Consolidated Report
On
Programme development
Certificate in Sound Technician

National Institute of Open Schooling
in collaboration with
Commonwealth Educational Media Centre for Asia (Regional Division)
Commonwealth of Open Learning, Vancouver, Canada

Acknowledgements

National Institute of Open Schooling

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1. Rationale :

Media and Entertainment is the most growing sector which is expected to reach USD 1.8 trillion by 2016 globally and Asian countries are expected to contribute greatly into it. Indian Media and Entertainment industry's size in 2006 was recorded approx. Rs. 43,700 crore. The Media & Entertainment industry comprises of segments such as - Television, Print, Films, Radio, Music, Animation, Gaming, Advertising - Internet & Outdoor.

The rapid growth and scope in this industry is the reason behind the development of this Course/Programme on Media and Entertainment. This programme envisages studies about media theory, management and production. It is an inter-disciplinary field of studies and relates to journalism, mass communication, political economy, cultural studies including News gathering and distribution. Media and entertainment is institutionalized in many names such as Mass Communication, Media ecology, Communication science etc. Very vast scope is available in this field for the learners to work in any of these sectors- films, advertising, newspaper, websites, Radio TV channels, press information bureau, corporate communication, central information service etc. Therefore the objective behind developing this programme is to make learners equipped with the respective areas so that they can step into this field as a photographer through the skills of clarity of thought, expression and good communication etc.

Demand Drivers of this industry are :

 ➢ Increasing disposable incomes
 ➢ inc. in No of screens , Multiplexes
 ➢ organised distribution plans
 ➢ growing popularity of Indian films overseas
 ➢ affordable prices of Mobile games

Projected size of Media & entertainment industry* (Rs. billion in '000s; 2012-2022)

	TV & films	Print	Radio	Animation	Gaming	Total
2012	550	239	14	33	23	**859**
2018	1197	422	30	88	53	**1790**
2022	1972	610	50	168	89	**2889**

Projected Human resource requirement* - 2012 to 2022 (in '000s)

	TV & films	Print	Radio	Animation	Gaming	Total
2012	1311	18	65	19	13	**1425**
2018	2473	28	123	43	26	**2692**
2022	3705	36	185	74	39	**4040**

*Source: NSDC report

National Institute of Open Schooling in collaboration with Commonwealth Educational Media Centre for Asia had signed an contribution agreement to develop a Certificate in Sound Assistant.

By initiating this project NIOS is venturing into the Media and Entertainment sector as per the qualifications packs provided by the NSDC .

2. Objective: To develop a programme for the job role of Sound Technician

Individuals at this job are responsible to set-up/ disassemble sound equipment and capture sound with the optimum quality for production. After completion of the programme learner would be able to :

➢ know the principles of sound and acoustics.
➢ get acquainted with the features and handling specifications of sound equipment to be able to operate them effectively during shoots/audio programmes.
➢ place/move equipment appropriately to ensure that the sound captured meets expected quality standards.
➢ operate the boom mic to capture sound/dialogue unobtrusively with regard to the positioning of the camera/lighting.

In this context, two workshops were held for programme development . First one was from 28th Oct 2014-30th Oct 2014 wherein curriculum detailing was done along with setting up of infrastructure norms. Participants were informed about the concerns while writing for SLM and lessons were allocated. Detailed pathway for offering the programme was discussed i.e.

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Name of Programme    :    Certificate in Sound Technician/Assistant
Duration             :    6 months
Eligibility          :    10th Pass with Maths and Science
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List of infrastructure norms is at Annexure A. Detailed syllabus as finalized and got developed at Annexure B. Followed by the list of expert committee for content writing and editing at Annexure C

The second workshop for development of program on the job role of sound assistant was held from 6th Feb - 8th Feb 2014 . The objective of the workshop was to review the developed content i.e. 12 written lessons by the experts and discuss the issues related to development of practical and multimedia based support materials. Eight outside experts nationwide and four internal experts from media unit of NIOS participated in this workshop to provide their valuable inputs to the programme. While reviewing these lessons some common problems found in all chapters were addressed by the Coordinator from NIOS to each group for rectification and emphasis was made to focus writing for SLM and simple language keeping in view the target group of NIOS.

