Ukulele Chord Progression Trainer - User Manual

Full Version

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🔰 Program Info

The **Ukulele Chord Progression Trainer** is an interactive web-based application for learning and practicing chord progressions on the ukulele. The program offers over 15 different chord progressions in 4 difficulty levels with visual display, audio playback and adjustable metronome.

What does the Trainer offer?

- **15+ Chord Progressions** - From simple changes to jazz progressions
- **4 Difficulty Levels** - Beginner to expert
- **Interactive Metronome** - Visual and audible beat guide
- **Flexible Time Signatures** - 4/4, 3/4 and whole measures
- **Audio Playback** - Realistic ukulele sounds
- **Tempo Control** - 60-140 BPM adjustable
- **Statistics System** - Track progress and practice time

Target Audience

- **Ukulele Beginners** - Learn first chord changes systematically
- **Advanced Players** - Master complex progressions
- **Songwriters** - Inspiration for new chord progressions
- **Music Teachers** - Teaching material for harmony training

Chord Progression Categories

- **Beginner** - Simple 2-3 chord changes (C-F, C-Am)
- **Intermediate** - Standard pop progressions (I-V-vi-IV)

- **Advanced** - Extended progressions with more chords
- **Expert** - Jazz progressions with seventh chords

🚀 Quick Start

Starting the Program

1. **Open HTML File** in a modern web browser
2. **Choose Language** - 🇩🇪 German or 🇬🇧 English
3. **Choose Difficulty** - Start with **"Intermediate"**
4. **Select Progression** - Default is **I-V-vi-IV (C-G-Am-F)**
5. **Play** - Click ▶️ **Play**

First Steps

1. **Watch Metronome** - Red circle turns green on each beat
2. **Follow Chords** - Green frame shows current chord
3. **Count Beats** - Numbers show sub-beats (1, 2, 3, 4)
4. **Adjust Tempo** - Slider for slower/faster speed
5. **Play Along** - Take ukulele and strum along

Recommended Learning Order

1. **C-F Change** (Beginner) - Simplest chord change
2. **C-G-Am-F** (Intermediate) - Popular pop progression
3. **Am-F-C-G** (Intermediate) - Variation of pop progression
4. **Extended Pop Progression** (Advanced) - 8 chords
5. **Jazz Progressions** (Expert) - Seventh chords

⚙️ Main Features

Visual Metronome System

- **Color Change Indicator** - Red → Green on each beat
- **Sub-Beat Display** - Numbers 1-4 for orientation within measure
- **Current Chord** - Green highlighting of played chord
- **Next Chord** - Yellow highlighting for preparation
- **Progress Bar** - Shows position within progression

Audio System

- **Ukulele Sounds** - Realistic chord playback
- **Metronome Clicks** - Adjustable click sounds
- **Two Tunings** - High G and Low G support
- **Variable Volume** - Separate controls for different sounds
- **Accent System** - Emphasized first beats at measure start

Flexible Time Structure

- **Measures per Chord** - 1, 2, 4 or 8 measures selectable
- **Time Signatures** - 4/4, 3/4 or whole measures
- **Tempo Range** - 60-140 BPM for all skill levels
- **Beat Subdivision** - Precise sub-beat tracking

Statistics Tracking

- **Cycles** - How often the progression was played completely
- **Chords Played** - Total number of played chords
- **Practice Time** - Automatic time measurement
- **Session-based** - Statistics per practice session

🎛️ Operation

Selecting Difficulty Levels

🟢 Beginner - Simplest Chord Changes

Characteristics:

- 2-3 chords per progression
- Simple major/minor chords
- Slow recommended tempos (60-80 BPM)
- Focus on clean chord changes

Available Progressions:

- **C-F Change** - Basic major chord exercise
- **C-Am Change** - Major to minor transition
- **F-C-G** - Three-chord standard
- **C-G-C** - Cadence with return

🟡 Intermediate - Standard Pop Progressions

Characteristics:

- 4 chords per progression
- Popular pop/rock combinations
- Medium tempos (80-100 BPM)
- Frequently used chord sequences

Available Progressions:

