

Deccan Education Society's
FERGUSSON COLLEGE, PUNE
(AUTONOMOUS)

**SYLLABUS FOR S Y B Sc PHOTOGRAPHY AND
AUDIO VISUAL PRODUCTION (Vocational)**

Semester III

Effective from Academic Year 2017-2018

PREAMBLE:

The UGC introduced the concept of vocationalization of the first degree way back in the year 1994. Fergusson College was awarded the vocational course in Photography and Audio Visual Production under this programme in the same year. Fergusson College is the only college to offer such course at the UG level. The course is introduced as a vocational course, at par with the traditional subjects.

At the first and the second year of the B Sc it is offered as an independent subject. There are two theory courses and one practical course at the first and the second year.

At the third year of the degree this is a part of the B Sc (Physics) programme. It is in place of the theory course 5, 6 and practical course.

Students of the vocational course are more privileged due to their vocational training along with conventional knowledge based curriculum. This fact is considered while framing the syllabus. Proper emphasis is given on the theoretical component vis-à-vis its application keeping up the academic foundation.

The second year syllabus evolves to train and prepare students to take up commercial assignments on their own. All the studio assignments and the image processing assignments are designed so that they are thoroughly trained in all advanced skills of photography. Some assignments are designed to be group work.

Sound plays an important part in media. A course on 'Acoustics and Sound for Media' is designed to train students to use various sound equipment used in media. Some assignments are also designed to train students in recording and editing sound in a studio.

OBJECTIVE:

1. To promote the possibility of self employment by providing skill based training.
2. To bridge the gap between knowledge based conventional education and market demands and to provide an alternative to those pursuing higher education.

| Semester | Course Code | Title of the Course | Core / Elective | No. of Credits |
|--------------|-------------|---|-----------------|----------------|
| I | VPH1101 | Basic Photography | CORE-1 | 2 |
| | VPH1102 | Introduction to Mass communication | CORE-2 | 2 |
| | VPH1103 | Practical Course I | PCORE-1 | 2 |
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| II | VPH1201 | Photo Appreciation | CORE-3 | 2 |
| | VPH1202 | Introduction to Media | CORE-4 | 2 |
| | VPH1203 | Practical Course II | PCORE-2 | 2 |
| | | | | |
| III | VPH2301 | Advanced Photography | CORE-5 | 3 |
| | VPH2302 | Acoustics and Sound for Media | CORE-6 | 3 |
| | VPH2303 | Practical Course III | PCORE-3 | 2 |
| | | | | |
| IV | VPH2401 | Colour Theory and Digital Photography | CORE-7 | 3 |
| | VPH2402 | Principles and Applications of Analog & Digital Communication | CORE-8 | 3 |
| | VPH2403 | Practical Course IV | PCORE-4 | 2 |
| | | | | |
| V | VPH3501 | Video Recording and Playback Systems* | DSE-2 | 3 |
| | VPH3502 | Video Production* | DSE-3 | 3 |
| | VPH3503 | Practical Course V* | PCORE-7 | 2 |
| | | | | |
| VI | VPH3601 | Entrepreneurship Development* | DSE-5 | 3 |
| | VPH3602 | Radio Production* | DSE-6 | 3 |
| | VPH3603 | Practical Course VI* | PCORE-9 | 2 |
| | VPH3604 | Practical Course VII: Project* | PCORE-10 | 2 |
| | | | | |
| TOTAL | | | | |

Note: For semester V:

- *Students opting for vocational photography at F. Y. B. Sc. and S. Y. B. Sc. should select VPH3501, VPH3502 and VPH3503.*

Note: For semester VI:

- *Students opting for vocational photography at F. Y. B. Sc. and S. Y. B. Sc. should select VPH3601, VPH3602, VPH3603 and VPH3604.*

PAPER CODE: VPH2301: Advanced Photography**Objectives:**

1. Enhance the understanding of photographic equipment and the science and the technology behind it.
2. Understand the role of light in photography.
3. To be able to analyze the photographic image technically and aesthetically.

