

# Heptatonic Scales

## 112 Modes (Abstract)

Degree	Scale												
I	1	-	2	-	3	4	-	5	-	6	-	7	1
II	1	-	2	b3	-	4	-	5	-	6	b7	-	1
III	1	b2	-	b3	-	4	-	5	b6	-	b7	-	1
IV	1	-	2	-	3	-	#4	5	-	6	-	7	1
V	1	-	2	-	3	4	-	5	-	6	b7	-	1
VI	1	-	2	b3	-	4	-	5	b6	-	b7	-	1
VII	1	b2	-	b3	-	4	b5	-	b6	-	b7	-	1

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[Docs, Charts & Diagrams \[Google Drive\]](#)

# 16 Heptatonic scales / 112 modes

## Classification

### Division into various groups

Scale		2 groups	2 groups	4 groups
A1	Melodic major (Diatonic major modes)	} Major Modes (Series A & B)	Melodic Modes (Series A & C)	1. Basic Modes 2. Altered ♭2 Modes 3. Altered ♭5 Modes 4. Altered ♭2 ♭5 Modes
A2	Melodic major ♭2			
A3	Melodic major ♭5			
A4	Melodic major ♭2 ♭5			
B1	Harmonic major	} Major Modes (Series A & B)	Harmonic Modes (Series B & D)	1. Basic Modes 2. Altered ♭2 Modes 3. Altered ♭5 Modes 4. Altered ♭2 ♭5 Modes
B2	Harmonic major ♭2 (Byzantine scale)			
B3	Harmonic major ♭5			
B4	Harmonic major ♭2 ♭5			
C1	Melodic minor	} Minor Modes (Series C & D)	Melodic Modes (Series A & C)	1. Basic Modes 2. Altered ♭2 Modes 3. Altered ♭5 Modes 4. Altered ♭2 ♭5 Modes
C2	Melodic minor ♭2 (Neapolitan major scale)			
C3	Melodic minor ♭5			
C4	Melodic minor ♭2 ♭5			
D1	Harmonic minor	} Minor Modes (Series C & D)	Harmonic Modes (Series B & D)	1. Basic Modes 2. Altered ♭2 Modes 3. Altered ♭5 Modes 4. Altered ♭2 ♭5 Modes
D2	Harmonic minor ♭2 (Neapolitan minor scale)			
D3	Harmonic minor ♭5			
D4	Harmonic minor ♭2 ♭5			

### Common notes

Basic Modes	2	5	}	All Modes : <b>7</b>		
Altered ♭2 Modes	♭2	5				
Altered ♭5 Modes	2	♭5				
Altered ♭2 ♭5 Modes	♭2	♭5				
Major Modes	3	4	}			
Minor Modes	♭3	4				
Melodic Modes	6		}			
Harmonic Modes	♭6					

# 16 Heptatonic scales / 112 modes

## Overview (1)

### A. Melodic Major Modes

4 scales (28 modes)

Scale / Mode	Scale												
A1/I Melodic major (Diatonic major modes)	1		2		3	4		5		6		7	1
A2/I Melodic major $\flat 2$	1	$\flat 2$			3	4		5		6		7	1
A3/I Melodic major $\flat 5$	1		2		3	4	$\flat 5$			6		7	1
A4/I Melodic major $\flat 2 \flat 5$	1	$\flat 2$			3	4	$\flat 5$			6		7	1

### B. Harmonic Major Modes

4 scales (28 modes)

Scale / Mode	Scale												
B1/I Harmonic major	1		2		3	4		5	$\flat 6$			7	1
B2/I Harmonic major $\flat 2$ (Byzantine scale)	1	$\flat 2$			3	4		5	$\flat 6$			7	1
B3/I Harmonic major $\flat 5$	1		2		3	4	$\flat 5$		$\flat 6$			7	1
B4/I Harmonic major $\flat 2 \flat 5$	1	$\flat 2$			3	4	$\flat 5$		$\flat 6$			7	1

### C. Melodic Minor Modes

4 scales (28 modes)

Scale / Mode	Scale												
C1/I Melodic minor	1		2	$\flat 3$		4		5		6		7	1
C2/I Melodic minor $\flat 2$ (Neapolitan major scale)	1	$\flat 2$		$\flat 3$		4		5		6		7	1
C3/I Melodic minor $\flat 5$	1		2	$\flat 3$		4	$\flat 5$			6		7	1
C4/I Melodic minor $\flat 2 \flat 5$	1	$\flat 2$		$\flat 3$		4	$\flat 5$			6		7	1

### D. Harmonic Minor Modes

4 scales (28 modes)

Scale / Mode	Scale												
D1/I Harmonic minor	1		2	$\flat 3$		4		5	$\flat 6$			7	1
D2/I Harmonic minor $\flat 2$ (Neapolitan mainor scale)	1	$\flat 2$		$\flat 3$		4		5	$\flat 6$			7	1
D3/I Harmonic minor $\flat 5$	1		2	$\flat 3$		4	$\flat 5$		$\flat 6$			7	1
D4/I Harmonic minor $\flat 2 \flat 5$	1	$\flat 2$		$\flat 3$		4	$\flat 5$		$\flat 6$			7	1

# 16 Heptatonic scales / 112 modes

## Overview (2)

### 1. Basic Modes

4 scales (28 modes)

Scale / Mode	Structure													
A1/I Melodic major (Diatonic major modes)	1		2		3	4		5		6		7	1	
B1/I Harmonic major	1		2		3	4		5	b6			7	1	
C1/I Melodic minor	1		2	b3		4		5		6		7	1	
D1/I Harmonic minor	1		2	b3		4		5	b6			7	1	

### 2. Altered b2 Modes

4 scales (28 modes)

Scale / Mode	Structure													
A2/I Melodic major b2	1	b2			3	4		5		6		7	1	
B2/I Harmonic major b2 (Byzantine scale)	1	b2			3	4		5	b6			7	1	
C2/I Melodic minor b2 (Neapolitan major scale)	1	b2		b3		4		5		6		7	1	
D2/I Harmonic minor b2 (Neapolitan mainor scale)	1	b2		b3		4		5	b6			7	1	

### 3. Altered b5 Modes

4 scales (28 modes)

Scale / Mode	Structure													
A3/I Melodic major b5	1		2		3	4	b5			6		7	1	
B3/I Harmonic major b5	1		2		3	4	b5		b6			7	1	
C3/I Melodic minor b5	1		2	b3		4	b5			6		7	1	
D3/I Harmonic minor b5	1		2	b3		4	b5		b6			7	1	

### 4. Altered b2 b5 Modes

4 scales (28 modes)

Scale / Mode	Structure													
A4/I Melodic major b2 b5	1	b2			3	4	b5			6		7	1	
B4/I Harmonic major b2 b5	1	b2			3	4	b5		b6			7	1	
C4/I Melodic minor b2 b5	1	b2		b3		4	b5			6		7	1	
D4/I Harmonic minor b2 b5	1	b2		b3		4	b5		b6			7	1	

# 16 Heptatonic scales / 112 modes

## 16 Tetrachords

2 Tones		1st (Lower)						2nd (Upper)					
Diminished	1-1-2	2T Dim	1	b2	bb3	-	b4		#5	6	b7	-	1
Phrygian	1-2-1	2T Phry	1	b2	-	b3	b4		#5	6	-	7	1
Minor	2-1-1	2T Min	1	-	2	b3	b4		#5	-	#6	7	1

2½ Tones		1st (Lower)						2nd (Upper)							
Diminished	1-1-3	2T½ Dim	1	b2	bb3	-	-	4		5	b6	bb7	-	-	1
Phrygian	1-2-2	2T½ Phry	1	b2	-	b3	-	4		5	b6	-	b7	-	1
Harmonic	1-3-1	2T½ Harm	1	b2	-	-	3	4		5	b6	-	-	7	1
Minor	2-1-2	2T½ Min	1	-	2	b3	-	4		5	-	6	b7	-	1
Major	2-2-1	2T½ Maj	1	-	2	-	3	4		5	-	6	-	7	1
Augmented	3-1-1	2T½ Aug	1	-	-	#2	3	4		5	-	#6	7	1	