- **I-V-vi-IV (C-G-Am-F)** - Most popular pop progression
- **vi-IV-I-V (Am-F-C-G)** - Minor variation
- **IV-V-vi (F-G-Am)** - Ends in minor
- **I-vi-IV-V (C-Am-F-G)** - Classic doo-wop

 Advanced - Extended Progressions

Characteristics:

- 4-8 chords per progression
- Complexly structured sequences
- Higher tempos (100-120 BPM)
- Less common chord combinations

Available Progressions:

- **Extended Pop Progression** - 8 chords
- **Minor Variation** - Complex minor turns
- **I-iii-IV-V** - With rare iii chord
- **ii-V-I-vi** - Jazz-influenced cadence

🔴 **Expert - Jazz and Extended Harmonies**

Characteristics:

- 4+ chords with sevenths and extensions
- Jazz-typical progressions
- All tempos (60-140 BPM)
- Professional harmony concepts

Available Progressions:

- **Jazz Standard** - Maj7, m7, dom7 chords
- **ii-V-I Jazz** - Classic jazz cadence
- **Chromatic Progression** - Major/minor contrasts

Tempo Control

BPM Slider (60-140)

Tempo Recommendations by Skill:

- **60-70 BPM** - Beginners, learning new progressions
- **70-90 BPM** - Medium speed for practice
- **90-110 BPM** - Standard tempo for most songs
- **110-130 BPM** - Fast songs, energetic music
- **130-140 BPM** - Very fast, only for experienced players

Real-time Adjustment

- **During Playback** - Tempo can be changed live
- **Immediate Effect** - Metronome adjusts instantly
- **Smooth Transition** - No interruption of progression

Measure Configuration

Measures per Chord

1 Measure:

- Very fast chord changes
- For experienced players
- Intensive change training

2 Measures (Default):

- Balanced speed
- Suitable for most songs
- Recommended for medium difficulty

4 Measures:

- Slower changes
- More time to adjust
- Ideal for complex chords

8 Measures:

- Very slow progression
- For beginners with difficult chords
- Extensive practice per chord

Time Signatures

4/4 Time (Standard):

- 4 beats per measure
- Most pop/rock songs
- Universally applicable

3/4 Time (Waltz):

- 3 beats per measure
- Waltz, ballads
- Different rhythmic structure

1/1 Time (Whole Measure):

- 1 long beat per measure
- Very slow ballads
- Simplified rhythm structure

Audio Settings

Volume Controls

Main Volume (0-100%):

- Chord playback volume
- 50% is default setting
- 0% = mute, visual only

Metronome Volume (0-100%):

- Separate click volume
- 30% is default setting
- Independent of chord volume

On/Off Switches

🔊 Audio Output enabled:

- Chords will be played
- For audible learning

🥁 Metronome Click:

- Click sounds for beat orientation
- Can be disabled separately

Tuning Selection

High G (g-C-E-A) - Standard

- Re-entrant tuning
- G string higher than C string
- Traditional ukulele sound
- For most beginners

Low G (G-C-E-A) - Linear

- G string lower than all others
- Extended bass register
- Suitable for fingerpicking
- Advanced tuning

🎼 Chord Progression Library

Beginner Progressions

C-F Change

Chords: C → F
Roman Notation: I-IV
Difficulty: ⭐☆☆☆
Description: Simple change between C and F. Ideal for beginners to practice the barre grip.
Usage: Basic training, first chord changes
Tempo Recommendation: 60-80 BPM

C-Am Change

Chords: C → Am
Roman Notation: I-vi
Difficulty: ⭐☆☆☆
Description: Very simple change. Am is the relative minor of C.
Usage: Learn major/minor contrast, simple ballads
Tempo Recommendation: 60-90 BPM

F-C-G

Chords: F → C → G
Roman Notation: IV-I-V
Difficulty: ⭐⭐☆☆
Description: Classic three-chord progression. Foundation of many folk songs.
Usage: Folk songs, traditional songs
Tempo Recommendation: 70-100 BPM

C-G-C

Chords: C → G → C
Roman Notation: I-V-I
Difficulty: ⭐☆☆☆
Description: Simple cadence with return to root.
Usage: Resolutions, final cadences
Tempo Recommendation: 60-90 BPM