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3. Transactional strategies:

This Programme has been designed keeping in view the NSDC sector skills council's report on Media & Entertainment which suggests that most of the job in this industry are for technical assistants in India. Therefore, qualifications pack provided by the respective SSC has been referred while preparing the curriculum which will be mapped & vetted by the experts before development .

Hence, Transactional mechanism will essentially involve with both theory and practical component. In theory learners will be taught about the basics concepts of Sound, tools and equipments with their maintenance. Practical component will involve recording of Sound, editing, mixing etc. It will deal with the projects, lab work, practical use and handling of various equipments and devices. Practical will be taught via well-furnished media labs.

Video programmes of Sound technician program have been developed by technical team of Media unit of NIOS. Programmes got recorded in house . Various images of audio consoles, equipments, fittings and placements of mikes have been captured in recording studios. Background montage has been prepared using Adobe Photoshop package. Programme presentation or anchoring has been done by Ms. Harpreet Kaur. Editing of the recorded programmes have been done using Final Cut Pro software package. Overall completion has been given by adding a soft background music to the videos. List of persons involved with development and finalization of video programmes mentioned at Annexure D.

4. Assessment strategies

Ratio between Practical & Theory will be 70:30. Practical work will be assessed in the form of a project developed during the course duration and it should contain practical study work conducted. Project/Portfolio will be judged at the end of the session on the basis of accuracy, creativity, content and presentation.

5. Details of video programmes

Mentioned below is the detailed analysis of programmes developed .

Video 1 talks about introduction about the programme, roles of sound assistant/technician, Job profile may also be known as a production mixer or an audio recordist. The required skills, interests and qualities for a sound Assistant/Technician have also been imbibed.

Video 2 talks about introduction of sound, measurement units , sound technology , advantages of digital technogy over analog technology.

Video 3 details upon Sound Measurement & Technology. the basic laws of propagation of sound waves have been explained well . These are:

1. Law of reflection
2. Law of Refraction
3. Law of diffraction

Video 4 details on Studio Acoustics including various factors to be considered in acoustic design. Studio and control room acoustics play a very important role while recording any talk/musical program. Irrespective of which type of studio facility is being designed, built and being used, there are various factors, which should be addressed, in order to achieve the best possible acoustic results.

These are Acoustic isolation, Symmetry in control room and monitoring design Frequency balance, Reflection, Absorption and Reverberation.

Acoustic treatments of studios are of prime importance to have the sound propagated perfectly.

For achieving optimum R/T characteristics combination of acoustic absorbers is used in the studio. Every material has some absorptive qualities. Porous Materials, Fibrous Materials, Panel/ Resonant Absorbers have been explained.

Video 5 describes the Health and Safety. Safety considerations are an integral part of any technical working area/ setup. In this section it is explained what precautions to be taken at the studio level for various types of health and safety considerations.

Following studio equipments have been described:

- Microphones
- Recorders
- Amplifiers
- Sound Mixers
- Speakers
- Routers
- Wireless Communication Devices
- Cables and batteries etc.

All these material are packed with safety instruction and these instructions are available on the users' manual.

A Sound Assistant is required to be alert at all the times during recording hour and also after the recording hour and see that no lapses occur in the safety at the recording area. It is the responsibility of the sound assistant to instruct and make aware the crew about safety directives.

