shape resembling early romantic guitars from France and Italy. [Classical guitar strings](#) were once made of [catgut](#) and nowadays are made of polymers such as [nylon](#), with a fine wire wrap on the bass strings.

A guitar family tree can be identified. The [flamenco guitar](#) derives from the modern classical, but has differences in material, construction and sound.^{[1][2]}

The term *modern classical guitar* is sometimes used to distinguish the classical guitar from older forms of guitar, which are in their broadest sense also called *classical*, or more specifically: *early guitars*. Examples of early guitars include the 6-string early romantic guitar (c. 1790–1880), and the earlier baroque guitars with 5 [courses](#).

Today's *modern classical guitar* was established by the late designs of the 19th-century Spanish luthier [Antonio Torres Jurado](#).

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Contexts

The classical guitar has a long history and one is able to distinguish various:

- instruments
- [repertoire](#) (composers and their compositions, [arrangements](#), improvisations)

Both instrument and repertoire can be viewed from a combination of various perspectives:

Historical (chronological period of time)

- baroque guitar — 1600 to 1750 CE
- [early romantic guitars](#) — 1750 to 1850 CE (for music from the [Classical](#) and [Romantic](#) periods)
- modern classical guitars

Geographical

- Spanish guitars ([Torres](#)), and French guitars (René Lacôte, ...), etc.

Cultural

- baroque court music, 19th century opera and its influences, 19th century folk songs, Latin American music, etc.

Historical perspective

Early guitars



Baroque Guitars from the Museum [Cité de la Musique](#) in Paris (which houses almost 200 classical guitars^[3])



Guitars from the Museum [Cité de la Musique](#) in Paris (which houses almost 200 classical guitars^[3])

While "classical guitar" is today mainly associated with the modern classical guitar design, there is an increasing interest in early guitars; and understanding the link between historical repertoire and the particular period guitar that was originally used to perform this repertoire. The musicologist and author Graham Wade writes:

Nowadays it is customary to play this repertoire on reproductions of instruments authentically modeled on concepts of musicological research with appropriate adjustments to techniques and overall interpretation. Thus over recent decades we have become accustomed to specialist artists with expertise in the art of vihuela (a 16th-century type of guitar popular in Spain), lute, Baroque guitar, 19th-century guitar, etc.^[4]

Different types of guitars have different sound aesthetics, e.g. different color-spectrum characteristics (the way the sound energy is spread in the fundamental frequency and the [overtones](#)), different response, etc. These differences are due to differences in construction, for

example modern classical guitars usually use a different bracing (fan-bracing), than was used in earlier guitars (they had ladder-bracing); and a different voicing was used by the luthier.

It is interesting to note the historical parallel between musical styles (baroque, classical, romantic, flamenco, jazz) and the style of "sound aesthetic" of the musical instruments used, for example: [Robert de Visée](#) played on a baroque guitar with a very different sound aesthetic than the guitars used by [Mauro Giuliani](#) and [Legnani](#) - they used 19th century guitars. These guitars in turn sound different from the Torres models used by Segovia, that are suited for interpretations of romantic-modern works such as [Moreno Torroba](#).

When considering the guitar from a historical perspective, the musical instrument used is just as important as the musical language and style of the particular period. As an example: It is impossible to play a historically informed [de Visee](#) or Corbetta (baroque guitarist-composers) on a modern classical guitar. The reason is that the baroque guitar used courses, which are two strings close together (in unison), that are plucked together. This gives baroque guitars an unmistakable sound characteristic and tonal texture that is an integral part of an interpretation. Additionally the sound aesthetic of the baroque guitar (with its strong overtone presence) is very different from modern classical type guitars, as is shown below.

Today's use of Torres and post-Torres type guitars for repertoire of all periods is sometimes critically viewed: Torres and post-Torres style modern guitars (with their fan-bracing and design) have a thick and strong tone, very suitable for modern-era repertoire. However, they are considered to emphasize the fundamental too heavily (at the expense of overtone partials) for earlier repertoire (Classical/Romantic: Carulli, Sor, Giuliani, Mertz, ...; Baroque: de Visee, ...; etc.). *"Andrés Segovia presented the Spanish guitar as a versatile model for all playing styles"*,^[5] to the extent, that still today, *"many guitarists have tunnel-vision of the world of the guitar, coming from the modern Segovia tradition"*.^[6]