3 Tones		1st (Lower)						2nd (Upper)									
Phrygian	1-2-3	3T Phry	1	b2	-	b3	-	-	#4		b5	bb6	-	bb7	-	-	1
Harmonic	1-3-2	3T Harm	1	b2	-	-	3	-	#4		b5	bb6	-	-	b7	-	1
Minor	2-1-3	3T Min	1	-	2	b3	-	-	#4		b5	-	b6	bb7	-	-	1
Major	2-2-2	3T Maj	1	-	2	-	3	-	#4		b5	-	b6	-	b7	-	1
Major +	2-3-1	3T Maj+	1	-	2	-	-	#3	#4		b5	-	b6	-	-	7	1
Augmented 1	3-1-2	3T Aug1	1	-	-	#2	3	-	#4		b5	-	-	6	b7	-	1
Augmented 2	3-2-1	3T Aug2	1	-	-	#2	-	#3	#4		b5	-	-	6	-	7	1

## Combination of Tetrachords

1st Tetrachords
2T
2T½
3T

2nd Tetrachords		
-	2T½	3T
2T	2T½	3T
2T	2T½	-

## Intervals

1	b2	2	#2	3	#3	#4	5	#5	6	#6	7	1
			bb3	b3	b4	4	b5	bb6	b6	bb7	b7	
			#2		#3	#4		#5		#6		
1		2		3	4		5		6		7	1
	b2		b3	b4		b5		b6		b7		
		bb3					bb6		bb7			
	b9	9	#9		11	#11		b13	13			
Complementary Intervals												
	b2		2		b3		3		4		#4	
	7		b7		6		b6		5		b5	

# 16 Heptatonic scales / 112 modes

## A. Melodic major modes

### A1. Melodic major (Diatonic major modes / Greek modes)

Name	Degr.	Chord	Scale										Tetrachords				
Ionian ( <i>Melodic major</i> )	I	M7	1		2		3	4		5		6		7	1	2T½ Maj	2T½ Maj
Dorian	II	m7	1		2	b3		4		5		6	b7		1	2T½ Min	2T½ Min
Phrygian	III	m7	1	b2		b3		4		5	b6		b7		1	2T½ Phry	2T½ Phry
Lydian	IV	M7	1		2		3		#4	5		6		7	1	3T Maj	2T½ Maj
Mixolydian	V	7	1		2		3	4		5		6	b7		1	2T½ Maj	2T½ Min
Aeolian ( <i>Natural minor scale</i> )	VI	m7	1		2	b3		4		5	b6		b7		1	2T½ Min	2T½ Phry
Locrian	VII	m7b5	1	b2		b3		4	b5		b6		b7		1	2T½ Phry	3T Maj

I. Diatonic major scale - VI. Relative minor scale / Descending melodic minor scale

### A2. Melodic major b2

Name	Degr.	Chord	Scale										Tetrachords				
Melodic major b2 (Ionian b2)	I	M7	1	b2			3	4		5		6		7	1	2T½ Harm	2T½ Maj
Aug. Dorian	bII	M7 #5	1			#2	3		#4		#5		#6	7	1	3T Aug1	2T Min
Phrygian b7	III	m6	1	b2		b3		4		5	b6	b7			1	2T½ Phry	2T½ Dim
Lydian b6	IV	M7	1		2		3		#4	5	b6			7	1	3T Maj	2T½ Harm
Mixolydian b5	V	7b5	1		2		3	4	b5			6	b7		1	2T½ Maj	3T Aug1
Aeolian b4	VI	m7	1		2	b3	b4			5	b6		b7		1	2T Min	2T½ Phry
Locrian bb3	VII	-	1	b2	bb3			4	b5		b6		b7		1	2T½ Dim	3T Maj

### A3. Melodic major b5

Name	Degr.	Chord	Scale										Tetrachords				
Melodic major b5 (Ionian b5)	I	M7b5	1		2		3	4	b5			6		7	1	2T½ Maj	3T Aug2
Dorian b4	II	m7	1		2	b3	b4			5		6	b7		1	2T Min	2T½ Min
Phrygian bb3	III	7sus4	1	b2	bb3			4		5	b6		b7		1	2T½ Dim	2T½ Phry
Lydian b2	IV	M7	1	b2			3		#4	5		6		7	1	3T Harm	2T½ Maj
Aug. Mixolydian	bV	m7b5	1			#2		#3	#4		#5		#6	7	1	3T Aug2	2T Min
Aeolian bb7	VI	m6	1		2	b3		4		5	b6	bb7			1	2T½ Min	2T½ Dim
Locrian bb6	VII	m7b5	1	b2		b3		4	b5	bb6			b7		1	2T½ Phry	3T Harm

### A4. Melodic major b2 b5

Name	Degr.	Chord	Scale										Tetrachords				
Melodic major b2 b5	I	M7b5	1	b2			3	4	b5			6		7	1	2T½ Harm	3T Aug2
Aug. Dorian b4	bII	M7 #5	1			2#	3	4			#5		#6	7	1	2T½ Aug	2T Min
Phrygian bb3 bb7	III	sus4	1	b2	bb3			4		5	b6	bb7			1	2T½ Dim	2T½ Dim
Lydian b2 b6	IV	M7	1	b2			3		#4	5	b6			7	1	3T Harm	2T½ Harm
Aug. Mixolydian b5	bV	mM7	1			2#		#3	#4	5			#6	7	1	3T Aug2	2T½ Aug
Aeolian b4 bb7	VI	m6	1		2	3m	b4			5	b6	bb7			1	2T Min	2T½ Dim
Locrian bb3 bb6	VII	7sus4	1	b2	bb3			4	b5	bb6			b7		1	2T½ Dim	3T Harm

I. Ionian b2 b5

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## B. Harmonic major modes

### B1. Harmonic major

Name	Degr.	Chord	Scale											Tetrachords			
Harmonic major (Ionian $\flat 6$ )	I	M7	1		2		3	4		5	$\flat 6$			7	1	2T½ Maj	2T½ Harm
Dorian $\flat 5$	II	m7 $\flat 5$	1		2	$\flat 3$		4	$\flat 5$			6	$\flat 7$		1	2T½ Min	3T Aug1
Phrygian $\flat 4$	III	m7 (7)	1	$\flat 2$		$\flat 3$	$\flat 4$			5	$\flat 6$		$\flat 7$		1	2T Phry	2T½ Phry
Lydian $\flat 3$	IV	mM7	1		2	$\flat 3$			$\sharp 4$	5		6		7	1	3T Min	2T½ Maj
Mixolydian $\flat 2$	V	7	1	$\flat 2$			3	4		5		6	$\flat 7$		1	2T½ Harm	2T½ Min
Lydian $\sharp 2$ $\flat 5$ (Aug. Aeolian)	$\flat$ VI	M7 $\sharp 5$	1			$\sharp 2$	3		$\sharp 4$		$\sharp 5$	6		7	1	3T Aug1	2T Phry
Locrian $\flat \flat 7$	VII	dim7	1	$\flat 2$		$\flat 3$		4	$\flat 5$		$\flat 6$	$\flat \flat 7$			1	2T½ Phry	3T Min

### B2. Harmonic major $\flat 2$ (Byzantine mode)

Name	Degr.	Chord	Scale											Tetrachords			
Harmonic major $\flat 2$ (Ionian $\flat 2$ $\flat 6$ )	I	M7	1	$\flat 2$			3	4		5	$\flat 6$			7	1	2T½ Harm	2T½ Harm
Lydian $\sharp 2$ $\sharp 6$	$\flat$ II	M7 (7)	1			$\sharp 2$	3		$\sharp 4$	5			$\sharp 6$	7	1	3T Aug1	2T½ Aug
Phrygian $\flat 4$ $\flat \flat 7$	III	m6 (M6)	1	$\flat 2$		$\flat 3$	$\flat 4$			5	$\flat 6$	$\flat \flat 7$			1	2T Phry	2T½ Dim
Lydian $\flat 3$ $\flat 6$	IV	mM7	1		2	$\flat 3$			$\sharp 4$	5	$\flat 6$			7	1	3T Min	2T½ Harm
Mixolydian $\flat 2$ $\flat 5$	V	7 $\flat 5$	1	$\flat 2$			3	4	$\flat 5$			6	$\flat 7$		1	2T½ Harm	3T Aug1
Ionian $\sharp 2$ $\sharp 5$	VI -	M7 $\sharp 5$	1			$\sharp 2$	3	4			$\sharp 5$	6		7	1	2T½ Aug	2T Phry
Locrian $\flat 3$ $\flat 7$	VII	-	1	$\flat 2$	$\flat \flat 3$			4	$\flat 5$		$\flat 6$	$\flat \flat 7$			1	2T½ Dim	3T Min