PAPER CODE: VPH2301**PAPER –I: Advanced Photography****Credits-3:****No. of****Lectures: 48**

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit - I | Camera Lens: Optical materials, Plastics / Glass, Lens coating, Types of lenses: Normal, Wide angle, Telephoto, Teleconverter, Fish eye lens, Zoom lens, Micro lens, Macro lens, Supplementary lenses-Close up lens, Extension tubes and bellows. Camera lens designs, Faults in lenses, Aberrations, Resolution, Flare, and Ghost image etc. Lenses for digital camera, crop factor. Aperture and its effects. Depth of field, depth of focus, hyper focal distance. Factors affecting the depth of field and the depth of focus. Circle of confusion and its effect on sharpness / blur. | 12 |
| Unit - II | Exposure: Methods of estimation. Rule of Thumb. Law of reciprocity, Reciprocity failure. Incident light and reflected light, Exposure meter- types and comparison, differences between hand-held exposure meter and TTL exposure meter, metering modes, flash meter. Reading exposure levels, interpreting the meter reading. Brightness range and exposure value. | 12 |
| Unit - III | Lighting: Types of light Sources, natural and artificial light. Spectral distribution of light sources, Hard & soft light. Basic lighting set up for a portrait. Key, Fill, Back & Top light. Brightness ratio and lighting ratio. Types of portrait lighting, Lighting for different subjects / situations. Flash light, Flash curves, Guide number. Electronic flash. Flash synchronization for different shutter speeds. Studio flash lights. | 12 |
| Unit - IV | Filters used in Photography: Need of filters, types of filters, their uses, law of transmission and absorption, filter factor, factors governing filter factors. Optical limitations of filters, Filter mount. Classification of filters, Optical materials | 12 |

References:

1. Basic Photography - M. J. Langford, Focal Press.
2. Advanced Photography (Vol.-I & Vol.-II) - M. J. Langford, Focal Press.
3. Applied Photographic Optics- Sidney F. Ray; Focal Press
4. The Practical Guide to Photographic Lighting, John Tarrant, Focal Press
5. Light Science and Magic, An Introduction to Photographic Lighting, Fill Hunter, Steven Biver, Paul Fuqua, Focal Press

PAPER CODE: VPH2302: Acoustics and Sound for Media

Objectives:

1. To create a general awareness of the basic principles of Acoustics and its application.
2. To make students familiar with the basic mechanism and use of Audio equipment.
3. To make students familiar with the requirements of acoustics of auditoria/studios/classrooms.

PAPER CODE: VPH2302**PAPER –II: Acoustics and Sound for Media****No of Credit -3:****No. of Lectures 48**

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit -I | Characteristics of Sound: Introduction, Generation of sound, Sound wave and its characteristics (Peak, compressions rarefactions, nodes / antinodes, Peak to peak amplitude, period and frequency of wave, pitch), Harmonics and overtones. Human ear as a transducer: External, middle and inner ear, IID and ATD. Intensity & Intensity level, Bel and Decibel, Decibel theory: Acoustic and electrical measurements, Sound Level Meter Analogy between electrical, mechanical and acoustical quantities. Acoustic envelop: Attack, decay, sustain, release (ADSR) curve, Digital audio: Sampling bit depth, error element | 12 |
| Unit -II | Loudspeakers: Characteristics of Loud Speakers, Direct radiator dynamic loudspeaker, Horn and electrodynamic type loudspeaker, loudspeaker system for halls, theaters. Directional characteristics of loud speakers, three-way speaker mechanism system including woofer, midrange and tweeter, Cross-over networks, measurement of frequency response characteristics of a loudspeaker. | 8 |
| Unit – III | Microphones: Characteristics and requirements of a microphone, Different types of microphones -Directional response and polar diagrams of different types of microphones: moving coil (dynamic), ribbon, condenser, carbon, electret and crystal. Factors governing the selection of microphones. Special types: lapel, wireless, shotgun. | 8 |
| Unit -IV | Basics of Architectural Acoustics: Reverberation time, Sabine equation and Eyring Formula (Without derivation), Active enclosures with sound reinforcement systems. Synthetic reverberation, Audio delays, Anechoic chambers. Requirement of an auditorium, acoustic insulation. Acoustic characteristics of film, radio & T.V. Studios | 8 |
| Unit -V | Sound recording and reproducing Systems: Monophonic, Stereophonic, Surround System. Hi-Fi system, Principles of Sound recording: Magnetic Recording / Reproduction. Optical Recording / Reproduction - Types and methods of optical recording of sound on film, reproduction of sound on film, compact | 12 |