While fan-braced modern classical Torres and post-Torres style instruments coexisted with traditional ladder-braced guitars at the beginning of the 20th century; the traditional forms eventually fell away. Some attribute this to the popularity of [Segovia](#), considering him *"the catalyst for change toward the Spanish design and the so-called 'modern' school in the 1920's and beyond"*.^[5] The styles of music performed on ladder-braced guitars were becoming more and more unfashionable; and, e.g. in Germany, musicians were in part turning towards folkstyle music (Schrammel-music and the [Contraguitar](#)), but this only remained localized in Germany and Austria and became unfashionable again. On the other hand, Segovia was playing in concerts around the world, popularizing his modern classical guitar, as well as a new style of music in the 1920s: Spanish romantic-modern style, with guitar works by [Moreno Torroba](#), de Falla, etc. Some people consider it to have been this influence of Segovia, which eventually led to the domination of the Torres instrument - factories all over the world began producing them in large numbers.

It was the 19th century classical guitarist [Francisco Tárrega](#) who first popularized the Torres design as a classical solo instrument.

Characteristics

- Vihuela, renaissance guitars and baroque guitars have a bright sound - rich in overtones - and their courses(double strings) give the sound a very particular texture.
- Early guitars of the classical and romantic period (early romantic guitars) have single strings but their design and voicing are still such that they have their tonal energy more in the overtones (but without starved fundamental), giving a bright intimate tone.
- Later in Spain a style of music emerged that favored a stronger fundamental:
With the change of music a stronger fundamental was demanded and the fan bracing system was approached. ... the guitar tone has been changed from a transparent tone, rich in higher partials to a more "broad" tone with a strong fundamental.^[7]
- Thus modern guitars with fan bracing (fan strutting) have a design and voicing that gives them a much more thick heavy sound, with far more tonal energy found in the fundamental.

Style periods

Renaissance

Composers of the Renaissance period who wrote for four course guitar include [Alonso Mudarra](#), [Miguel de Fuenllana](#), [Adrian Le Roy](#), [Gregoire Brayssing](#), [Guillaume de Morlaye](#), and [Simon Golier](#).

Instrument

Four-course guitar

Baroque^[edit]

Some well known composers of the baroque guitar were [Gaspar Sanz](#), [Robert de Visée](#) and [Francesco Corbetta](#).

Examples of instruments

- Baroque guitar by [Nicolas Alexandre Voboam II](#): This French instrument has the typical design of the period with five courses of double-strings and a flat back.^[8]
- Baroque guitar attributed to Matteo Sellas : This Italian instrument has five courses and a rounded back.^[9]

Classical and Romantic

From approximately 1780 to 1850, the guitar had numerous composers and performers including:

- [Filippo Gragnani](#) (1767–1820)
- [Antoine de Lhoyer](#) (1768–1852)
- [Ferdinando Carulli](#) (1770–1841)

- [Francesco Molino](#) (1774–1847)
- [Fernando Sor](#) (1778–1839)
- Luigi Moretti (c. 1780–1850)
- [Mauro Giuliani](#) (1781–1829)
- [Dionisio Aguado](#) (1784 – 1849)
- [Matteo Carcassi](#) (1792–1853)
- [Napoléon Coste](#) (1805–1883)
- [Johann Kaspar Mertz](#) (1806–1856)

[Hector Berlioz](#) studied the guitar as a teenager,^[10] [Franz Schubert](#) owned at least two and wrote for the instrument,^[11] [Ludwig van Beethoven](#), after hearing Giuliani play, commented the instrument was "a miniature orchestra in itself".^[12]

Francisco Tárrega

The guitarist and composer [Francisco Tárrega](#) (b. Vilareal, Spain in November 29, 1852-d. December 15, 1909) was one of the great guitar virtuosos and teachers and is considered the father of modern classical guitar playing. As professor of guitar at the conservatories of Madrid and Barcelona he defined many elements of the modern classical technique and elevated the importance of the guitar in the classical music tradition.

Modern period

At the beginning of the 1920s, [Andrés Segovia](#) popularized the guitar with tours and early phonograph recordings. Segovia collaborated with the composers [Federico Moreno Torroba](#) and Joaquin Turina with the aim of extending the guitar repertoire with new music.^[13] Segovia's tour of South America revitalized public interest in the guitar and helped the guitar music of [Manuel Ponce](#) and Heitor Villa-Lobos reach a wider audience.^[14] The composers [Alexandre Tansman](#) and [Mario Castelnuovo-Tedesco](#) were commissioned by Segovia to write new pieces for the guitar.^[15] [Luiz Bonfá](#) popularized Brazilian musical styles such as the newly created Bossa Nova, which was well received by audiences in the USA.