I. Byzantine scale / Double harmonic major - IV. Hungarian / Gypsy minor / Double harmonic minor - V. Oriental scale

### B3. Harmonic major $\flat 5$

Name	Degr.	Chord	Scale											Tetrachords			
Harmonic major $\flat 5$ (Ionian $\flat 5$ $\flat 6$ )	I	M7 $\flat 5$	1		2		3	4	$\flat 5$		6			7	1	2T½ Maj	3T Maj+
Dorian $\flat 4$ $\flat 5$	II	m7 $\flat 5$	1		2	$\flat 3$	$\flat 4$		$\flat 5$			6	$\flat 7$		1	2T Min	3T Aug1
Phrygian $\flat \flat 3$ $\flat 4$	$\flat$ III	7	1	$\flat 2$	$\flat \flat 3$		$\flat 4$			5	$\flat 6$		$\flat 7$		1	2T Dim	2T½ Phry
Lydian $\flat 2$ $\flat 3$	IV	mM7	1	$\flat 2$		$\flat 3$			$\sharp 4$	5		6		7	1	3T Phry	2T½ Maj
Aug. Mixolydian $\flat 2$	$\flat$ V	-	1		2			$\flat 3$	$\sharp 4$		$\sharp 5$		$\sharp 6$	7	1	3T Maj+	2T Min
Aug. Aeolian $\flat 7$	$\flat$ VI	7 $\sharp 5$	1			$\sharp 2$	3		$\sharp 4$		$\sharp 5$	6	$\flat 7$		1	3T Aug1	2T Dim
Locrian $\flat \flat 6$ $\flat \flat 7$	VII	dim7	1	$\flat 2$		$\flat 3$		4	$\flat 5$	$\flat \flat 6$		$\flat \flat 7$			1	2T½ Phry	3T Phry

### B4. Harmonic major $\flat 2$ $\flat 5$

Name	Degr.	Chord	Scale											Tetrachords			
Harmonic major $\flat 2$ $\flat 5$	I	M7 $\flat 5$	1	$\flat 2$			3	4	$\flat 5$		$\flat 6$			7	1	2T½ Harm	3T Maj+
Ionian $\sharp 2$ $\sharp 6$	$\flat$ II	M7	1			$\sharp 2$	3	4		5			$\sharp 6$	7	1	2T½ Aug	2T½ Aug
Dim. Dorian $\flat 5$	III	M6	1	$\flat 2$	$\flat \flat 3$		$\flat 4$			5	$\flat 6$	$\flat \flat 7$			1	2T Dim	2T½ Dim
Phrygian $\sharp 4$ $\flat 7$	IV	mM7	1	$\flat 2$		$\flat 3$			$\sharp 4$	5	$\flat 6$			7	1	3T Phry	2T½ Harm
Lydian $\sharp 3$ $\sharp 6$	$\flat$ V	M7sus4	1		2			$\flat 3$	$\sharp 4$	5			$\sharp 6$	7	1	3T Maj+	2T½ Aug
Mixolydian $\sharp 2$ $\sharp 5$	$\flat$ VI	7 $\sharp 5$	1			$\sharp 2$	3	4			$\sharp 5$	6	$\flat 7$		1	2T½ Aug	2T Dim
Dim. Aeolian $\flat 4$	VII	sus4	1	$\flat 2$	$\flat \flat 3$			4	$\flat 5$	$\flat \flat 6$		$\flat \flat 7$			1	2T½ Dim	3T Phry

I. Persian scale / Locrian  $\flat 3$   $\flat 7$



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## C. Melodic minor modes

### C1. Melodic minor

Name	Degr.	Chord	Scale										Tetrachords				
Melodic minor (Ionian $\flat 3$ /Dorian $\natural 7$ )	I	mM7	1		2	$\flat 3$		4		5		6		7	1	2T $\frac{1}{2}$ Min	2T $\frac{1}{2}$ Maj
Dorian $\flat 2$ (Phrygian $\flat 6$ )	II	m7	1	$\flat 2$		$\flat 3$		4		5		6	$\flat 7$		1	2T $\frac{1}{2}$ Phry	2T $\frac{1}{2}$ Min
Lydian $\sharp 5$ (Aug. Phrygian)	$\flat$ III	M7 $\sharp 5$	1		2		3		$\sharp 4$		$\sharp 5$	6		7	1	3T Maj	2T Phry
Lydian $\flat 7$ (Mixolydian $\sharp 4$ )	IV	7	1		2		3		$\sharp 4$	5		6	$\flat 7$		1	3T Maj	2T $\frac{1}{2}$ Min
Mixolydian $\flat 6$ (Aeolian $\flat 3$ )	V	7	1		2		3	4		5	$\flat 6$		$\flat 7$		1	2T $\frac{1}{2}$ Maj	2T $\frac{1}{2}$ Phry
Aeolian $\flat 5$ (Locrian $\flat 2$ )	VI	m7 $\flat 5$	1		2	$\flat 3$		4	$\flat 5$		$\flat 6$		$\flat 7$		1	2T $\frac{1}{2}$ Min	3T Maj
Locrian $\flat 4$ (Dim. Ionian)	VII	m7 $\flat 5$	1	$\flat 2$		$\flat 3$	$\flat 4$		$\flat 5$		$\flat 6$		$\flat 7$		1	2T Phry	3T Maj

I. Ascending melodic minor scale - II. Cappadocian scale - IV. Acoustic scale / Bartok - VII. Altered Scale / Superlocrian

### C2. Melodic minor $\flat 2$ (Neapolitan major mode)

Name	Degr.	Chord	Scale										Tetrachords				
Melodic minor $\flat 2$ (Ionian $\flat 2$ $\flat 3$ )	I	mM7	1	$\flat 2$		$\flat 3$		4		5		6		7	1	2T $\frac{1}{2}$ Phry	2T $\frac{1}{2}$ Maj
Lydian $\sharp 5$ $\sharp 6$	$\flat$ II	M7 $\sharp 5$	1		2		3		$\sharp 4$		$\sharp 5$		$\sharp 6$	7	1	3T Maj	2T Min
Mixolydian $\sharp 4$ $\sharp 5$	$\flat$ III	7 $\sharp 5$	1		2		3		$\sharp 4$		$\sharp 5$	6	$\flat 7$		1	3T Maj	2T Dim
Lydian $\flat 6$ $\flat 7$	IV	7	1		2		3		$\sharp 4$	5	$\flat 6$		$\flat 7$		1	3T Maj	2T $\frac{1}{2}$ Phry
Mixolydian $\flat 5$ $\flat 6$	V	7 $\flat 5$	1		2		3	4	$\flat 5$		$\flat 6$		$\flat 7$		1	2T $\frac{1}{2}$ Maj	3T Maj
Aeolian $\flat 4$ $\flat 5$	VI		1		2	$\flat 3$	$\flat 4$		$\flat 5$		$\flat 6$		$\flat 7$		1	2T Min	3T Maj
Locrian $\flat\flat 3$ $\flat 4$	VII	7 $\flat 5$	1	$\flat 2$	$\flat\flat 3$		$\flat 4$		$\flat 5$		$\flat 6$		$\flat 7$		1	2T Dim	3T Maj

I. Neapolitan major scale

### C3. Melodic minor $\flat 5$

Name	Degr.	Chord	Scale										Tetrachords				
Melodic minor $\flat 5$ (Ionian $\flat 3$ $\flat 5$ )	I	mM7 $\flat 5$	1		2	$\flat 3$		4	$\flat 5$			6		7	1	2T $\frac{1}{2}$ Min	3T Aug2
Dim. Harmonic major	II	m7 $\flat 5$	1	$\flat 2$		$\flat 3$	$\flat 4$		$\flat 5$	$\flat\flat 6$			$\flat 7$		1	2T Phry	3T Harm
Lydian $\flat 3$ $\sharp 5$	$\flat$ III	m7 $\flat 5$	1		2	$\flat 3$			$\sharp 4$		$\sharp 5$	6		7	1	3T Min	2T Phry
Mixolydian $\flat 2$ $\sharp 4$ (Lydian $\flat 2$ $\flat 7$ )	IV	7	1	$\flat 2$			3		$\sharp 4$	5		6	$\flat 7$		1	3T Harm	2T $\frac{1}{2}$ Min
Aug. Aeolian $\flat 3$	$\flat$ V	mM7 $\sharp 5$	1			$\sharp 2$		$\sharp 3$	$\sharp 4$		$\sharp 5$	6		7	1	3T Aug2	2T Phry
Locrian $\flat 2$ $\flat\flat 7$	VI	dim7	1		2	$\flat 3$		4	$\flat 5$		$\flat 6$	$\flat\flat 7$			1	2T $\frac{1}{2}$ Min	3T Min
Phrygian $\flat 4$ $\flat 6$	VII	m7	1	$\flat 2$		$\flat 3$	$\flat 4$			5		6	$\flat 7$		1	2T Phry	2T $\frac{1}{2}$ Min