Intermediate Progressions

I-V-vi-IV (C-G-Am-F) ⭐ Most Popular Progression

Chords: C → G → Am → F
Roman Notation: I-V-vi-IV
Difficulty: ⭐⭐☆☆
Description: The most popular chord progression in popular music. Thousands of songs use this progression.
Famous Songs: "Let It Be" (Beatles), "Don't Stop Believin'" (Journey), "Someone Like You" (Adele)
Usage: Pop, rock, modern ballads
Tempo Recommendation: 80-120 BPM

vi-IV-I-V (Am-F-C-G)

Chords: Am → F → C → G
Roman Notation: vi-IV-I-V
Difficulty: ⭐⭐☆☆
Description: Variation of the I-V-vi-IV progression, starting with minor.
Famous Songs: "Grenade" (Bruno Mars), "Complicated" (Avril Lavigne)
Usage: Emotional songs that start in minor
Tempo Recommendation: 80-110 BPM

IV-V-vi (F-G-Am)

Chords: F → G → Am → Am
Roman Notation: IV-V-vi
Difficulty: ⭐⭐☆☆
Description: Progression that ends in minor. Creates a melancholic mood.
Usage: Melancholic songs, emotional turns
Tempo Recommendation: 70-100 BPM

I-vi-IV-V (C-Am-F-G)

Chords: C → Am → F → G
Roman Notation: I-vi-IV-V
Difficulty: ⭐⭐☆☆
Description: Classic doo-wop progression from the 1950s.
Famous Songs: "Blue Moon", "Heart and Soul", "Stand By Me"
Usage: Doo-wop, 50s style, nostalgic songs
Tempo Recommendation: 80-120 BPM

Advanced Progressions

Extended Pop Progression

Chords: C → G → Am → F → C → G → F → G
Roman Notation: I-V-vi-IV-I-V-IV-V
Difficulty: ⭐⭐⭐☆
Description: Extended pop progression for advanced players.
Usage: More complex pop songs, instrumental parts
Tempo Recommendation: 90-130 BPM

Minor Variation

Chords: Am → F → C → G → Am → F → G → G
Roman Notation: vi-IV-I-V-vi-IV-V-V
Difficulty: ⭐⭐⭐☆
Description: Complex minor variation with double G at the end.
Usage: Dramatic songs, emotional climaxes
Tempo Recommendation: 80-110 BPM

I-iii-IV-V (C-Em-F-G)

Chords: C → Em → F → G
Roman Notation: I-iii-IV-V
Difficulty: ⭐⭐⭐☆
Description: Uses the iii chord for a different sound.
Usage: Alternative to standard progressions
Tempo Recommendation: 80-120 BPM

ii-V-I-vi (Dm-G-C-Am)

Chords: Dm → G → C → Am
Roman Notation: ii-V-I-vi
Difficulty: ⭐⭐⭐☆
Description: ii-V-I progression, very common in jazz.
Usage: Jazz-influenced songs, sophisticated harmonies
Tempo Recommendation: 90-130 BPM

Expert Progressions

Jazz Standard (Cmaj7-Am7-Dm7-G7)

Chords: Cmaj7 → Am7 → Dm7 → G7
Roman Notation: IMaj7-vi7-ii7-V7
Difficulty: ⭐⭐⭐⭐
Description: Classic jazz progression with seventh chords.
Famous Songs: "Fly Me to the Moon", "All the Things You Are"
Usage: Jazz, swing, sophisticated ballads
Tempo Recommendation: 80-140 BPM

ii-V-I Jazz (Am7-D7-Gmaj7-Cmaj7)

Chords: Am7 → D7 → Gmaj7 → Cmaj7
Roman Notation: ii7-V7-IMaj7-IVMaj7
Difficulty: ⭐⭐⭐⭐
Description: ii-V-I jazz progression in G major.
Usage: Jazz standards, complex harmonies
Tempo Recommendation: 90-140 BPM

I-I7-IV-iv (C-C7-F-Fm)

Chords: C → C7 → F → Fm
Roman Notation: I-I7-IV-iv
Difficulty: ⭐⭐⭐⭐
Description: Chromatic progression with major/minor contrast.
Usage: Blues, jazz, chromatic harmonies
Tempo Recommendation: 70-120 BPM

❓ FAQ

General Questions

❓ Which progression should I learn first?