"New music" - avant-garde

The classical guitar repertoire also includes modern contemporary works – sometimes termed "New Music" – such as [Elliott Carter](#)'s *Changes*,^[16] [Cristóbal Halffter](#)'s *Codex I*,^[17] [Luciano Berio](#)'s *Sequenza XI*,^[18] [Maurizio Pisati](#)'s *Sette Studi*,^[19] [Maurice Ohana](#)'s *Si Le Jour Paraît*,^[20] [Sylvano Bussotti](#)'s *Rara (eco sierologico)*,^[21] [Ernst Krenek](#)'s *Suite für Gitarre allein, Op. 164*,^[22] [Franco Donatoni](#)'s *Algo: Due pezzi per chitarra*,^[23] etc.

Performers who are known for including modern repertoire include Jürgen Ruck, Elena Càsoli, [Leo Brouwer](#) (when he was still performing), [John Schneider](#), [Reinbert Evers](#), [Maria Kämmerling](#), [Siegfried Behrend](#), [David Starobin](#), [Mats Scheidegger](#), [Magnus Andersson](#), etc.

This type of repertoire is usually performed by guitarists who have particularly chosen to focus on the avant-garde in their performances.

Within the contemporary music scene itself, there are also works which are generally regarded as extreme. These include works such as [Brian Ferneyhough's *Kurze Schatten II*](#),^[24] [Sven-David Sandström's *away from*](#)^[25] and [Rolf Riehm's *Toccata Orpheus*](#),^[26] etc. which are notorious for their extreme difficulty.

There are also a variety of databases documenting modern guitar works such as [Sheer Pluck](#)^[27] and others.^{[28][29]}

Background information

The evolution of the classical guitar and its repertoire spans more than four centuries. It has a history that was shaped by contributions from earlier instruments, such as the lute, the vihuela, and the baroque guitar.

The last guitarist to follow in Segovia's footsteps was Julian Bream and Julian Bream will be 73 years old on July 15th 2006. Miguel Llobet, Andrés Segovia and Julian Bream are the three performer personalities of the 20th century. Do not understand me wrong, we have many guitarists today that are very excellent performers, but none with such a distinct personality in their tone and style as Llobet, Segovia and Bream. In all instrumental areas, not just the guitar, there is a lack of individualism with a strong tendency to conformity. This I find very unfortunate since art (music, theatre or the pictorial arts) is a very individual and personal matter.^[30]

—Bernard Hebb, *Interview*

History



[Guitarra Latina](#) (left) and

Guitarra Morisca (right)



History of guitars

(exhibited at [Deutsches Museum](#))

Main article: [History of the classical guitar](#)

Overview of the classical guitar's history

The ancestries of the modern guitar, like numerous other [chordophones](#), track back through many instruments and thousands of years to [ancient central Asia](#). Guitar like instruments appear in ancient carvings and statues recovered from the old [Persian](#) capital of [Susa](#). This means that the contemporary Iranian instruments such as the [tanbur](#) and [setar](#) are distantly related to the European guitar, as they all derive ultimately from the same ancient origins, but by very different historical routes and influences.

During the [Middle Ages](#), instruments called "guitars" with three and four strings were in use but their construction and tuning was different from the modern guitars. The [Guitarra Latina](#) in Spain, had curved sides and a single hole. The [Guitarra Morisca](#), which was brought to Spain by the [Moors](#) or at least was heavily influenced by Moorish instruments, had an oval soundbox and many sound holes on its soundboard. By the 15th century, a four course double-string instrument called the [vihuela de mano](#), that had tuning like the later modern guitar except on one string and similar construction, appeared in Spain and spread to Italy; by the 16th century, a fifth double-string had been added. During this time, composers wrote mostly in tablature notation. In the middle of the 16th century, influences from the vihuela and the renaissance guitar were combined and the baroque five string guitar appeared in Spain.^[31] The baroque guitar quickly superseded the vihuela in popularity in Spain, France and Italy and Italian players and composers became prominent. In the late 18th century the six string guitar quickly became popular at the expense of the five string guitars. During the 19th century the Spanish luthier and player [Antonio de Torres](#) gave the modern classical guitar its definitive form, with a broadened body, increased waist curve, thinned belly, improved internal bracing.^[32] The modern classical guitar replaced older form for the accompaniment of song and dance called [flamenco](#), and a modified version, known as the [flamenco guitar](#), was created.