It also covers protecting studio software, Reading Manuals while installing and disassembling sound equipments, Protecting recorded data.
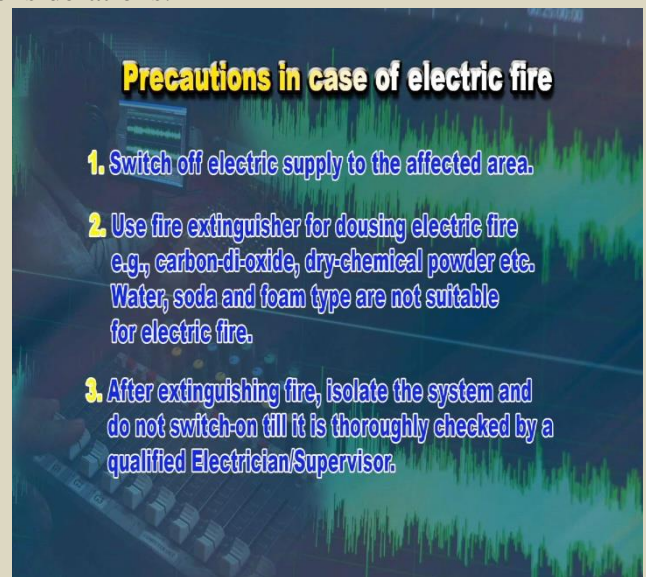
Video 6 details the various Sound Equipments. Such as microphones its various types such as Condenser Microphone, Dynamic Microphone, Ribbon Microphone, Carbon microphone, Piezoelectric microphone, Fiber optic microphone.

Various Polar pattern such as Omni-directional, Uni-directional, Bi-directional are included using diagrams.

Components of Loudspeaker, its different types, how a Loudspeaker works, Headphones/earphones and their types have also been explained . Apart from these other equipments such as Amplifier, Turn table, Audio Tape Recorder/ Player, Compact Disc, Portable 2-track Digital Recorder have also been explained.

Amongst one of the vital organs in the field of sound are Audio recording/ Playback Software's which is also addressed there.

Video 7 explains the electronics related to sound technology. Voltage, current, Interference, earthing connection and problems, carry out adjustments.

Video 8 is on Audio consoles **.** It includes various types of signal Analog, Digital, their Purpose, Block diagram (I/O signal path), features, facilities, Visual and Aural metering.

Video 9 details about Installing & Disassembling Sound Equipments: Audio chain: Operating and Managing Sound equipments, requirement of power for sound, placements of power fitting and techniques of safe testing of sound equipments - sound checks.

Video 10 is on Recording & Capturing Sound: Production Types- Indoor, Outdoor, Speech, Music, Live Music; Qualities of professional sound recording - Concept of frequency response distortion, noise, signal to noise ratio (SNR), dynamic range etc.

6. Job opportunities

Having a certificate in sound technician will enable the learner in making their careers in various subsectors such as film, television, advertising etc. In addition to this;

➢ Assisting the Sound designer, editor, mixer
➢ Working with AIR, CRS, web radio stations spreaded nation wide
➢ Vertical mobility also in terms of getting higher education in the field such as sound engineer, sound designer etc.

7. Implementation strategy

Targeted /Prospective study centres adhering to NIOS infrastructure norms will be the
- ✓ Media Institutes /houses or Radio/TV channels
- ✓ Vocational training providers of sector skill council
- ✓ Promotion and Publicity of the course through advertisement in National dailies, announcements on Mukta Vidya Vani, on NIOS website etc.
- ✓ Pvt. Media training centres as prospective AVIs

The programme has got uploaded on CEMCA website. Link is available at cemca.org.in/resources/course-sound-technician#.VVxp-o7vPIU

Infrastructure norms

The institution having the following requisite infrastructure may apply for accreditation

A. **Classroom**: Class room for 25 students (min. area 250 sq. ft.) should have proper ventilation, well-illuminated black board and availability of adequate furniture and ceiling fans.

