Explanation of Members Areas of Professional Practice

This directory is a listing of Members "self nominated" areas of acoustic practice. The listing is provided for information only. It is not an endorsement of any members competence or professional expertise. It is incumbent on the user of this information to make their own assessment of the abilities of the member to be able to carry out the work in a professional manner.

1. The register of nominated areas of professional practice relies on the honesty of members to provide correct information and to abide by the Society Code of Ethics.
2. Members must register their areas of professional practice annually to ensure the list is always correct. A renewal form is available from the Society's website and a form will be sent to members with their annual subscription notice.
3. The Society may reject an application for inclusion on the register of nominated areas of professional practice and may remove a member's name from the register.
4. The Society is not responsible for errors or omissions in the register of member's areas of professional practice. It is the responsibility of members to notify the Society of any errors.

The field of acoustics is extremely broad; it covers areas as diverse as vibration, psychoacoustics, bioacoustics, music, entertainment, environmental or occupational noise, building acoustics, underwater and medical imaging to list some. This list is restricted to six areas and is designed to assist in contacting an acoustician with expertise in an area.

The acoustician may or may not be practising on a commercial basis.

The following members of the Society have nominated themselves for listing. They are either Fellows or Members of the Society. They have recognised professional qualifications appropriate to their field of work and have been actively working in the field of acoustics at a professional level for a number of years. They are bound by the Societies' Code of Ethics to not practice outside their area of competence.

It should be recognised that the member's nomination has not been vetted and the Society is not accrediting the member. The Society is not responsible for any errors or inaccurate details provided by members and included in this list. The information supplied by members has been...
published by the Society in good faith. Any person making use of this information should undertake due diligence enquiries of their own to ensure that the skills claimed by the individual are sufficient and relevant to their requirements and individual circumstances before commissioning work or acting on the advice given.

The defined areas of Professional Practice are as follows:

These are broad area and members do NOT need to have all the skills in an area to nominate themselves but will most likely have been regularly involved in work in that area for several years:-

**Acoustical Measurement and Instrumentation**

Transducers are devices for converting energy form one form to another, acoustic waves to electrical signals as for microphones, electrical signals to sound waves as for loudspeakers. The scientific bases of psychoacoustics, physics and engineering are applied in the design of electronic and electro/mechanical equipment that interface, process and analyse sound waves from infrasonic to ultrasonic frequencies. Practical applications to the design of audio equipment are transducers such as signal shaping filters. Electro-acoustics covers also the design of hearing measuring equipment, hearing aids, sound level meters, and acoustic measuring and analysing equipment. This wide ranging technology has enabled measurement and analysis of sound and vibration in all of its known configurations, with application to science, research, health, safety, medicine, underwater acoustics, and in consulting work.

**Architectural and Building Acoustics**

This category is available to members involved in the design of buildings of all types (commercial and residential buildings, concert halls, etc.). It includes, but is not restricted to, design systems within buildings including mechanical services, noise assessment and control...
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(such as air-conditioning, lifts, hydraulics, vibration and isolation of plant).

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**Environmental Noise**

This includes the assessment of noise/vibration from a variety of sources, including transportation noise, general noise from industry including mines, quarries, landfills, process/manufacturing plants, power stations, petrochemical plants, and how it may affect adjoining residential/commercial areas. This embraces the measurement of background noise levels, prediction and assessment of potential impacts and the in-principle design of mitigation measures (note that this does NOT include the detailed design of more sophisticated engineering noise control measures which is discussed in the Industrial Design category). This area also includes the effects of vibration and over pressure from blasting and vibration from construction activities and the measurement and control of rail vibration/regeneration and the isolation of rail systems or buildings.

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**Industrial Noise Control/Design**

This category covers the specific area of design of sophisticated or complex noise control solutions for large industrial facilities either for occupational or environmental purposes.

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**Music Acoustics**

This category embraces all kinds of music, musical instruments and human voice, music perception, music performance, the psychology of music, with research possibilities. Much of the work and research into music, its physical characteristics and perception combines contributions from the physicist, experimental psychologist, sometimes musicians, using sophisticated methodologies to quantify the physical properties of music elements and relate these to its perception and performance. The findings of the music and musical instrument disciplines is essential to acousticians who design facilities for music performance, music listening and sound recording.

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**Occupational Health and Safety**
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This category covers the measurement, assessment and control of noise in the workplace including audiometric testing and provision of employee hearing loss training/awareness in hearing conservation. Note that this does NOT include the design of more sophisticated systems which is dealt with in the Industrial Design category.

Psychoacoustics, Physiological Acoustics, Bioacoustics

Psychoacoustics is part of the general subject of classical psychophysics, a branch of experimental psychology. A plethora of different and variable stimuli are used to quantify the perception of sounds. Because of the variability between subjects and within one subject for the same stimulus, results are obtained using signal detection theory and/or statistical analysis using repetitious measurements. Physiological acoustics may use the same stimuli and precisely defined measuring conditions as for psychoacoustics, but relates measured physiological responses to these stimuli. There is some overlapping of the two disciplines.

Practical directions of psychoacoustics include the determination of perceptual constraints of sound via hearing, and their application to the design and evaluation of enclosures for speech, music, sound recording; electro-acoustic design and transducers as for audio equipment, hearing aids, acoustic measuring equipment; in audiology and hearing conservation. Physiological acoustics has greatest application in medical diagnosis, physiology and audiology, and hearing conservation. Cochlear implants source the findings of both psychoacoustics and physiological acoustics.

Bioacoustics is the study of sound in non-human animals on land and living organisms in the sea. This discipline investigates animal communication and associated behaviour, their auditory mechanisms and capacities, sound production, the neurophysiology of animals, and effects upon them from human created noise.

Speech Production, Perception and Speech Processing

Speech sounds are basic to communication. Its patterns constantly vary in frequency, intensity and time, and are rich in information. Science and applied science yield quantification by measurement of its production, perception and processing in the application of technology to prostheses such as cochlear implants, hearing aids, also in speech synthesis, acoustic analysis and spectrograms, speech recognition and the growing technology of artificially produced
speech. Measurement techniques have application to language, forensics, medical diagnoses as well as for the neurologist and psycho-neurologist in brain function. Speech protocols and phonetics have wide application in audiology. Applied physics has assessed the vocal tract. Professionals in science, psychology, physiology, medicine, linguistics, engineering and acoustics find application in this fruitful branch of acoustics.

Underwater Acoustics and Sonar

This category includes measurements, numerical studies, theoretical studies and equipment development for all aspects of underwater acoustics. Examples include: sonar systems; arrays and imaging systems; acoustic communication systems; acoustic propagation; signal processing including inversion techniques, time-reversal acoustics and array processing; acoustic sources and receivers; scattering from surfaces and isolated objects; sound production and reception by marine animals; fisheries acoustics; physical, biological and anthropogenic noise; environmental impacts of underwater sound; and acoustic habitat classification.

Vibration

This area incorporates issues such as final element modelling, structural energy analysis and condition monitoring of plant and machinery. It does not include the assessment of vibration from construction activity likely to cause damage or annoyance, or the assessment of vibration/regenerated noise from rail operations which should all be included within environmental noise vibration assessment.