[Gittern](#) (1450)

[Vihuela](#)

(vihuela book by Luis Milan, 1536^[33])



[Baroque guitar](#)^[34] with rounded-back
(engraving by Etienne Picart, 1680)

Renaissance guitar

See also: [Renaissance music](#)

The [gittern](#), often referred to as *Renaissance guitar*, is a musical instrument resembling a small lute or guitar. It is related to but is not a [citole](#), another medieval instrument. The gittern was carved from a single piece of wood with a curved ("sickle-shaped") pegbox. An example has survived from around 1450.

Vihuela

Main article: [Vihuela](#)

The written history of the classical guitar can be traced back to the early 16th century with the development of the [vihuela](#) in Spain. While the lute was then becoming popular in other parts of Europe, the Spaniards did not take to it well because of its association with the Moors.^{[[citation needed](#)]} Instead, the lute-like vihuela appeared with two more strings that gave it more range and complexity. In its most developed form, the vihuela was a guitar-like instrument with six double strings made of gut, tuned like a modern classical guitar with the exception of the third string, which was tuned half a step lower. It has a high sound and is rather large to hold. Few have survived and most of what is known today comes from diagrams and paintings.



The Guitar Player (c. 1672), by [Johannes Vermeer](#), guitar Voboam



[Early romantic guitar](#) by Jean-Nicolas Grobert (1830)

Baroque guitar

Main article: [Baroque guitar](#)

See also: [Baroque music](#)

"Early romantic guitar" or "Guitar during the Classical music era"

Main article: [Early romantic guitar](#)

See also: [Classical music era](#)

The earliest extant six-string guitar is believed to have been built in 1779 by Gaetano Vinaccia (1759 - after 1831) in [Naples, Italy](#); however, the date on the label is a little ambiguous.^{[35][36]}

The Vinaccia family of luthiers is known for developing the [mandolin](#). This guitar has been examined and does not show tell-tale signs of modifications from a double-course guitar.^[37] The authenticity of guitars allegedly produced before the 1790s is often in question. This also corresponds to when Moretti's 6-string method appeared, in 1792.



Spanish guitar by [Antonio de Torres Jurado](#) (1862)



[Smallman](#) played by John Williams in 2008

Modern classical guitar

Main article: [Modern classical guitar](#)

See also: [Antonio de Torres Jurado](#) and [Hermann Hauser, Sr.](#)

Contemporary classical guitar

Main article: [Classical guitar making](#)

Contemporary concert guitars occasionally follow the [Smallman](#) design, which replaces fan braces with a much lighter balsa brace attached to the back of the sound board with carbon fiber. The balsa brace has a honeycomb pattern and allows the (now much thinner) sound board to support more vibrational modes. This leads to greater volume and longer sustain but compromises the subtle tonalities of the Spanish sound.

Performance

Main article: [Classical guitar technique](#)

The modern classical guitar is usually played in a seated position, with the instrument resting on the left lap - and the left foot placed on a footstool. Alternatively - if a footstool is not used - a *guitar support* can be placed between the guitar and the left lap (the support usually attaches to the instrument's side with [suction cups](#)). (There are of course exceptions, with some performers choosing to hold the instrument another way.)

Plucking of the string

Right-handed players use the fingers of the right hand to pluck the strings, with the thumb plucking from the top of a string downwards (downstroke) and the other fingers plucking from the bottom of string upwards (upstroke). The little finger in classical technique as it evolved in the 20th century is used only to ride along with the ring finger without striking the strings and to thus physiologically facilitate the ring finger's motion.

In contrast, [Flamenco](#) technique, and classical compositions evoking Flamenco, employ the little finger semi-independently in the Flamenco four-finger [rasgueado](#), that rapid strumming of the

string by the fingers in reverse order employing the back of the fingernail—a familiar characteristic of Flamenco.

[Flamenco](#) technique, in the performance of the [rasgueado](#) also uses the upstroke of the four fingers and the downstroke of the thumb: the string is hit not only with the inner, fleshy side of the fingertip but also with the outer, fingernail side. This was also used in a technique of the [vihuela](#) called [dedillo](#)^[38] which has recently begun to be introduced on the classical guitar.

