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EUROPEAN COMPUTER DRIVING LICENCE
Multimedia Audio Editing
Syllabus

Purpose

This document details the syllabus for *ECDL Multimedia Module 1 – Audio Editing*. The syllabus describes, through learning outcomes, the knowledge and skills that a candidate for ECDL Multimedia should possess. The syllabus also provides the basis for the theory and practice-based test in this module.

Note

The official version of the syllabus for ECDL Multimedia Version 1.0 can be found on the web site www.ecdl-multimedia.it, and it was released in 2011.

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Multimedia Module 1 – Audio Editing

The Audio Editing module requires the candidate to understand the basic principles of digital audio representation and to be able to perform different tasks on audio feeds (music, dialogue, noise). The candidate shall be able to use programs for digital audio processing, suitable for soundtracks to be used on multimedia projects.

CATEGORY	SKILL SET	REF.	TASK ITEM
1.1 Basic concepts	1.1.1 Digital audio representation	1.1.1.1	Define the parameters of musical sound : pitch, loudness, sustain, timbre.
		1.1.1.2	Define and understand the characteristics of sound waves and the way they are propagated.
		1.1.1.3	Understand the relationship between pitch and vibration frequency, loudness and vibration amplitude, the timbre of a musical instrument and harmonic sounds.
		1.1.1.4	Understand the meaning of “signal-to-noise-ratio” (SNR), dynamics and distortion.
		1.1.1.5	Understand the difference between analog audio signals and digital audio signals.
		1.1.1.6	Define the sampling operations and the quantization process of a signal.
		1.1.1.7	Understand the concepts of sample rate, bit depth.
		1.1.1.8	Define the effect of aliasing, the signal-to-quantization-noise ratio (SQNR), the ratio between the number of bits used and dynamics.
		1.1.1.9	Understand compressed and uncompressed audio formats and describe their usage.
	1.1.2 The MIDI protocol	1.1.2.1	Understand the main features of MIDI protocol.
		1.1.2.2	Identify the current MIDI controllers: CC1, CC5, CC7, CC10, CC11, CC64.
		1.1.2.3	Know the different ways to connect a MIDI device to a computer.
	1.1.3 The musical language	1.1.3.1	Define the elements of the musical language: rhythm, melody and harmony.
		1.1.3.2	Understand the main agogic accents (Italian tempo marking): “adagio”, “andante”, “allegro”, “presto”, “rallentando”, “accelerando”, “beats per minute” (BPM).
		1.1.3.3	Identify the elements of musical scale: scale step, whole tone, semitone, chromatic alterations, musical intervals and modes.

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		1.1.3.4	Understand the concept of tonality and modulation.
1.2 Instruments	1.2.1 Software	1.2.1.1	Understand the main features of the most popular software programs for audio production and post-production, the techniques for hard-disk recording and non linear editing.
		1.2.1.2	Identify the most appropriate software for creation and modification of digital audio.
	1.2.2 Hardware	1.2.2.1	Identify a suitable configuration for a computer to support audio production and post-production: cpu, data bus, ram, internal-external hard-disk drives.
		1.2.2.2	Understand the characteristics and the operation of an audio board.
		1.2.2.3	Know how to operate microphones and understand their polar patterns.
		1.2.2.4	Know how to connect input and output audio peripherals.
		1.2.2.5	Identify the required tools for audio recording like: cables, bars, boom operator, anti shock - anti wind supports, pop-screen etc..
1.3 Production	1.3.1 Set up of a audio production session	1.3.1.1	Set up the sample rate and the bit depth for a session (project).
		1.3.1.2	Create one or more audio a/o MIDI tracks inside a session (project).
		1.3.1.3	Set up one or more audio scores inside a session (project).
	1.3.2 Live recording on hard disk	1.3.2.1	Handle the connection of a recording software programme with a microphone, using the internal PC audio board or an external audio board.
		1.3.2.2	Record a vocal or instrumental audio score using a microphone, setting up the most appropriate input signal level.
		1.3.2.3	Manage the difference between the monitoring recording level and the real recording level.
		1.3.2.4	Import a motion picture without soundtrack to an audio recording program and create the dialogue replacement (dubbing) and/or the background sound effects.
	1.3.3 Line in recording through the use of a software program	1.3.3.1	Connect electrical musical instruments (guitars, keyboards etc.) to a recording software program, using the internal audio board to a PC or an external audio board.

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		1.3.3.2	Record an instrumental audio feed using a line input.
	1.3.4.MIDI recording	1.3.4.1	Set up the connection with MIDI and/or USB electronic keyboards to play virtual instruments.
		1.3.4.2	Record a MIDI musical sequence through the use of MIDI connection and of virtual instruments.
	1.3.5 Musical production	1.3.5.1	Set up a session (project) to produce loop-based music, for basic parameters: BPM (measure of tempo in music) and key (tonality).
		1.3.5.2	Dynamically modify tempo and key inside a loop-based piece.
1.4 Post-production	1.4.1 Editing	1.4.1.1	Move and resize the audio tracks over the timeline eventually using a quantization grid.
		1.4.1.2	Shorten, in tempo, a musical piece to produce a loop-based audio feed, to be used as musical background.
		1.4.1.3	Perform fade-in, fade-out and cross-fade of audio tracks.
	1.4.2 Optimization	1.4.2.1	Improve the dynamic range of an audio feed using specific plug-ins for gamma correction and dynamic compression.
		1.4.2.2	Improve the frequency response of an audio feed using plug-ins to provide equalization.
		1.4.2.3	Use software filters (such as denoiser, declicker, hum removal) to eliminate background noise as ground noise, due to AC, electrostatic click.
	1.4.3 Audio Mixing	1.4.3.1	Be able to use the audio mixer elements: gain, fader, pan-pot, master track, mute, solo.
		1.4.3.2	Apply an effect to an audio track (ie. reverb, chorus, delay).
		1.4.3.3	Perform a static panning of audio feeds in the audio mixing.
		1.4.3.4	Perform dynamic panning of an audio feed, with reference to the displacement of an object present in a video previously imported.
		1.4.3.5	Perform an audio mix with numerous tracks, using standard reference intensity value (0 db) correctly managing the panning.
	1.4.4 Podcast production	1.4.4.1	Produce a podcast in radio style, using voice, background music and stingers.

CATEGORY	SKILL SET	REF.	TASK ITEM
		1.4.4.2	Produce a podcast episode synchronized to a photographic sequence, using voice and/or background music.
		1.4.4.3	Produce a podcast episode synchronized with a videocast, using background voice and/or music.
1.5 Finalization	1.5.1 Audio and multimedia creation.	1.5.4.1	Export an audio and/or MIDI sequence (Bounce To Disk) to create a digital audio uncompressed (Wave, AIFF) to be burned on a CD.
		1.5.4.2	Export an audio and/or MIDI sequence or convert from an existing audio to create a digital audio compressed (lossy compression: MP3, WMA, AAC, M4a), to be used for multimedia applications, or compressed for archiving, (lossless compression: APE, CAF and FLAC).