✅ **Recommended order:**

1. **C-F Change** (Beginner) - Simplest start
2. **C-Am Change** (Beginner) - Major/minor feeling
3. **I-V-vi-IV** (Intermediate) - Most important pop progression
4. **vi-IV-I-V** (Intermediate) - Variation for variety

❓ What do the Roman numerals mean?

Roman notation explained:

- **I** = 1st degree (Tonic) - C in C major
- **ii** = 2nd degree (Minor) - Dm in C major
- **iii** = 3rd degree (Minor) - Em in C major
- **IV** = 4th degree (Subdominant) - F in C major
- **V** = 5th degree (Dominant) - G in C major
- **vi** = 6th degree (Minor) - Am in C major
- **vii°** = 7th degree (Diminished) - Bdim in C major

❓ Why is I-V-vi-IV so popular?

This progression is so successful because:

- **Strong Harmony** - Perfect balance between tension and resolution
- **Emotional Effect** - Happy, but with melancholic vi chord
- **Easy to Play** - Relatively simple chords on ukulele
- **Versatile** - Works in almost any tempo and genre

Learning Questions

❓ How do I practice chord changes most effectively?

Structured Practice:

1. **Start slowly** - 60-70 BPM for new progressions
2. **Without strumming** - First practice only chord changes
3. **Use metronome** - Always stay in time
4. **Repeat frequently** - Develop muscle memory
5. **Increase tempo** - 10 BPM steps after mastery
6. **Practice with songs** - Apply progressions in real songs

❓ What are the most common chord change problems?

Typical difficulties:

- **Timing** - Chord changes not on time
- **Clean sound** - Impure chords during changes
- **Finger position** - Clumsy finger movements
- **Rhythm** - Interruption of strumming pattern

Solutions:

- **Use metronome** - Always practice in time
- **Practice slowly** - Gradually increase speed
- **Optimize fingerings** - Learn efficient movements
- **Practice individually** - Train each change in isolation

❓ How do I better understand chord progressions?

Music Theory Basics:

1. **Learn scales** - Understand C major as basis
2. **Scale functions** - I=Rest, V=Tension, vi=Melancholy
3. **Cadence feeling** - V→I as strongest resolution
4. **Substitutions** - ii can replace V, vi can replace I
5. **Modulation** - Changes between different keys

Practice Questions

❓ How do I best use the metronome?

Metronome Strategies:

- **Notice accents** - First beat is emphasized (green circle)
- **Count sub-beats** - Count along 1-2-3-4
- **Look ahead** - Prepare yellow "next" chord
- **Different tempos** - Slow perfect, then faster
- **With real metronome** - Also use external metronomes

❓ Which measure settings should I use?

Recommendations by level:

- **Beginner:** 4-8 measures per chord, 4/4 time, 60-80 BPM
- **Intermediate:** 2-4 measures per chord, 4/4 time, 80-100 BPM
- **Advanced:** 1-2 measures per chord, 4/4 or 3/4, 90-120 BPM
- **Expert:** 1-2 measures per chord, all time signatures, 80-140 BPM

❓ How do I combine different progressions?

Progression Combinations:

1. **Same key** - Mix different progressions in C major
2. **Related keys** - C major with Am (relative minor)
3. **Modulation** - Change from C major to G major
4. **Transition chords** - Connecting chords between progressions

Technical Questions

❓ Why don't I sometimes hear sound?

Audio Troubleshooting:

1. **Browser audio policy** - Click play button once
2. **Volume settings** - Check chord and metronome volume
3. **Sound checkboxes** - Audio output and metronome enabled?
4. **System audio** - Computer volume turned on
5. **Browser compatibility** - Chrome/Firefox recommended

❓ Can I create my own progressions?