Some modern guitarists, such as [Štěpán Rak](#) and [Kazuhito Yamashita](#), use the little finger independently, compensating for the little finger's shortness by maintaining an extremely long fingernail.

[Štěpán Rak](#) and [Kazuhito Yamashita](#) have also generalized the use of the upstroke of the four fingers and the downstroke of the thumb (the same technique as in the [rasgueado](#) of the [Flamenco](#): as explained above the string is hit not only with the inner, fleshy side of the fingertip but also with the outer, fingernail side) both as a free stroke and as a rest stroke.^[39]

Direct contact with strings

As with other plucked instruments (such as the lute), the musician directly touches the strings (usually plucking) to produce the sound. This has important consequences: Different tone/[timbre](#) (of a single note) can be produced by plucking the string in different manners and in different positions.

How are fingerings marked?

In guitar *scores* the five fingers of the right-hand (which pluck the strings) are designated by the first letter of their Spanish names namely p = thumb (*pulgar*), i = index finger (*índice*), m = middle finger (*mayor*), a = ring finger (*anular*), c = little finger or pinky (*chiquito*)^[40]

The four fingers of the left hand (which stop the strings) are designated 1 = index, 2 = major, 3 = ring finger, 4 = little finger; 0 designates an open string, that is a string that is not stopped by a finger of the left hand and whose full length thus vibrates when plucked. On the classical guitar thumb of the left hand is never used to stop strings from above (as is done on the electric guitar): the neck of a classical guitar is too wide and the normal position of the thumb used in classical guitar technique do not make that possible.

Scores (contrary to *tablatures*) do not systematically indicate the string to be plucked (although in most cases the choice is obvious). When an indication of the string is required the strings are designated 1 to 6 (from the 1st the high E to the 6th the low E) with figures 1 to 6 inside circles.

The positions (that is where on the fretboard the first finger of the right hand is placed) are also not systematically indicated, but when they are (mostly in the case of the execution of *barrés*) these are indicated with Roman numerals from the first position I (index finger of the left hand placed on the 1st fret: F-B flat-E flat-A flat-C-F) to the twelfth position XII (the index finger of the left hand placed on the 12th fret: E-A-D-G-B-E; the 12th fret is placed where the body

begins) or even higher up to position XIX (the classical guitar most often having 19 frets, with the 19th fret being most often split and not being usable to fret the 3rd and 4th strings).

Alternation

To achieve tremolo effects and rapid, fluent scale passages, the player must practice alternation, that is, never plucking a string with the same finger twice in a row. Using **p** to indicate the thumb, **i** the index finger, **m** the middle finger and **a** the ring finger, common alternation patterns include:

- *i-m-i-m* : Basic melody line on the treble strings. Has the appearance of "walking along the strings".
- *i-m-a-i-m-a* : Tremolo pattern with a triplet feel (i.e. the same note is repeated three times).
- *p-a-m-i-p-a-m-i* : Another tremolo pattern.
- *p-m-p-m* : A way of playing a melody line on the lower strings.

Repertoire

Main article: [classical guitar repertoire](#)

Music written specifically for the classical guitar dates from the addition of the sixth string (the baroque guitar normally had five pairs of strings) in the late 18th century.

A guitar recital may include a variety of works, e.g. works written originally for the lute or vihuela by composers such as [John Dowland](#) (b. Ireland 1563) and [Luis de Narváez](#) (b. Spain c. 1500), and also music written for the harpsichord by [Domenico Scarlatti](#) (b. Italy 1685), for the baroque lute by [Sylvius Leopold Weiss](#) (b. Germany 1687), for the baroque guitar by [Robert de Visée](#) (b. France c. 1650) or even Spanish-flavored music written for the piano by [Isaac Albéniz](#) (b. Spain 1860) and [Enrique Granados](#) (b. Spain 1867). The most important composer who did not write for the guitar but whose music is often played on it is [Johann Sebastian Bach](#) (b. Germany 1685), whose baroque lute works have proved highly adaptable to the instrument.