### C4. Melodic minor $\flat 2$ $\flat 5$

Name	Degr.	Chord	Scale										Tetrachords				
Melodic minor $\flat 2$ $\flat 5$ (Locrian $\flat 6$ $\flat 7$ )	I	mM7 $\flat 5$	1	$\flat 2$		$\flat 3$		4	$\flat 5$			6		7	1	2T $\frac{1}{2}$ Phry	3T Aug2
Ionian $\sharp 5$ $\sharp 6$	$\flat$ II	M7 $\sharp 5$	1		2		3	4			$\sharp 5$		$\sharp 6$	7	1	2T $\frac{1}{2}$ Maj	2T Min
Dorian $\sharp 4$ $\sharp 5$	$\flat$ III	m7 $\sharp 5$	1		2	$\flat 3$			$\sharp 4$		$\sharp 5$	6	$\flat 7$		1	3T Min	2T Dim
Phrygian $\flat 3$ $\sharp 4$	IV	7	1	$\flat 2$			3		$\sharp 4$	5	$\flat 6$		$\flat 7$		1	3T Harm	2T $\frac{1}{2}$ Phry
Lydian $\sharp 2$ $\sharp 3$	$\flat$ V	mM7	1			$\sharp 2$		$\sharp 3$	$\sharp 4$	5		6		7	1	3T Aug2	2T $\frac{1}{2}$ Maj
Dim. Mixolydian $\flat 2$	VI	dim7	1		2	$\flat 3$	$\flat 4$		$\flat 5$		$\flat 6$	$\flat\flat 7$			1	2T Min	3T Min
Dim. Aeolian $\flat 7$	VII	7 $\flat 5$	1	$\flat 2$	$\flat\flat 3$		$\flat 4$		$\flat 5$	$\flat\flat 6$			$\flat 7$		1	2T Dim	3T Harm

I. Persian scale - VII Dim. Harmonic minor

# 16 Heptatonic scales / 112 modes

## D. Harmonic minor modes

### D1. Harmonic minor

Name	Degr.	Chord	Scale										Tetrachords				
Harmonic minor (Aeolian ♭7)	I	mM7	1		2	♭3		4		5	♭6			7	1	2T½ Min	2T½ Harm
Locrian ♭6	II	m7♭5	1	♭2		♭3		4	♭5			6	♭7		1	2T½ Phry	3T Aug1
Ionian #5	♭III	M7 #5	1		2		3	4			#5	6		7	1	2T½ Maj	2T Phry
Dorian #4	IV	m7	1		2	♭3			#4	5		6	♭7		1	3T Min	2T½ Min
Phrygian ♭3	V	7	1	♭2			3	4		5	♭6		♭7		1	2T½ Harm	2T½ Phry
Lydian #2	♭VI	M7	1			#2	3		#4	5		6		7	1	3T Aug1	2T½ Maj
Locrian ♭4 ♭♭7 (Dim. Mixolydian)	VII	dim7	1	♭2		♭3	♭4		♭5		♭6	♭♭7			1	2T Phry	3T Min

I. Ionian ♭3 ♭6 - IV. Romanian scale - V. Phrygian dominant scale / Spanish Phrygian scale / Spanish Gypsy scale / Jewish scale

### D2. Harmonic minor ♭2 (Neapolitan minor mode)

Name	Degr.	Chord	Scale										Tetrachords				
Harmonic minor ♭2 (Phrygian ♭7)	I	mM7	1	♭2		♭3		4		5	♭6			7	1	2T½ Phry	2T½ Harm
Lydian #6	♭II	M7 (7)	1		2		3		#4	5			#6	7	1	3T Maj	2T½ Aug
Mixolydian #5	♭III	7 #5	1		2		3	4			#5	6	♭7		1	2T½ Maj	2T Dim
Aeolian #4	IV	m7	1		2	♭3			#4	5	♭6		♭7		1	3T Min	2T½ Phry
Locrian ♭3	V	7♭5	1	♭2			3	4	♭5		♭6		♭7		1	2T½ Harm	3T Maj
Ionian #2	♭VI	M7	1			#2	3	4		5		6		7	1	2T½ Aug	2T½ Maj
Dim. Dorian	VII	Aug	1	♭2	♭♭3		4♭		♭5		♭6	♭♭7			1	2T Dim	3T Min

I. Neapolitan minor scale - IV. Hungarian Gypsy scale

### D3. Harmonic minor ♭5

Name	Degr.	Chord	Scale										Tetrachords				
Harmonic minor ♭5 (Aeolian ♭5 ♭7)	I	mM7♭5	1		2	♭3		4	♭5		♭6			7	1	2T½ Min	3T Maj+
Locrian ♭4 ♭6	II	m7♭5	1	♭2		♭3	4♭		♭5			6	♭7		1	2T Phry	3T Aug1
Ionian ♭3 #5	♭III	mM7 #5	1		2	♭3		4			#5	6		7	1	2T½ Min	2T Phry
Dorian ♭2 #4 (Phrygian #4 ♭6)	IV	m7	1	♭2		♭3			#4	5		6	♭7		1	3T Phry	2T½ Min
Lydian #3 #5	♭V	-	1		2			3#	#4	#5	6		7	1	3T Maj+	2T Phry	
Mixolydian #2 #4	♭VI	7	1			#2	3		#4	5		6	♭7		1	3T Aug1	2T½ Min
Dim. Aeolian ♭3	VII	dim7	1	♭2		♭3	4♭		♭5	♭♭6		♭♭7			1	2T Phry	3T Phry

♭VI. Hungarian major scale

### D4. Harmonic minor ♭2 ♭5

Name	Degr.	Chord	Scale										Tetrachords				
Harmonic minor ♭2 ♭5 (Locrian ♭7)	I	mM7♭5	1	♭2		♭3		4	♭5		♭6			7	1	2T½ Phry	3T Maj+
Ionian #6	♭II	M7	1		2		3	4		5			#6	7	1	2T½ Maj	2T½ Aug
Dorian #5	♭III	m7 #5	1		2	♭3		4			#5	6	♭7		1	2T½ Min	2T Dim
Phrygian #4	IV	m7	1	♭2		♭3			#4	5	♭6		♭7		1	3T Phry	2T½ Phry
Lydian #3	♭V	M7sus4	1		2			3#	#4	5		6		7	1	3T Maj+	2T½ Maj
Mixolydian #2	♭VI	7	1			#2	3	4		5		6	♭7		1	2T½ Aug	2T½ Min
Dim. Aeolian	VII	M6	1	♭2	♭♭3		4♭		♭5	♭♭6		♭♭7			1	2T Dim	3T Phry

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## Structure (1)

