

UPAO - FACULTAD DE ARQUITECTURA			ACONDICIONAMIENTO AMBIENTAL 1							
EFEMERIDES SOLARES - Latitud 8° Sur - ANGULOS DE ALTURA SOLAR APARENTE										
SOLSTICIO DE VERANO			Diciembre 22				Cálculo: Arq. Guillermo Malca O.			
HORA	EFEMERIDES		180	135	90	45	0	-45	-90	-135
	AZIMUT	ALTURA	NORTE	N-E	ESTE	S-E	SUR	S-O	OESTE	N-O
05:46	66.8	0.0		0.0	0.0	0.0	0.0			
06:00	66.3	3.2		8.7	3.5	3.4	7.9			
07:00	67.8	16.9		38.0	18.1	18.2	38.8			
08:00	67.4	30.6		57.2	32.7	32.6	57.0			
09:00	64.9	44.2		70.7	47.1	46.0	66.5			
10:00	58.3	57.4		81.6	61.4	58.1	71.4			
11:00	41.3	68.9			75.7	68.9	73.8	88.6		
12:00	0.0	74.6				78.9	74.6	78.9		
13:00	-41.3	68.9				88.6	73.8	68.9	75.7	
14:00	-58.3	57.4					71.4	58.1	61.4	81.6
15:00	-64.9	44.2					66.5	46.0	47.1	70.7
16:00	-67.4	30.6					57.0	32.6	32.7	57.2
17:00	-67.8	16.9					38.8	18.2	18.1	38.0
18:00	-66.3	3.2					7.9	3.4	3.5	8.7
18:13	-66.8	0.0					0.0	0.0	0.0	0.0
EQUINOCCIOS DE OTONO Y PRIMAVERA			Marzo 22 - Set. 23							
HORA	EFEMERIDES		180	135	90	45	0	-45	-90	-135
	AZIMUT	ALTURA	NORTE	N-E	ESTE	S-E	SUR	S-O	OESTE	N-O
06:00	90.0	0.0	0.0	0.0	0.0	0.0				
07:00	92.2	14.9	81.9	19.9	14.9	21.3				
08:00	94.6	29.7	82.0	36.8	29.7	41.3				
09:00	97.9	44.4	82.0	50.9	44.7	58.4				
10:00	103.6	59.0	82.0	62.9	59.7	72.6				
11:00	117.5	73.0	82.0	73.8	74.8	84.7				
12:00	180.0	82.0	82.0	84.3						84.3
13:00	-117.5	73.0	82.0					84.7	74.8	73.8
14:00	-103.6	59.0	82.0					72.6	59.7	62.9
15:00	-97.9	44.4	82.0					58.4	44.7	50.9
16:00	-94.6	29.7	82.0					41.3	29.7	36.8
17:00	-92.2	14.9	81.9					21.3	14.9	19.9
18:00	-90.0	0.0	0.0					0.0	0.0	0.0
SOLSTICIO DE INVIERNO			Junio 22							
HORA	EFEMERIDES		180	135	90	45	0	-45	-90	-135
	AZIMUT	ALTURA	NORTE	N-E	ESTE	S-E	SUR	S-O	OESTE	N-O
06:13	113.7	0.0	0.0	0.0	0.0	0.0				
07:00	115.8	10.4	22.8	10.9	11.5	29.0				
08:00	120.0	23.5	41.0	24.2	26.7	59.2				
09:00	126.8	35.6	50.1	35.9	41.8	78.7				
10:00	137.7	47.0	55.4	47.0	57.9					
11:00	155.4	55.3	57.8	57.0	73.9					76.5
12:00	180.0	58.6	58.6	66.6						66.6
13:00	-155.4	55.3	57.8	76.5					73.9	57.0
14:00	-137.7	47.0	55.4						57.9	47.0
15:00	-126.8	35.6	50.1					78.7	41.8	35.9
16:00	-120.0	23.5	41.0					59.2	26.7	24.2
17:00	-115.8	10.4	22.8					29.0	11.5	10.9
17:46	-113.7	0.0	0.0					0.0	0.0	0.0