Of music written originally for guitar, the earliest important composers are from the classical period and include [Fernando Sor](#) (b. Spain 1778) and [Mauro Giuliani](#) (b. Italy 1781), both of whom wrote in a style strongly influenced by Viennese classicism. In the 19th century guitar composers such as [Johann Kaspar Mertz](#) (b. Slovakia, Austria 1806) were strongly influenced by the dominance of the piano. Not until the end of the nineteenth century did the guitar begin to establish its own unique identity. [Francisco Tárrega](#) (b. Spain 1852) was central to this, sometimes incorporating stylized aspects of flamenco's Moorish influences into his romantic miniatures. This was part of late 19th century mainstream European musical nationalism. Albéniz and Granados were central to this movement; their evocation of the guitar was so successful that their compositions have been absorbed into standard guitar repertoire.

The steel-string and electric guitars characteristic to the rise of rock and roll in the post-WWII era became more widely played in North America and the English speaking world. Barrios

composed many works and brought into the mainstream the characteristics of Latin American music, as did the Brazilian composer [Heitor Villa-Lobos](#). Andrés Segovia commissioned works from Spanish composers such as [Federico Moreno Torroba](#) and [Joaquín Rodrigo](#), Italians such as [Mario Castelnuovo-Tedesco](#) and Latin American composers such as [Manuel Ponce](#) of Mexico. Other prominent Latin American composers are [Leo Brouwer](#) of Cuba, [Antonio Lauro](#) of Venezuela and [Enrique Solares](#) of Guatemala. [Julian Bream](#) of Britain managed to get nearly every British composer from [William Walton](#) to [Benjamin Britten](#) to [Peter Maxwell Davies](#) to write significant works for guitar. Bream's collaborations with tenor [Peter Pears](#) also resulted in [song cycles](#) by Britten, [Lennox](#) Berkeley and others. There are significant works by composers such as [Hans Werner Henze](#) of Germany, [Gilbert Biberian](#) of England and [Roland Chadwick](#) of Australia.

The classical guitar also became widely used in popular music and rock & roll in the 1960s after guitarist [Mason Williams](#) popularized the instrument in his instrumental hit [Classical Gas](#). Guitarist [Christopher Parkening](#) is quoted in the book *Classical Gas: The Music of Mason Williams* as saying that it is the most requested guitar piece besides Malagueña and perhaps the best known instrumental guitar piece today. In the field of [New Flamenco](#), the works and performances of Spanish composer and player [Paco de Lucía](#) are known worldwide.

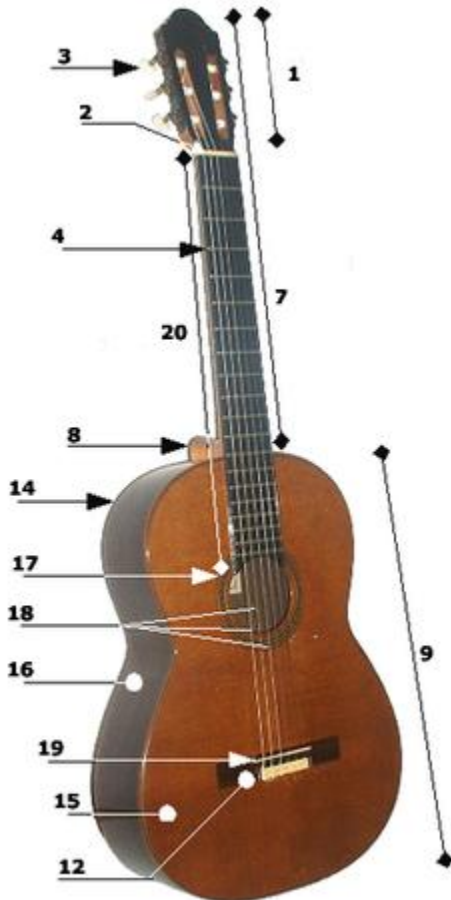
Physical characteristics

The classical guitar is distinguished by a number of characteristics:

- It is an [acoustic](#) instrument. The sound of the plucked string is amplified by the [soundboard](#) and resonant cavity of the guitar.^[41]
- It has six [strings](#), though some classical guitars have seven or more strings.
- All six strings are made from [nylon](#), or nylon wrapped with metal, as opposed to the metal strings found on other acoustic guitars. Nylon strings also have a much lower [tension](#) than steel strings, as do the predecessors to nylon strings, gut strings (made from ox or sheep gut). The lower three strings ('bass strings') are wound with metal, commonly silver plated copper.
- Because of the low string tension
 - The neck can be entirely of wood without a steel truss rod
 - The interior bracing can be lighter
- Typical modern six-string classical guitars are 48–54 mm wide at the nut, compared to around 42 mm for electric guitars.
- Classical fingerboards are normally flat and without inlaid fret markers, or just have dot inlays on the side of the neck—steel string fingerboards usually have a slight radius and inlays.
- Classical guitarists use their right hand to pluck the strings. Players shape their fingernails for ideal tone and feel against the strings.
- Strumming is a less common technique in classical guitar, and is often referred to by the Spanish term "rasgueo," or for strumming patterns "rasgueado," and uses the backs of the fingernails. Rasgueado is integral to [Flamenco](#) guitar.
- [Machine heads](#) at the [headstock](#) of a classical guitar point backwards—in contrast to most steel-string guitars, which have machine heads that point outward.

- The overall design of a Classical Guitar is very similar to the slightly lighter and smaller [Flamenco guitar](#).

Parts



Parts of typical classical guitars, numbered^[42]

- 1 [Headstock](#)
- 2 [Nut](#)
- 3 [Machine heads](#) (or pegheads, tuning keys, tuning machines, tuners)
- 4 [Frets](#)
- 7 [Neck](#)
- 8 [Heel](#)
- 9 [Body](#)
- 12 [Bridge](#)
- 14 [Bottom deck](#)
- 15 [Soundboard](#)
- 16 [Body sides](#)
- 17 [Sound hole](#), with [rosette](#) inlay
- 18 [Strings](#)
- 19 [Saddle](#) (Bridge nut)
- 20 [Fretboard](#)

Fretboard

The fretboard (also called the **fingerboard**) is a piece of wood embedded with metal frets that constitutes the top of the neck. It is flat or slightly curved. The curvature of the fretboard is measured by the fretboard radius, which is the radius of a hypothetical circle of which the fretboard's surface constitutes a segment. The smaller the fretboard radius, the more noticeably curved the fretboard is. Fretboards are most commonly made of [ebony](#), but may also be made of [rosewood](#) or of phenolic composite ("micarta").

Frets

Main article: [Fret](#)

Frets are the metal strips (usually nickel alloy or stainless steel) embedded along the [fingerboard](#) and placed at points that divide the length of string mathematically. The strings' vibrating length is determined when the strings are pressed down behind the frets. Each fret produces a different pitch and each pitch spaced a half-step apart on the 12 tone scale. The [ratio](#) of the widths of two consecutive frets is the [twelfth root of two](#) ($\sqrt[12]{2}$), whose numeric value is about 1.059463. The twelfth fret divides the string in two exact halves and the 24th fret (if present) divides the string in half yet again. Every twelve frets represents one octave. This arrangement of frets results in [equal tempered](#) tuning.

Neck

Main article: [Guitar neck](#)

See also: [Guitar strings](#)

A classical guitar's frets, fretboard, tuners, headstock, all attached to a long wooden extension, collectively constitute its [neck](#). The wood for the fretboard usually differs from the wood in the rest of the neck. The bending stress on the neck is considerable, particularly when heavier gauge strings are used.

Neck joint or 'heel'

This is the point where the neck meets the body. In the traditional Spanish neck joint the neck and block are one piece with the sides inserted into slots cut in the block. Other necks are built separately and joined to the body either with a dovetail joint, mortise or flush joint. These joints are usually glued and can be reinforced with mechanical fasteners. Recently many manufacturers use bolt on fasteners. Bolt on neck joints were once associated only with less expensive instruments but now some top manufacturers and hand builders are using variations of this method. Some people believed that the Spanish style one piece neck/block and glued dovetail necks have better sustain, but testing has failed to confirm this. While most traditional Spanish style builders use the one piece neck/heel block, Fleta a prominent Spanish builder used a dovetail joint due to the influence of his early training in violin making. One reason for the introduction of the mechanical joints was to make it easier to repair necks. This is more of a

problem with steel string guitars than with nylon strings, which have about half the string tension. This is why nylon string guitars often don't include a truss rod either.