1	b2	2	#2	3	#3	#4	5	#5	6	#6	7	1	Mode	Name	Tetrachords	
1	b2	bb3	b3	b4	4	b5	bb6	b6	bb7	b7	7	1				
1	b2	bb3	-	b4	-	b5	bb6	-	bb7	-	-	1	D4 / VII	Dim. Aeolian	2T Dim	3T Phry
1	b2	bb3	-	b4	-	b5	bb6	-	-	b7	-	1	C4 / VII	Dim. Aeolian ♯7 (Dim. Harmonic minor)	2T Dim	3T Harm
1	b2	bb3	-	b4	-	b5	-	b6	bb7	-	-	1	D2 / VII	Dim. Dorian	2T Dim	3T Min
1	b2	bb3	-	b4	-	b5	-	b6	-	b7	-	1	C2 / VII	Locrian bb3 b4	2T Dim	3T Maj
1	b2	bb3	-	b4	-	-	5	b6	bb7	-	-	1	B4 / III	Dim. Dorian ♯5	2T Dim	2T½ Dim
1	b2	bb3	-	b4	-	-	5	b6	-	b7	-	1	B3 / bIII	Phrygian bb3 b4	2T Dim	2T½ Phry
1	b2	bb3	-	-	4	b5	bb6	-	bb7	-	-	1	B4 / VII	Dim. Aeolian ♯4	2T½ Dim	3T Phry
1	b2	bb3	-	-	4	b5	bb6	-	-	b7	-	1	A4 / VII	Locrian bb3 bb6	2T½ Dim	3T Harm
1	b2	bb3	-	-	4	b5	-	b6	bb7	-	-	1	B2 / VII	Locrian b3 b7	2T½ Dim	3T Min
1	b2	bb3	-	-	4	b5	-	b6	-	b7	-	1	A2 / VII	Locrian bb3	2T½ Dim	3T Maj
1	b2	bb3	-	-	4	-	5	b6	bb7	-	-	1	A4 / III	Phrygian bb3 bb7	2T½ Dim	2T½ Dim
1	b2	bb3	-	-	4	-	5	b6	-	b7	-	1	A3 / III	Phrygian bb3	2T½ Dim	2T½ Phry
1	b2	-	b3	b4	-	b5	bb6	-	bb7	-	-	1	D3 / VII	Dim. Aeolian b3	2T Phry	3T Phry
1	b2	-	b3	b4	-	b5	bb6	-	-	b7	-	1	C3 / II	Dim. Harmonic major	2T Phry	3T Harm
1	b2	-	b3	b4	-	b5	-	b6	bb7	-	-	1	D1 / VII	Locrian b4 bb7 (Dim. Mixolydian)	2T Phry	3T Min
1	b2	-	b3	b4	-	b5	-	b6	-	b7	-	1	C1 / VII	Locrian b4 (Dim. Ionian)	2T Phry	3T Maj
1	b2	-	b3	b4	-	b5	-	-	6	b7	-	1	D3 / II	Locrian b4 ♯6	2T Phry	3T Aug1
1	b2	-	b3	b4	-	-	5	b6	bb7	-	-	1	B2 / III	Phrygian b4 bb7	2T Phry	2T½ Dim
1	b2	-	b3	b4	-	-	5	b6	-	b7	-	1	B1 / III	Phrygian b4	2T Phry	2T½ Phry
1	b2	-	b3	b4	-	-	5	-	6	b7	-	1	C3 / VII	Phrygian b4 ♯6	2T Phry	2T½ Min
1	b2	-	b3	-	4	-	5	b6	-	b7	-	1	A1 / III	Phrygian	2T½ Phry	2T½ Phry
1	b2	-	b3	-	4	-	5	b6	-	-	7	1	D2 / I	Harmonic minor b2 (Phrygian ♯7)	2T½ Phry	2T½ Harm
1	b2	-	b3	-	4	-	5	-	6	b7	-	1	C1 / II	Dorian b2 (Phrygian ♯6)	2T½ Phry	2T½ Min
1	b2	-	b3	-	4	-	5	-	6	-	7	1	C2 / I	Melodic minor b2 (Ionian b2 b3)	2T½ Phry	2T½ Maj
1	b2	-	b3	-	4	b5	bb6	-	bb7	-	-	1	B3 / VII	Locrian bb6 bb7	2T½ Phry	3T Phry
1	b2	-	b3	-	4	b5	bb6	-	-	b7	-	1	A3 / VII	Locrian bb6	2T½ Phry	3T Harm
1	b2	-	b3	-	4	b5	-	b6	bb7	-	-	1	B1 / VII	Locrian bb7	2T½ Phry	3T Min
1	b2	-	b3	-	4	b5	-	b6	-	b7	-	1	A1 / VII	Locrian	2T½ Phry	3T Maj
1	b2	-	b3	-	4	b5	-	b6	-	-	7	1	D4 / I	Harmonic minor b2 b5 (Locrian ♯7)	2T½ Phry	3T Maj+
1	b2	-	b3	-	4	b5	-	-	6	b7	-	1	D1 / II	Locrian ♯6	2T½ Phry	3T Aug1
1	b2	-	b3	-	4	b5	-	-	6	-	7	1	C4 / I	Melodic minor b2 b5 (Locrian ♯6 ♯7)	2T½ Phry	3T Aug2
1	b2	-	b3	-	4	-	5	b6	bb7	-	-	1	A2 / III	Phrygian ♯7	2T½ Phry	2T½ Dim
1	b2	-	b3	-	-	♯4	5	b6	-	b7	-	1	D4 / IV	Phrygian ♯4	3T Phry	2T½ Phry
1	b2	-	b3	-	-	♯4	5	b6	-	-	7	1	B4 / IV	Phrygian ♯4 ♯7	3T Phry	2T½ Harm
1	b2	-	b3	-	-	♯4	5	-	6	b7	-	1	D3 / IV	Dorian b2 ♯4 (Phrygian ♯4 ♯6)	3T Phry	2T½ Min
1	b2	-	b3	-	-	♯4	5	-	6	-	7	1	B3 / IV	Lydian b2 b3	3T Phry	2T½ Maj

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## Structure (2)

1	b2	2	#2	3	#3	#4	5	#5	6	#6	7	1	Mode	Name	Tetrachords		
	b2	bb3	b3	b4	4	b5	bb6	b6	bb7	b7	7	1					
1	b2	-	-	3	4	b5	-	b6	-	b7	-	1	D2 / V	Locrian ♭3	2T½ Harm	3T Maj	
1	b2	-	-	3	4	b5	-	b6	-	-	7	1	B4 / I	Harmonic major ♭2 ♭5 (Locrian ♭3 ♯7)	2T½ Harm	3T Maj+	
1	b2	-	-	3	4	b5	-	-	6	b7	-	1	B2 / V	Mixolydian ♭2 ♭5	2T½ Harm	3T Aug1	
1	b2	-	-	3	4	b5	-	-	6	-	7	1	A4 / I	Melodic major ♭2 ♭5 (Ionian ♭2 ♭5)	2T½ Harm	3T Aug2	
1	b2	-	-	3	4	-	5	b6	-	b7	-	1	D1 / V	Phrygian ♭3	2T½ Harm	2T½ Phry	
1	b2	-	-	3	4	-	5	b6	-	-	7	1	B2 / I	Harmonic major ♭2 (Ionian ♭2 ♭6)	2T½ Harm	2T½ Harm	
1	b2	-	-	3	4	-	5	-	6	b7	-	1	B1 / V	Mixolydian ♭2	2T½ Harm	2T½ Min	
1	b2	-	-	3	4	-	5	-	6	-	7	1	A2 / I	Melodic major ♭2 (Ionian ♭2)	2T½ Harm	2T½ Maj	
1	b2	-	-	3	-	#4	5	b6	-	b7	-	1	C4 / IV	Phrygian ♭3 #4	3T Harm	2T½ Phry	
1	b2	-	-	3	-	#4	5	b6	-	-	7	1	A4 / IV	Lydian ♭2 ♭6	3T Harm	2T½ Harm	
1	b2	-	-	3	-	#4	5	-	6	b7	-	1	C3 / IV	Mixolydian ♭2 #4 (Lydian ♭2 ♭7)	3T Harm	2T½ Min	
1	b2	-	-	3	-	#4	5	-	6	-	7	1	A3 / IV	Lydian ♭2	3T Harm	2T½ Maj	
1	-	2	b3	b4	-	b5	-	b6	bb7	-	-	1	C4 / VI	Dim. Mixolydian ♭2	2T Min	3T Min	
1	-	2	b3	b4	-	b5	-	b6	-	b7	-	1	C2 / VI	Aeolian ♭4 ♭5	2T Min	3T Maj	
1	-	2	b3	b4	-	b5	-	-	6	b7	-	1	B3 / II	Dorian ♭4 ♭5	2T Min	3T Aug1	
1	-	2	b3	b4	-	-	5	b6	bb7	-	-	1	A4 / VI	Aeolian ♭4 bb7	2T Min	2T½ Dim	
1	-	2	b3	b4	-	-	5	b6	-	b7	-	1	A2 / VI	Aeolian ♭4	2T Min	2T½ Phry	
1	-	2	b3	b4	-	-	5	-	6	b7	-	1	A3 / II	Dorian ♭4	2T Min	2T½ Min	
1	-	2	b3	-	4	b5	-	b6	bb7	-	-	1	C3 / VI	Locrian ♭2 bb7	2T½ Min	3T Min	
1	-	2	b3	-	4	b5	-	b6	-	b7	-	1	C1 / VI	Aeolian ♭5 (Locrian ♭2)	2T½ Min	3T Maj	
1	-	2	b3	-	4	b5	-	-	6	b7	-	7	1	D3 / I	Harmonic minor ♭5 (Aeolian ♭5 ♯7)	2T½ Min	3T Maj+
1	-	2	b3	-	4	b5	-	-	6	b7	-	1	B1 / II	Dorian ♭5	2T½ Min	3T Aug1	
1	-	2	b3	-	4	b5	-	-	6	-	7	1	C3 / I	Melodic minor ♭5 (Ionian ♭3 ♭5)	2T½ Min	3T Aug2	
1	-	2	b3	-	4	-	5	b6	bb7	-	-	1	A3 / VI	Aeolian bb7	2T½ Min	2T½ Dim	
1	-	2	b3	-	4	-	5	b6	-	b7	-	1	A1 / VI	Aeolian ( <i>Natural minor scale</i> )	2T½ Min	2T½ Phry	
1	-	2	b3	-	4	-	5	b6	-	-	7	1	D1 / I	Harmonic minor (Aeolian ♯7)	2T½ Min	2T½ Harm	
1	-	2	b3	-	4	-	5	-	6	b7	-	1	A1 / II	Dorian	2T½ Min	2T½ Min	
1	-	2	b3	-	4	-	5	-	6	-	7	1	C1 / I	Melodic minor (Ionian ♭3 / Dorian ♯7)	2T½ Min	2T½ Maj	
1	-	2	b3	-	4	-	-	#5	6	b7	-	1	D4 / bIII	Dorian #5	2T½ Min	2T Dim	
1	-	2	b3	-	4	-	-	#5	6	-	7	1	D3 / bIII	Ionian ♭3 #5	2T½ Min	2T Phry	
1	-	2	b3	-	-	#4	5	b6	-	b7	-	1	D2 / IV	Aeolian #4	3T Min	2T½ Phry	
1	-	2	b3	-	-	#4	5	b6	-	-	7	1	B2 / IV	Lydian ♭3 ♭6	3T Min	2T½ Harm	
1	-	2	b3	-	-	#4	5	-	6	b7	-	1	D1 / IV	Dorian #4	3T Min	2T½ Min	
1	-	2	b3	-	-	#4	5	-	6	-	7	1	B1 / IV	Lydian ♭3	3T Min	2T½ Maj	
1	-	2	b3	-	-	#4	-	#5	6	b7	-	1	C4 / bIII	Dorian #4 #5	3T Min	2T Dim	
1	-	2	b3	-	-	#4	-	#5	6	-	7	1	C3 / bIII	Lydian ♭3 #5	3T Min	2T Phry	

