

**COLLEGE OF APPLIED SCIENCE VADAKKENCHERRY,
PALAKKAD-678683**

POST GRADUATE DIPLOMA IN AUDIO ENGINEERING (PGDAE)

SYLLABUS

Recommended Text Book:

- 1) Modern recording techniques 6th Edition: David Miles Huber, Robert E Runstein-
Focal Press (ISBN 0-240-80625-5)

Reference Books:

1. Holman, Tomlinson, Sound for film and television, Focal Press
2. McCormick, Tim and Rumsey, Francis, Sound and recording: An introduction,
Focal Press
3. Talbot-Smith, Michael, Sound engineering explained, Focal Press
4. Talbot-Smith, Michael, Sound assistance, Focal Press
5. Altman, Rick, ed., Sound theory sound practice, Routledge
6. Talbot-Smith, Michael, Sound engineer's pocket book, Focal Press
7. Truebitt, Rudy and David, Trubitt, Live sound for musicians, Hal Leonard
8. Nathan, Julian, Back to basic audio, Newnes
9. Yewdall, Lewis, David, Practical art of motion picture sound, Focal Press
10. Leider, N., Colby, Digital audio workstation, McGraw-Hill

Semester I

Code	Title	Hrs/Week		Marks		
		L/P	T	W/P	S	Total
PGDAE 101T	Acoustics	5	2	80	20	100
PGDAE 102T	Sound recording	5	2	80	20	100
PGDAE 103L	Lab Work	15	1(Internet)	80	20	100

Semester II

Code	Title	Hrs/Week		Marks		
		L/P	T	T	S	Total
PGDAE 201T	Amplifiers and Signal Processing	5	2	80	20	100
PGDAE 202T	Monitoring Mastering and Production	5	2	80	20	100
PGDAE 203L	Lab Work	15	1 (Internet)	80	20	100
	Project Work				300	300
	VIVA VOCE				100	100
	TOTAL					1000

Schedule: JUNE-SEPT-1st Semester**OCT-JAN-2nd Semester****FEB-APRIL-INTERNSHIP****MAY-VIVA VOCE & PROJECT EVALUATION****Internship: 3 Months**

Semester I

Duration: 16 Weeks

PAPER I: ACOUSTICS

Module 1

Sound and Hearing

The Basics of Sound, Waveform Characteristics, Loudness Levels, The Ear, Auditory Perception, Perception of Direction, Perception of Space, Doubling

Module 2

Studio Acoustics and Design

Studio Types, Primary Factors Governing Studio and Control Room Acoustics, Frequency Balance, Reverberation, Acoustic Echo Chambers, Power- and Ground-Related Issues

Module 3

Microphones: Design and Application

The Microphone: An Introduction, Microphone Design, Microphone Characteristics, Microphone Preamps, Microphone Techniques, Pickup Characteristics as a Function of Working Distance, Stereo Miking Techniques, Surround Miking Techniques, Recording Direct, Microphone Placement Techniques for different instruments like Brass, Strings, Keyboard, Percussion, Wood instruments, Voice etc. Microphone Selection

PAPER 2: SOUND RECORDING

Module 1

Introduction to Audio Recording

Audio recording history, Different steps in recording and producing audio material

Module 2

The Analog Tape Recorder

Magnetic Recording and Its Media, The Professional Analog ATR, The Tape Transport, The Magnetic Tape Head, Equalization, Bias Current, Recording Channels and Monitoring Modes, MIDI Machine Control, Tape, Tape Speed, and Head Configurations.

Module 3

Digital Audio Technology

The Basics of Digital Audio, The Digital Recording/Reproduction Process, Digital Audio Recording Systems, MiniDiscs, Hard-Disk Recording

Module 4

MIDI and Electronic Music Technology

MIDI Production Environments, What is MIDI, System Interconnections, MIDI Cable and Port Connections, USB and FireWire Connections, mLAN Network Connections, The MIDI Message, MIDI Channels, Channel Messages System Messages, System-Exclusive Messages, MIDI Machine Control, The MIDI Interface, The Multiport Interface, Electronic Musical Instruments Mixing in the MIDI Environment