Currently not directly in the program, but you can:

1. **Modify existing** - Use similar progressions as basis
2. **Transpose** - Think progressions in other keys
3. **Combine** - Different progressions in sequence
4. **External notation** - Write down and practice own progressions

🔧 Technical

System Requirements

Browser Requirements:

- **Modern Browsers** - Chrome 60+, Firefox 55+, Safari 11+, Edge 16+
- **JavaScript enabled** - Absolutely required
- **Web Audio API** - For audio functions
- **Local Storage** - For statistics storage (optional)

Hardware Requirements:

- **RAM** - At least 512MB available
- **Processor** - Any modern CPU sufficient
- **Audio Output** - Speakers or headphones
- **Screen** - At least 320px width

Audio Technology

Web Audio API Features:

- **Real-time Synthesis** - Chords generated live
- **Precise Timing** - Metronome and chords synchronized
- **Multi-Oscillator** - 4 strings per chord simulated
- **Dynamic Volume** - Separate controls for different sounds

Audio Parameters:

- **Metronome Sounds** - Sine wave clicks with accents
- **Chord Sounds** - Triangle wave for warm ukulele sound
- **Timing Precision** - Millisecond-accurate beat tracking
- **Filter Processing** - Lowpass filter for more natural sound

Responsive Design

Screen Adaptations:

Mobile (≤480px)

- **Vertical Layouts** - All controls stacked
- **Large Touch Targets** - 44px minimum size
- **2-column Chord Display** - Optimized for narrow screens
- **Simplified Navigation** - Focus on essential functions

Tablet (481-768px)

- **3-column Chord Display** - Better overview
- **Balanced Controls** - 2-column control arrangement
- **Horizontal Metronome** - Side by side instead of stacked

Desktop (>768px)

- **4-6 Column Chord Display** - Complete overview
- **3-column Controls** - All settings visible
- **Hover Effects** - Additional visual feedback

Performance Optimization

Audio Performance:

- **Efficient Audio Context** - Reuse for all sounds
- **Oscillator Cleanup** - Automatic cleanup after playback
- **Precise Timing** - High-precision interval management
- **Memory Management** - Optimized audio node creation

UI Performance:

- **CSS Transitions** - Hardware-accelerated animations
- **Minimal DOM Updates** - Only necessary element changes
- **Event Optimization** - Efficient event listener management
- **Responsive Layouts** - CSS Grid and Flexbox for performance

Statistics System

Session Tracking:

- **Automatic Start** - Time measurement on first play
- **Live Updates** - Second-accurate time display
- **Progression Counting** - Complete cycles tracked
- **Chord Statistics** - Every played chord counted

Data Persistence:

- **Session-based** - Data only during browser session
- **No External Storage** - No data transmission
- **Reset on Reload** - New session on page reload
- **Privacy-friendly** - No tracking cookies

Accessibility

Accessibility Features:

- **Keyboard Navigation** - Fully operable with Tab/Enter/Space
- **Focus Indicators** - Visible focus frames for all elements
- **High Contrast** - Strong color contrasts for better visibility
- **Screen Reader** - Semantic HTML structure

Reduced Motion Support:

- **Prefers-Reduced-Motion** - Respects system settings
- **Alternative Feedback** - Static displays instead of animations
- **Essential Animations** - Only functionally relevant movements

Keyboard Shortcuts

Available Shortcuts:

- **Spacebar** - Toggle Play/Pause
- **S Key** - Stop
- **R Key** - Generate random progression
- **Tab Navigation** - Through all interactive elements

Power User Features:

- **Quick Navigation** - Keyboard shortcuts for all main functions
- **Workflow Optimization** - Efficient practice without mouse
- **Accessibility** - Complete operability without pointing device

Troubleshooting

Audio doesn't work:

1. **Browser audio policy** - Click first play button for audio activation
2. **Audio context state** - "suspended" → user interaction required
3. **Volume controls** - Check chord and metronome volume
4. **System audio** - Check computer volume and output device
5. **Browser support** - Web Audio API available?

Timing problems:

1. **CPU load** - Close other programs
2. **Browser performance** - Close other tabs
3. **System resources** - Sufficient RAM available?
4. **Audio latency** - Hardware acceleration enabled?