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## Structure (3)

1	b2	2	#2	3	#3	#4	5	#5	6	#6	7	1	Mode	Name	Tetrachords	
		b3	b3	b4	4	b5	b6	b6	b7	b7						
1	-	2	-	3	4	b5	-	b6	-	b7	-	1	C2 / V	Mixolydian b5 b6	2T½ Maj	3T Maj
1	-	2	-	3	4	b5	-	b6	-	-	7	1	B3 / I	Harmonic major b5 (Ionian b5 b6)	2T½ Maj	3T Maj+
1	-	2	-	3	4	b5	-	-	6	b7	-	1	A2 / V	Mixolydian b5	2T½ Maj	3T Aug1
1	-	2	-	3	4	b5	-	-	6	-	7	1	A3 / I	Melodic major b5 (Ionian b5)	2T½ Maj	3T Aug2
1	-	2	-	3	4	-	5	b6	-	b7	-	1	C1 / V	Mixolydian b6 (Aeolian b3)	2T½ Maj	2T½ Phry
1	-	2	-	3	4	-	5	b6	-	-	7	1	B1 / I	Harmonic major (Ionian b6)	2T½ Maj	2T½ Harm
1	-	2	-	3	4	-	5	-	6	b7	-	1	A1 / V	Mixolydian	2T½ Maj	2T½ Min
1	-	2	-	3	4	-	5	-	6	-	7	1	A1 / I	Ionian (Melodic major)	2T½ Maj	2T½ Maj
1	-	2	-	3	4	-	5	-	-	#6	7	1	D4 / bII	Ionian #6	2T½ Maj	2T½ Aug
1	-	2	-	3	4	-	-	#5	6	b7	-	1	D2 / bIII	Mixolydian #5	2T½ Maj	2T Dim
1	-	2	-	3	4	-	-	#5	6	-	7	1	D1 / bIII	Ionian #5	2T½ Maj	2T Phry
1	-	2	-	3	4	-	-	#5	-	#6	7	1	C4 / bII	Ionian #5 #6	2T½ Maj	2T Min
1	-	2	-	3	-	#4	5	b6	-	b7	-	1	C2 / IV	Lydian b6 b7	3T Maj	2T½ Phry
1	-	2	-	3	-	#4	5	b6	-	-	7	1	A2 / IV	Lydian b6	3T Maj	2T½ Harm
1	-	2	-	3	-	#4	5	-	6	b7	-	1	C1 / IV	Lydian b7 (Mixolydian #4)	3T Maj	2T½ Min
1	-	2	-	3	-	#4	5	-	6	-	7	1	A1 / IV	Lydian	3T Maj	2T½ Maj
1	-	2	-	3	-	#4	5	-	-	#6	7	1	D2 / bII	Lydian #6	3T Maj	2T½ Aug
1	-	2	-	3	-	#4	-	#5	6	b7	-	1	C2 / bIII	Mixolydian #4 #5	3T Maj	2T Dim
1	-	2	-	3	-	#4	-	#5	6	-	7	1	C1 / bIII	Lydian #5 (Aug. Phrygian)	3T Maj	2T Phry
1	-	2	-	3	-	#4	-	#5	-	#6	7	1	C2 / bII	Lydian #5 #6	3T Maj	2T Min
1	-	2	-	-	#3	#4	5	-	6	-	7	1	D4 / bV	Lydian #3	3T Maj+	2T½ Maj
1	-	2	-	-	#3	#4	5	-	-	#6	7	1	B4 / bV	Lydian #3 #6	3T Maj+	2T½ Aug
1	-	2	-	-	#3	#4	-	#5	6	-	7	1	D3 / bV	Lydian #3 #5	3T Maj+	2T Phry
1	-	2	-	-	#3	#4	-	#5	-	#6	7	1	B3 / bV	Aug. Mixolydian b2	3T Maj+	2T Min
1	-	-	#2	3	4	-	5	-	6	b7	-	1	D4 / bVI	Mixolydian #2	2T½ Aug	2T½ Min
1	-	-	#2	3	4	-	5	-	6	-	7	1	D2 / bVI	Ionian #2	2T½ Aug	2T½ Maj
1	-	-	#2	3	4	-	5	-	-	#6	7	1	B4 / bII	Ionian #2 #6	2T½ Aug	2T½ Aug
1	-	-	#2	3	4	-	-	#5	6	b7	-	1	B4 / bVI	Mixolydian #2 #5	2T½ Aug	2T Dim
1	-	-	#2	3	4	-	-	#5	6	-	7	1	B2 / bVI	Ionian #2 #5	2T½ Aug	2T Phry
1	-	-	#2	3	4	-	-	#5	-	#6	7	1	A4 / bII	Aug. Dorian b4	2T½ Aug	2T Min
1	-	-	#2	3	-	#4	5	-	6	b7	-	1	D3 / bVI	Mixolydian #2 #4	3T Aug1	2T½ Min
1	-	-	#2	3	-	#4	5	-	6	-	7	1	D1 / bVI	Lydian #2	3T Aug1	2T½ Maj
1	-	-	#2	3	-	#4	5	-	-	#6	7	1	B2 / bII	Lydian #2 #6	3T Aug1	2T½ Aug
1	-	-	#2	3	-	#4	-	#5	6	b7	-	1	B3 / bVI	Aug. Aeolian b7	3T Aug1	2T Dim
1	-	-	#2	3	-	#4	-	#5	6	-	7	1	B1 / bVI	Lydian #2 b5 (Aug. Aeolian)	3T Aug1	2T Phry
1	-	-	#2	3	-	#4	-	#5	-	#6	7	1	A2 / bII	Aug. Dorian	3T Aug1	2T Min
1	-	-	#2	-	#3	#4	5	-	6	-	7	1	C4 / bV	Lydian #2 #3	3T Aug2	2T½ Maj
1	-	-	#2	-	#3	#4	5	-	-	#6	7	1	A4 / bV	Aug. Mixolydian b5	3T Aug2	2T½ Aug
1	-	-	#2	-	#3	#4	-	#5	6	-	7	1	C3 / bV	Aug. Aeolian b3	3T Aug2	2T Phry
1	-	-	#2	-	#3	#4	-	#5	-	#6	7	1	A3 / bV	Aug. Mixolydian	3T Aug2	2T Min

