

Skills	Measurement technician		Engineer		Manager	
	Level of detail	Hours Theory (T) / Practice (P)	Level of detail	Hours Theory (T) / Practice (P)	Level of detail	Hours Theory (T) / Practice (P)
<b>Fundamentals of acoustics and outdoor sound propagation</b> <i>Sound pressure and sound power. Pure tones, frequency, the audible range, broadband noise, octave and third-octave frequency analysis of noise. Sound pressure level, sound intensity level, sound power level and the decibel scale. The range of decibel levels and the significance of level changes (3dB, 10dB, 20dB etc) in terms of energy content and loudness. The procedure for combining and subtracting decibel levels, including background levels. -</i>	Medium	4T	Advanced	6T	Medium	4T
<b>Frequency bands:</b> <i>The variation of hearing sensitivity with frequency and level: the A-weighting scale.</i>						
<b>Noise indicators:</b> <i>Steady and time-varying noise levels: LAeq, LAE and statistical levels LA10, LA90 etc. Calculations involving the LAeq and LAE. The effects of noise on people: hearing damage, annoyance, activity interference and sleep disturbance.</i>						
<b>Basic concept about the determination of sound power level according</b>	Medium	2T+4P	Advanced	4T+4P	-	
<b>Basic concept about sound source modelling according to point/line/planar source model</b>	Basic	2T	Advanced	4T+4P	-	
<b>Reflection, absorption, diffraction</b>	Medium	2T+2P	Advanced	4T+4P	Basic	2T
<b>Training on the use of sound level meters</b>	Advanced	4T+4P	Advanced	6T+4P	Basic	4T
<b>Instrument features</b>						
<b>Instrument legal requirements</b>						
<b>Instruments maintenance and quality assurance</b>						
<b>Road Infrastructures noise:</b> <i>Concepts and measurement. Measurement location selection. Measurement time sampling (time intervals and</i>	Basic	6P	Medium	6T+6P	Basic	4T

<i>number of samples). Microphone position and corrections</i>						
<b>Railway Infrastructures noise: Concepts and measurement. Measurement location selection. Measurement time sampling (time intervals and number of samples). Microphone position and corrections</b>						
<b>Air traffic Infrastructures noise: Concepts and measurement. Measurement location selection. Measurement time sampling (time intervals and number of samples). Microphone position and corrections</b>						
<b>Road Infrastructures noise: Processing and reporting</b>	Basic	2P	Advanced	2T+2P	-	
<b>Railway Infrastructures noise: Processing and reporting</b>	Basic	2P	Advanced	2T+2P	-	
<b>Air traffic Infrastructures noise: Processing and reporting</b>	Basic	2P	Advanced	2T+2P	-	
<b>Activities: Industrial, construction sites, leisure, temporary. Measurement and processing. Background noise, penalties (ISO 1996). Measurement location selection. Measurement time sampling (time intervals and number of samples). Microphone position and corrections</b>	Advanced	12T+8P	Advanced	12T+8P	Basic	4T
<b>Legal acoustics</b>	-		Advanced	8T	Advanced	8T
<b>Noise monitoring (including low cost sensor networks)</b>	Basic	2T	Advanced	8T	Medium	4T
<b>Interpretation of local/regional noise regulation</b>	-		Medium/ Advanced	8T	Advanced	10T
<b>National noise regulation</b>						
<b>European noise regulation</b>						
<b>Extended regulation related to noise sources</b>	-		-		Basic	2T
<b>Noise maps in relation to END</b>	-		Advanced	8T	Medium/ Advanced	6T
<b>Noise mapping input data</b>						
<b>Noise maps interpretation</b>						
<b>Noise prediction software</b>	-		Advanced	8T + 16P	Basic	4T + 2P

<b>Action plans in relation to END</b>	-		Medium	4T + 12P	Medium/ Advanced	8T + 2P
<b>Noise mitigation measures</b>	-					
<b>Quiet areas identification and analysis</b>	-		Medium	4T	Advanced	8T + 2P
<b>Quiet areas preservation and management</b>						
<b>Criteria for acoustic planning and zoning related to land use</b>	-		Basic	2T	Advanced	8T + 2P
<b>Calculation of uncertainty of measurements results</b>	-		Advanced	10T	-	
<b>Interpretation of uncertainty of instruments and results</b>	Advanced	2T	Advanced	2T	Advanced	2T
<b>Non acoustic factors (mobility, landscape, communication, people engagement, etc)</b>	-		Basic	4T	Advanced	8T
<b>Quality assurance procedures (ISO 17025)</b>	Basic	2T	Advanced	8T	Basic	2T
<b>Health risks</b>	Basic	2T	Basic	2T	Basic	2T
		<b>34T + 30P</b>		<b>124T + 64P</b>		<b>90T + 8P</b>