B. **Studio**: Studio area at least 200 sq. ft. with the control room of 100 sq. ft. With proper sound proofing or acoustics treatment along with three phase power supply for AC, lighting and audio equipment separately and facility of power back up

Tools And Equipment

Items	Quantity
Microphone – Condenser (with switchable polar pattern)	2
Dynamic	2
Audio Interface	1
Audio Console (mixer) [Digital\Analog] 16 channels : 4 buses : 2 outputs	1
Studio Monitors	1 pair (near field)
Headphones	3
DAW (Digital Audio Workstation) Audio editing systems with multi track software (protools , nuendo, sound forge) Storage : minimum 1TB	1
Expander	1
Compressor	1
Limiter	1
Headphone amplifier	1
Audio tape recorder (DAT)	1
CD player and recorder	1
Hard disk recorder	1
Patch bays(basic)	1
Cables & accessories ;	as per studio size
Connectors i.e. XLR , TRS, TS, RCA,	5 each
UPS to provide back up for above setup	1 unit

C. **Physical facilities**: The institution should have the facilities for drinking water, bathrooms & toilets.

D. **Library**: Library should have a min. of 25 books/articles/magazines etc. related to the subject.

E. **Faculty:**

Faculty & Supporting staff	Educational/professional qualification	No.
Coordinator		1
Instructor/Faculty	Degree/Diploma in sound engineering /sound designing with minimum two yrs of experience, OR Masters in Journalism & Mass Communication with minimum of 3 yrs. of experience in related field, OR A professional with related industry (Sound/Engineering) experience not less than 10 yrs	2
Studio assistant	Diploma in sound Recording/Engineering or Certificate in Sound engineering or 12th Pass with 3 yrs. of experience in Sound Engineering/ recording	1
Receptionist cum clerk	Relevant to job	1
Assistant	Relevant to job	1

F. **Batch Size**: Maximum 25 students in a batch

SOUND TECHNICIAN
Syllabus

Fundamentals of Sound and Sound Technology

L-1 Introduction: Introduction to sound, Nature of sound, Characteristics of Sound: Amplitude,wavelength, time period frequency, speed or velocity ; Principles of sound Propagation, Refraction, reflection, transmission, absorption of sound.

L-2 Measurement of Sound: Units of sound i.e. decibels and their usage, dynamic range, sound pressure level (SPL)

L-3 Fundamentals of Sound technology: Analog & digital signals, Converters- converting analog to digital, vice versa

L-4 Studio Acoustics: Meaning of acoustics, need of acoustics, factors governing studio and control room acoustics - acoustics isolation, symmetry in design, reflection, absorption, reverberation Cost factors; Phenomenon of Sound propagation: refraction noise level basics of psychoacoustics - sound transmission, threshold of hearing and pain

L-5 Audio Electronics: Voltage, current, Interference, earthing connection and problems, carry out adjustments.

NOS : Setting up, Maintaining and Disassembling Sound Equipments

L-6 Microphones - Definition of microphones, Classification of microphones based on transducer types and polar pattern, use of microphones, Key considerations while selecting microphones.

L-7 Loudspeakers - Types of loudspeakers - Active & Passive, Classification and classification of headphones such as ear bud head phones, on ear headphones, over the ear headphones

L-8 Other Sound Equipments: Amplifiers & their types ; recording and playback equipment- Audio recorders: DAT, Tape recorder, Hard Disk Recorder, Sound Cards, Digital Audio Workstation and related software

L-9 Audio Consoles : Types - Analog, Digital, Purpose, Block diagram (I/O signal path), features, facilities, Visual and Aural metering

L-10 Installing & **Disassembling Sound Equipments:** Audio chain: Operating and Managing Sound equipments, requirement of power for sound, placements of power fitting and techniques of safe testing of sound equipments - sound checks

NOS : Health & Safety
L-11 Health & **Safety :** General safety provisions, sound studio safety, studio hardware and software protection; Safety Measures while working with electronics mains equipment, - do's and dont's.

NOS : Recording and Capturing Sound

L-12 Recording & Capturing Sound : Production Types- Indoor, Outdoor, Speech, Music, Live Music ; Qualities of professional sound recording - Concept of frequency response distortion, noise, signal to noise ratio (SNR), dynamic range etc.

ACKNOWLEDGEMENTS

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