Module 5

Multimedia and the Web

The Multimedia Environment, Delivery Media, The CD, The DVD, The Web, Delivery Formats, Digital Audio, MIDI, Graphics, Desktop Video, Multimedia and the Web in the "Need for Speed" Era

Module 6

Synchronization

Synchronization between Transports, Real-World Sync Applications for Using Time Code and MIDI Time Code

PAPER 3: LAB

PART A (Review of Basic Electronics)

- 1) Electrical safety measures in a studio**
- 2) Familiarisation of different hand tools and measuring instruments**
- 3) Familiarisation of symbols and terminologies**
- 4) Active passive component identification, specification and testing**
- 5) Soldering de-soldering Practice**
- 6) Measurement of Voltage, Current, Resistance etc.**
- 7) Study of sound with different wave forms (Sine, Square, Sawtooth etc.)**
- 8) Study of different cables and connectors**
- 9) Assembling practise of simple circuits such as single stage amplifier, power supplies etc.**
- 10) Study of Audio Amplifier and Power amplifier (Discrete and IC)**
- 11) Study of Filters**
- 12) Data acquisition ADC/DAC**
- 13) Familiarisation of circuit design and simulation software**

PART B

- 14) Inside a P.C and a MAC**
- 15) Installing O.S, hardware and basic software for recording**
- 16) Networking of Computers**
- 17) Connecting different storage media to Computers and their usage**
- 18) Study of Dynamic and Condenser microphones with regards to placement, frequency response, gain etc.**
- 19) Study of basic recording of sound using a P.C and Microphones**
- 20) Listen, study and analyse different types and genres of music from different parts of the globe.**

Semester II

Duration: 16 Weeks

PAPER 1: APAMPLIFIERS AND SIGNAL PROCESSING

Module 1

Amplifiers

Amplification, The Operational Amplifier, Preamplifiers, Equalizers, Summing Amplifiers, Isolation Amplifiers, Distribution Amplifiers, Impedance Amplifiers, Power Amplifiers, Voltage- and Digitally-Controlled Amplifiers

Module 2

The Audio Production Console

Recording, Monitoring, Overdubbing, Mixdown, The Professional Analog Console, Digital Console Technology, Console Automation

Module 3

Signal Processing

The Wonderful World of Analog, Digital, Plug-Ins, Inline vs. Side-Chain Processing, Equalization, Dynamic Range, Time-Based Effects, Multiple-Effects Devices

Module 4

Noise Reduction

Analog Noise Reduction, Do It Yourself Tutorial: Analog Tape Modulation and Asperity Noise, The Compansion Process, The dbx Noise-Reduction System, The Dolby Noise-Reduction System, Single-Ended Noise-Reduction, Noise Gates, Digital Noise Reduction, Fast Fourier Transform , Do It Yourself Tutorial: FFT-Based Noise Reduction, Digital Single-Ended Noise-Reduction Systems, De-clicking and De-popping, Dither

PAPER 2: MONITORING, MASTERING AND PRODUCTION

MODULE 1

Monitoring

Speaker and Room Considerations, Speaker Design, Speaker Polarity, Monitoring, Monitor Speaker Types, Monitoring in the Studio

Module 2

Surround Sound

Surround Sound: Past to the Present, Surround in the Not-Too-Distant Future, Monitoring in 5.1 Surround, Practical Placement, Active/Passive Monitors in Surround, Surround Interfacing, Surround Formats, Mixing in Surround, Virtual Surround Mixers, Mixing Philosophies, Re-issuing Back Catalog Material

Module 3

Mastering

The Mastering Process

Module 4

Product manufacture

Choosing the Right Facility and Manufacturer, CD Manufacturing, The Process CD Burning, Rolling Your Own, Burning Speeds, CD Labeling, CD and DVD Handling and Care , DVD Burning, Cassette Duplication, Producing for the web

Module 5

Studio Session procedures

Preparation, Setting Up, Recording, Overdubbing, Mixdown, Sequence Editing, Mastering , Marketing and Sales.

PAPER 3: LAB

- 1) **Study of DAW**
- 2) **Working on PROTOOLS 8**
- 3) **Working on LOGIC 9 PRO**
- 4) **Working with MIDI Controllers**
- 5) **Mastering and authoring CD's and DVD's**