# 16 Heptatonic scales / 112 modes

## Altered greek modes scales (1)

### I. Ionian

Alt.	Resulting scale	Mode
b2	Melodic major b2 (Ionian b2)	A2 / I
b2 b3	Melodic minor b2 (Ionian b2 b3)	C2 / I
b2 #4	Lydian b2	A3 / IV
b2 b5	Melodic major b2 b5 (Ionian b2 b5)	A4 / I
b2 b6	Harmonic major b2 (Ionian b2 b6)	B2 / I
b2 b7	Mixolydian b2 (Ionian b2 b7)	B1 / V
#2	Ionian #2	D2 / bVI
#2 #4	Lydian #2	D1 / bVI
#2 #5	Ionian #2 #5	B2 / bVI
#2 #6	Ionian #2 #6	B4 / bII
#2 b7	Mixolydian #2	D4 / bVI
b3	Melodic minor (Ionian b3)	C1 / I
b3 b5	Melodic minor b5 (Ionian b3 b5)	C3 / I
b3 #5	Ionian b3 #5	D3 / bIII
b3 b6	Harmonic minor (Ionian b3 b6)	D1 / I
b3 b7	Dorian	A1 / II
#4	Lydian	A1 / IV
#4 #5	Lydian #5 (Aug. Phrygian)	C1 / bIII
#4 b6	Lydian b6 (Harmonic major #4)	A2 / IV
#4 b7	Lydian b7 (Mixolydian #4)	C1 / IV
b5	Melodic major b5 (Ionian b5)	A3 / I
b5 b6	Harmonic major b5 (Ionian b5 b6)	B3 / I
b5 b7	Mixolydian b5	A2 / V
#5	Ionian #5	D1 / bIII
#5 #6	Ionian #5 #6	B4 / bII
#5 b7	Mixolydian #5	D2 / bIII
b6	Harmonic major (Ionian b6)	B1 / I
b6 b7	Mixolydian b6	C1 / V
#6	Ionian #6	D4 / bII
b7	Mixolydian	A1 / V

### II. Dorian

Alt.	Resulting scale	Mode
b2	Dorian b2 (Phrygian b6)	C1 / II
b2 b3	Mixolydian b2 (Ionian b2 b7)	B1 / V
b2 #4	Dorian b2 #4 (Phrygian #4 b6)	D3 / IV
b2 b5	Locrian b6 (Dorian b2 b5)	D1 / II
b2 b6	Phrygian	A1 / III
b3	Mixolydian	A1 / V
b3 b4	Ionian	A1 / I
b4	Dorian b4	A3 / II
b4 b5	Dorian b4 b5	B3 / II
#4	Dorian #4 (Romanian scale)	D1 / IV
#4 #5	Lydian b3 #5 (Dorian #4 #5)	C4 / bIII
b5	Dorian b5	B1 / II
#5	Dorian #5	D4 / bIII
b6	Aeolian	A1 / VI
b6 b7	Harmonic minor	D1 / I
b7	Melodic minor	C1 / I

### III. Phrygian

Alt.	Resulting scale	Mode
b2	Aeolian	A1 / VI
b3	Phrygian b3	A3 / III
b3 b4	Phrygian b3 b4	B3 / bIII
b3 b7	Phrygian b3 b7	A4 / III
b3	Phrygian b3 (Spanish/Jewish scale)	D1 / V
b3 #4	Phrygian b3 #4	C4 / IV
b4	Phrygian b4	B1 / III
b4 b6	Phrygian b4 b6	C3 / VII
#4	Phrygian #4	D4 / IV
#4 b6	Dorian b2 #4 (Phrygian #4 b6)	D3 / IV
#4 b7	Phrygian #4 b7	B4 / IV
b5	Locrian	A1 / VII
b6	Dorian b2 (Phrygian b6)	C1 / II
b7	Phrygian b7	A2 / III
b7	Harmonic minor b2 (Neapolitan min.)	D2 / I

# 16 Heptatonic scales / 112 modes

## Altered greek modes scales (2)

### IV. Lydian

Alt.	Resulting scale	Mode
♭2	Lydian ♭2 (Ionian ♭2 ♯4)	A3 / IV
♭2 ♭3	Lydian ♭2 ♭3	B3 / IV
♭2 ♭6	Lydian ♭2 ♭6	A4 / IV
♭2 ♭7	Mixolydian ♭2 ♯4 (Lydian ♭2 ♭7)	C3 / IV
♯2	Lydian ♯2 (Ionian ♯2 ♯4)	D1 / ♭VI
♯2 ♯3	Lydian ♯2 ♯3	C4 / ♭V
♯2 ♯5	Lydian ♯2 ♯5	B1 / ♭VI
♯2 ♯6	Lydian ♯2 ♯6	B2 / ♭II
♯2 ♭7	Mixolydian ♯2 ♯4 (Lydian ♯2 ♭7)	D3 / ♭VI
♭3	Lydian ♭3 (Melodic minor ♯4)	B1 / IV
♭3 ♯5	Lydian ♭3 ♯5	C3 / ♭III
♭3 ♭6	Lydian ♭3 ♭6 (Harmonic Minor ♯4)	B2 / IV
♭3 ♭7	Dorian ♯4 (Lydian ♭3 ♭7)	D1 / IV
♯3	Lydian ♯3	D4 / ♭V
♯3 ♯5	Lydian ♯3 ♯5	D3 / ♭V
♯3 ♯6	Lydian ♯3 ♯6	B4 / ♭V
♮4	Ionian	A1 / I
♯5	Lydian ♯5	C1 / ♭III
♯5 ♯6	Lydian ♯5 ♯6	C2 / ♭II
♯5 ♭7	Mixolydian ♯4 ♯5 (Lydian ♯5 ♭7)	C2 / ♭III
♭6	Lydian ♭6 (Melodic major ♯4)	A2 / IV
♭6 ♭7	Lydian ♭6 ♭7 (Mixolydian ♯4 ♭6)	C2 / IV
♯6	Lydian ♯6	D2 / ♭II
♭7	Lydian ♭7 (Mixolydian ♯4)	C1 / IV

### V. Mixolydian

Alt.	Resulting scale	Mode
♭2	Mixolydian ♭2 (Ionian ♭2 ♭7)	B1 / V
♭2 ♯4	Mixolydian ♭2 ♯4 (Lydian ♭2 ♭7)	C3 / IV
♭2 ♭5	Mixolydian ♭2 ♭5	B2 / V
♭2 ♭6	Phrygian ♮3 (Spanish/Jewish scale)	D1 / V
♯2	Mixolydian ♯2	D4 / ♭VI
♯2 ♯4	Mixolydian ♯2 ♯4 (Lydian ♯2 ♭7)	D3 / ♭VI
♯2 ♯5	Mixolydian ♯2 ♯5	B4 / ♭VI
♯2 ♮7	Ionian ♯2	D2 / ♭VI
♭3	Dorian	A1 / II
♭3 ♭5	Dorian ♭5	B1 / II
♭3 ♯5	Dorian ♯5	D4 / ♭III
♭3 ♭6	Aeolian	A1 / VI
♭3 ♮7	Melodic minor	C1 / I
♯4	Lydian ♭7 (Mixolydian ♯4)	C1 / IV
♯4 ♯5	Mixolydian ♯4 ♯5	C2 / ♭III
♯4 ♭6	Lydian ♭6 ♭7 (Mixolydian ♯4 ♭6)	C2 / IV
♯4 ♮7	Lydian	A1 / IV
♭5	Mixolydian ♭5	A2 / V
♭5 ♭6	Mixolydian ♭5 ♭6 (Aeolian ♮3 ♭5)	C2 / V
♭5 ♮7	Melodic major ♭5 (Ionian ♭5)	A3 / I
♯5	Mixolydian ♯5	D2 / ♭III
♯5 ♮7	Ionian ♯5	D1 / ♭III
♭6	Mixolydian ♭6 (Aeolian ♮3)	C1 / V
♭6 ♮7	Harmonic major (Ionian ♭6)	B1 / I
♮7	Ionian	A1 / I

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## Altered greek modes scales (3)