Body

The body of the instrument is a major determinant of the overall sound variety for acoustic guitars. The guitar top, or soundboard, is a finely crafted and engineered element often made of [spruce](#), [red cedar](#), [redwood](#) or [mahogany](#). This thin (often 2 or 3 mm thick) piece of wood, strengthened by different types of internal bracing, is considered the most prominent factor in determining the sound quality of a guitar. The majority of the sound is caused by vibration of the guitar top as the energy of the vibrating strings is transferred to it. Different patterns of wood bracing have been used through the years by luthiers ([Torres](#), [Hauser](#), [Ramírez](#), Fleta, and [C.F. Martin](#) being among the most influential designers of their times); to not only strengthen the top against collapsing under the tremendous stress exerted by the tensioned strings, but also to affect the resonance of the top. Some contemporary guitar makers have introduced new construction concepts such as "double-top" consisting of two extra-thin wooden plates separated by [Nomex](#), or carbon-fiber reinforced lattice - pattern bracing. The back and sides are made out of a variety of woods such as mahogany, Indian [rosewood](#) and highly regarded Brazilian rosewood (*Dalbergia nigra*). Each one is chosen for its aesthetic effect and structural strength, and such choice can also play a significant role in determining the instrument's [timbre](#). These are also strengthened with internal bracing, and decorated with inlays and purfling.

The body of a classical guitar is a resonating chamber that projects the vibrations of the body through a *sound hole*, allowing the acoustic guitar to be heard without amplification. The sound hole is normally a single round hole in the top of the guitar (under the strings), though some have different placement, shapes, or numbers of holes. How much air an instrument can move determines its maximum volume.

Binding, purfling and kerfing

The top, back and sides of a classical guitar body are very thin, so a flexible piece of wood called *kerfing* (because it is often scored, or *kerfed* so it bends with the shape of the rim) is glued into the corners where the rim meets the top and back. This interior reinforcement provides 5 to 20 mm of solid gluing area for these corner joints.

During final construction, a small section of the outside corners is carved or routed out and filled with binding material on the outside corners and decorative strips of material next to the binding, which are called [purfling](#). This binding serves to seal off the [endgrain](#) of the top and back. Binding and purfling materials are generally made of either wood or high quality plastic materials.

Bridge

The main purpose of the bridge on a classical guitar is to transfer the vibration from the strings to the soundboard, which vibrates the air inside of the guitar, thereby amplifying the sound produced by the strings. The bridge holds the strings in place on the body. Also, the position of

the saddle, usually a strip of bone or plastic that supports the strings off the bridge, determines the distance to the nut (at the top of the fingerboard).

Sizes

The modern full size classical guitar has a [scale length](#)^[43] of around 650 mm (25.6 inches), with an overall instrument length of 965–1016 mm (38-40 inches). The scale length has remained quite consistent since it was chosen by the originator of the instrument, [Antonio de Torres](#). This length may have been chosen because it's twice the length of a violin string. As the guitar is tuned to one octave below that of the violin, the same size gut could be used for the 1st strings of both instruments.

Smaller-scale instruments are produced to assist children in learning the instrument as the smaller scale leads to the frets being closer together, making it easier for smaller hands. The scale-size for the smaller guitars is usually in the range 484–578 mm (19-22.5 inches), with an instrument length of 785–915 mm (31-36 inches). Full-size instruments are sometimes referred to as 4/4, while the smaller sizes are 3/4, 1/2 or 1/4.^[44]

Tuning

Main article: [Guitar tuning](#)

A variety of different tunings are used. The most common by far, which one could call the "standard tuning" is:

- e¹ - b - g - d - A - E

The above order, is the tuning from the *1st string* (highest-pitched string e'¹—spatially the bottom string in playing position) to the *6th string* - lowest-pitched string E—spatially the upper string in playing position, and hence comfortable to pluck with the thumb.

The explanation for this "asymmetrical" tuning (in the sense that the maj 3rd is not between the two middle strings as say in the tuning of the viola da gamba) is probably that the guitar originated as a 4-string instrument (actually an instrument with 4 double courses of strings, see above) with a maj 3rd between the 2nd and 3rd strings and that it only became a 6-string instrument by gradual addition of a 5th string and then a 6th string tuned a 4th apart:

***"The Evolution of tuning** The development of the modern tuning can be traced in stages. One of the tunings from the 16th century is C-F-A-D. This is equivalent to the top four strings of the modern guitar tuned a tone lower. However, the absolute pitch for these notes is not equivalent to modern "concert pitch". The tuning of the four-course guitar was moved up by a tone and toward the end of the 16th century, five-course instruments were in use with an added lower string tuned to A. This produced A-D-G-B-E, one of a wide number of variant tunings of the period. The low E string was added during the 18th century."*^[45]

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