Università degli Studi di Catania – C.d.L. in Informatica Triennale – A.A. 2019/20

Computer Music (6 CFU) – Prof. Filippo L.M. Milotta

Teaching Material in English

In the academic year 2019/20, the Erasmus student Ute Skarupa realized the following English translations of the Italian teaching material available on my website.

The translated documents may contain errors. They do not substitute any educational book. It should be used only as a support material during the learning process. Please, report any error by e-mail.

Last update: 25/1/20

ID	Content	PDF
01	Sound and Audio. Waves, waveform, and periodicity. Vibration, Propagation, Revelation. Amplitude, Period, Frequency, Phase, and Wavelength.	PDF
02	Superposition of waves (overlapping principle). Waves in phase and in phase opposition. Periodic wave – Mathematical function. Amplitude of sounds.	PDF
03	Amplitude Pressure. Audibility thresholds. Decibel. Sound Pressure Level (SPL).	PDF
04	Inverse-square Law. Acoustic Monopole. Speed of sound. Wavelength.	PDF
05	Deviation of sound waves. Refraction. Can wind bring sounds?. Reflection. Echo. Diffraction. Doppler Effect. Sonic boom and Mach Number.	PDF
06	Human perception of sound. Difference between pure sound and complex sound. Natural tone and timbre. Fourier Analysis. Spectrogram.	PDF
07	Sound frequency (Notes). Octave in music. Amplitude and Envelope. Colors of noise.	PDF
08	Psychoacoustics. Physics and cognition. Tasks of the auditory system. Physiology of hearing. Noise tolerance thresholds. Sound – Human perception. Diagram of Fletcher-Munson. Place of sound sources (Interaural Time/Intensity Differences – ITD/IID).	PDF
09	Perceived Stamp. Tremolo and Vibrato. Frequency Resolution and analogies with Image Resolution. Masking and Critical Band. Non-Tonal and Tonal Masking. Barkhausen scale.	PDF
10	Audio analog representation, distortion, and pros&cons. Digital audio. Sampling. Nyquist frequency, Nyquist-Shannon sampling theorem. Claude Shannon and Harry Nyquist.	PDF
11	Quantization. SQNR. Uniform and not Uniform quantization. Pulse Code Modulation (PCM). Signal encodings. Error Correcting Code.	PDF
12	Equalizer. Fade-in / Fade-out effects. Clipping.	PDF
13	Dynamic range operators.	PDF