### VI. Aeolian

Alt.	Resulting scale	Mode
b2	Phrygian	A1 / III
b2 ♯3	Phrygian ♯3 (Spanish/Jewish scale)	D1 / V
b2 ♯4	Phrygian ♯4	D4 / IV
b2 b5	Locrian	A1 / VII
♯3	Mixolydian b6 (Aeolian ♯3)	C1 / V
♯3 ♯4	Lydian b6 b7 (Mixolydian ♯4 b6)	C2 / IV
♯3 b5	Mixolydian b5 b6 (Aeolian ♯3 b5)	C2 / V
♯3 ♯6	Mixolydian	A1 / V
♯3 ♯7	Harmonic major (Ionian b6)	B1 / I
b4	Aeolian b4	A2 / VI
b4 b5	Aeolian b4 b5	C2 / VI
b4 bb7	Aeolian b4 bb7	A4 / VI
♯4	Aeolian ♯4 (Hungarian Gypsy scale)	D2 / IV
b5	Aeolian b5 (Locrian ♯2)	C1 / VI
b5 ♯7	Harmonic minor b5 (Aeolian b5 ♯7)	D3 / I
♯6	Dorian	A1 / II
♯6 ♯7	Melodic minor	C1 / I
bb7	Aeolian bb7	A3 / VI
♯7	Harmonic minor	D1 / I

### VII. Locrian

Alt.	Resulting scale	Mode
♯2	Aeolian b5 (Locrian ♯2)	C1 / VI
♯2 bb7	Locrian ♯2 bb7	C3 / VI
♯2 ♯7	Harmonic minor b5 (Aeolian b5 ♯7)	D3 / I
bb3	Locrian bb3	A2 / VII
bb3 b4	Locrian bb3 b4	C2 / VII
bb3 bb7	Locrian bb3 bb7	B2 / VII
♯3	Locrian ♯3	D2 / V
♯3 ♯7	Harmonic major b2 b5 (Locrian ♯3 ♯7)	B4 / I
b4	Locrian b4 (Superlocrian)	C1 / VII
b4 ♯6	Locrian b4 ♯6	D3 / II
b4 bb7	Locrian b4 bb7 (Dim. Mixolydian)	D1 / VII
♯5	Phrygian	A1 / III
bb6	Locrian bb6	A3 / VII
bb6 bb7	Locrian bb6 bb7	B2 / VII
♯6	Locrian ♯6 (Dorian b2 b5)	D1 / II
♯6 ♯7	Melodic minor b2 b5	C4 / I
bb7	Locrian bb7	B1 / VII
♯7	Harmonic minor b2 b5	D4 / I

### Greek modes

Degree	Mode	Equivalences
I	Ionian	Lydian ♯4 - Mixolydian ♯7
II	Dorian	Mixolydian b3 - Aeolian ♯6
III	Phrygian	Aeolian b2 - Locrian ♯5
IV	Lydian	Ionian ♯4 - Aug. Locrian
V	Mixolydian	Ionian ♯7 - Dorian ♯3
VI	Aeolian	Dorian b6 - Phrygian ♯2
VII	Locrian	Phrygian b5 - Dim. Lydian



# 16 Heptatonic scales / 112 modes

## Chords (1)

A1. Melodic major		
Degr.	Chord	Extensions
I	M7	9 11 13
II	m7	9 11 13
III	m7	b9 11 b13
IV	M7	9 #11 13
V	7	9 11 13
VI	m7	9 11 b13
VII	m7b5	b9 11 b13

B1. Harmonic major		
Degr.	Chord	Extensions
I	M7	9 11 b13
II	m7b5	9 11 13
III	m7 (7)	b9 - b13
IV	mM7	9 #11 13
V	7	b9 11 13
bVI	M7#5	b9 #11 13
VII	dim7	- 11 b13

A2. Melodic major b2		
Degr.	Chord	Extensions
I	M7	b9 11 13
bII	M7#5 (7#5)	#9 #11 -
III	m6	- - -
IV	M7	9 #11 b13
V	7b5	9 11 b13
VI	M7#5 (7#5)	9 - b13
VII	-	- - -

B2. Harmonic major b2		
Degr.	Chord	Extensions
I	M7	b9 11 b13
bII	M7 (7)	#9 #11 -
III	m6 (M6)	- - -
IV	mM7	9 #11 b13
V	7b5	9 11 b13
Vlb	M7#5	#9 11 13
VII	-	- - -

A3. Melodic major b5		
Degr.	Chord	Extensions
I	M7b5	9 11 13
II	m7	9 - 13
III	7sus4	b9 - b13
IV	M7	b9 #11 13
bV	m7b5	- #11 -
VI	m6	- - -
VII	m7b5 (m7)	b9 - -

B3. Harmonic major b5		
Degr.	Chord	Extensions
I	M7b5	9 11 b13
II	m7b5 (7b5)	9 - 13
III	7	b9 - b13
IV	mM7	b9 #11 13
bV	-	- - -
bVI	7#5	#9 #11 13
VII	dim7 (m6)	- 11 -

A4. Melodic major b2 b5		
Degr.	Chord	Extensions
I	M7b5	b9 11 13
bII	M7#5 (7#5)	#9 11 -
III	sus4	- - -
IV	M7	b9 #11 b13
bV	mM7 (m7)	- #11 -
VI	m6 (M6)	- - -
VII	7sus4	b9 - -

B4. Harmonic major b2 b5		
Degr.	Chord	Extensions
I	M7b5	b9 11 b13
bII	M7 (7)	#9 11 -
III	M6	- - -
IV	mM7	b9 #11 b13
bV	7Msus4 (7sus4)	9 - -
bVI	7#5	#9 11 13
VII	sus4	- - -

# 16 Heptatonic scales / 112 modes

## Chords (2)

C1. Melodic minor		
Degr.	Chord	Extensions
I	mM7	9 11 13
II	m7	b9 11 13
bIII	M7 #5	9 #11 13
IV	7	9 #11 13
V	7	9 11 b13
VI	m7b5	9 11 b13
VII	m7b5	b9 #11 b13

D1. Harmonic minor		
Degr.	Chord	Extensions
I	mM7	9 11 b13
II	m7b5	b9 11 13
bIII	M7 #5	9 11 13
IV	m7	9 #11 13
V	7	b9 11 b13
bVI	M7	#9 #11 13
VII	dim7	- - b13

C2. Melodic minor b2 (Neapolitan maj.)		
Degr.	Chord	Extensions
I	mM7	b9 11 13
bII	M7 #5 (7 #5)	9 #11 -
bIII	7 #5	9 #11 13
IV	7	9 #11 b13
V	7b5	9 11 b13
VI	m7b5 (7b5)	9 - b13
VII	7b5	b9 - b13

D2. Harmonic minor b2 (Neapolitan min.)		
Degr.	Chord	Extensions
I	mM7	b9 11 b13
bII	M7 (7)	9 #11 -
bIII	7 #5	9 11 13
IV	m7	9 #11 b13
V	7b5	b9 11 b13
bVI	M7	#9 11 13
VII	Aug	- - -

C3. Melodic minor b5		
Degr.	Chord	Extensions
I	mM7b5	9 11 13
II	m7b5 (7b5)	b9 - 13
bIII	mM7 #5	9 #11 13
IV	7	b9 #11 13
bV	mM7 #5	- #11 13
VI	dim7	9 11 b13
VII	m7 (7)	b9 - 13

D3. Harmonic minor b5		
Degr.	Chord	Extensions
I	mM7b5	9 11 b13
II	m7b5 (7b5)	b9 - 13
bIII	mM7 #5	9 11 13
IV	m7	b9 #11 13
bV	-	- - -
bVI	7	#9 #11 13
VII	dim7 (m6/M6)	- - -

C4. Melodic minor b2 b5		
Degr.	Chord	Extensions
I	mM7b5	b9 11 13
bII	M7 #5 (7 #5)	9 11 -
bIII	m7 #5	9 #11 13
IV	7	b9 #11 b13
bV	mM7	- #11 13
VI	dim7	9 - b13
VII	7b5 (7)	b9 #11 -

D4. Harmonic minor b2 b5		
Degr.	Chord	Extensions
I	mM7b5	b9 11 b13
bII	M7 (7)	9 11 -
bIII	m7 #5	9 11 13
IV	m7	b9 #11 b13
bV	M7sus4	9 #11 13
bVI	7	#9 11 13
VII	M6	- - -