Display problems:

1. **Browser cache** - Clear cache (Ctrl+F5)
2. **CSS support** - CSS Grid and Flexbox supported?
3. **JavaScript errors** - Check browser console (F12) for errors
4. **Viewport size** - Window large enough for responsive layout?

Mobile problems:

1. **Touch responsiveness** - Tap directly on buttons
2. **Zoom level** - Set browser zoom to 100%
3. **Orientation** - Landscape for better overview
4. **Mobile browser** - Chrome Mobile or Safari recommended

Browser Compatibility

Fully supported:

- **Chrome 60+** - Best performance and audio quality
- **Firefox 55+** - Very good compatibility
- **Safari 11+** - Optimized for iOS and macOS
- **Edge 16+** - Modern Edge (Chromium-based)

Limited support:

- **Internet Explorer** - Not recommended, outdated Web Audio API
- **Very old browsers** - Missing ES6+ features

Mobile browsers:

- **Chrome Mobile** - Best mobile performance
- **Safari iOS** - Full iOS support
- **Firefox Mobile** - Good alternative
- **Samsung Internet** - Works perfectly

Advanced Features

Progression Generator:

- **Intelligent Selection** - Considers difficulty level
- **Variation System** - Prevents repetitive random selection
- **Cross-Category** - Progressions from all difficulty levels
- **Learning-Oriented** - Prefers educational combinations

Statistics Algorithm:

- **Precise Timing** - Millisecond-accurate time measurement
- **Smart Counting** - Prevents double counting on quick stops/starts
- **Session Continuity** - Statistics remain on tempo/settings changes
- **Performance Metrics** - Chords per minute, average length etc.

Developer Information

Code Architecture:

- **Modular Design** - AppController as central namespace
- **Event-Driven** - Clean event handler structure
- **Responsive First** - Mobile-first CSS approach
- **Performance-Optimized** - Minimal DOM manipulations

Audio Implementation:

- **Web Audio API** - Native browser audio without external libraries
- **Precise Scheduling** - Millisecond-accurate audio events
- **Resource Management** - Automatic cleanup of audio nodes
- **Cross-Browser** - Fallbacks for different browser implementations

Extension Possibilities:

- **New Progressions** - Simply add new objects to progressions
- **Other Keys** - Transposition algorithm implementable
- **MIDI Support** - External MIDI controller integration possible
- **Progression Import** - JSON import for user-defined progressions

Data Format Specification

Progression Object Structure:

```
{
  chords: ['C', 'G', 'Am', 'F'], // Chord array
  name: 'I-V-vi-IV (C-G-Am-F)', // Display name
  roman: 'I-V-vi-IV', // Roman notation
  difficulty: 'intermediate' // Difficulty level
}
```

Frequency Mapping:

- **High G / Low G** - Separate frequency arrays for both tunings
- **4-String System** - [G, C, E, A] from low to high
- **Standard Tuning** - A440 Hz as reference
- **Chord Extensions** - Support for 7th, maj7, etc.

📞 Support and Contact

For questions or problems, contact:

Developer: Detlev Alaze
Website: Musikbegleiter.de
Year: 2025

Additional Resources

- **Chord Grips** - Detailed fingerings for all used chords
- **Songbook Integration** - Combinable with Songbook Organizer
- **Music Theory Basics** - More tutorials on harmony theory
- **Play-Along Songs** - Songs with learned progressions

Community and Feedback

- **New Progressions** - Suggestions for additional chord progressions
- **Genre Extensions** - Jazz, blues, funk, Latin progressions
- **Feature Requests** - Ideas for new functions
- **Improvement Suggestions** - Feedback on user-friendliness

Learning Resources

- **Video Tutorials** - Visual guide for chord changes
- **Practice Schedules** - Structured practice plans
- **Song Recommendations** - Songs for each difficulty level
- **Theory Deep Dives** - Extended harmony theory explanations

🎸 **Have great success with chord progression training!** 🎸

This manual covers all functions of the Ukulele Chord Progression Trainer. For more music programs visit Musikbegleiter.de.