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| | disc and playback process. P. A. System - block diagram, Home Theatre Systems - block diagram and use. | |
| References: 1. Fundamental of Acoustics: Kinsler & Frey 2. Elements of Acoustical Engineering: Olson. 3. Acoustic Measurements: Berenek. 5. Audio and video system: R. G. Gupta | | |

List of Assignments:

Note: These assignments are designed to supplement the classroom sessions. Assessment of these assignments will be carried out as a part of the course no. VPH 2302.

1. Articulation test
2. Study and installation of a Public Address (PA) system
3. Study of recording system
4. Study of human audibility response
5. Frequency response of a Loudspeaker
6. Directional characteristics of microphones
7. Velocity of sound in air
8. Directional characteristics of a sound source
9. Recording of an interview and a talk
10. Visit to a sound recording/editing studio

PAPER CODE: VPH2303: Practical Course III

OBJECTIVES:

1. To train students to take up commercial and professional assignments.
2. To train students to develop image processing skills.

Note: All the assignments and practicals are designed and conducted so that the student learns advanced camera handling skills and image processing skills.

Students will work on one group (2 / 3 students) assignment and one individual assignment related to a given topic.

Students will cover various events on the college campus and maintain a stock of photographs.

PAPER CODE: VPH2303

PAPER –III: PRACTICAL COURSE III

No of Credits: 2

No. of Assignments: 10 (A + B)

A: Studio assignments: All assignments will be assessed by considering Treatment of the Subject, Aesthetic Values, Lensing and creativity.

| | Title of Assignment |
|---|----------------------------|
| 1 | Earthenware |
| 2 | Metal ware |
| 3 | Food |
| 4 | Flower |
| 5 | Glassware |

B: Image processing assignments: All assignments are designed to train students in Understanding layer blending modes, Adjustment layers, Professional image retouching, Advance selection tools, Implementation of ideas in design.

| | Title of Assignment |
|---|-----------------------------------|
| 1 | Changing background of portraits |
| 2 | Merging two different photographs |
| 3 | Skin retouching |
| 4 | Magazine cover designing |
| 5 | Page designing |

Note:

1. In addition to these assignments students will also work on Documentary Photography.
2. Each student has to prepare a photo feature for successful completion of his / her course. The subject of photo feature will have to be approved by the concerned faculty.

PAPER CODE: VPH2401: Colour Theory and Digital Photography

OBJECTIVES:

1. To understand basic colour theory.
2. To understand the concepts of colour photography.
3. To understand the science and technology of digital photography.

PAPER CODE: VPH2401

PAPER –I: Colour Theory and Digital Photography

No of Credits: 3

No. of Lectures: 48

| | Title and Contents | No. of Lectures |
|-------------------|---|------------------------|
| Unit -I | Colour Theory: Human vision, Science of colour, Black body radiation and colour temperature, Kelvin and Mired scales, Primary, secondary and tertiary colours, Additive and subtractive colours, Colour attributes (Hue, Saturation & Brightness), Colour description (Tint, Tone, Shade & value), Colour schemes (Achromatic, Monochromatic, Complementary, Split complementary, Analogous, Diad, Triad, Tetrad), Colour Models (Adobe models). | 12 |
| Unit - II | Filters in colour photography: Need of filters in colour photography. UV filter, Polarizing Filter, Sky-light Filter, Colour conversion filters, colour compensation filter, colour/ light balancing | 06 |
| Unit – III | Impact of colours: Colours for communication, Colour symbolism, Sociology of colours, Psychology of colours, Cultural relevance of colours. Colours in art, Colours as design element | 08 |
| Unit - IV | Colours in digital photography: Meaning of digital colours, Digital primary and secondary colours, Additive and subtractive colours, Colour spaces and colour gamut, Colour attributes, Munsell system and CIE system, Colours printing (monitor calibration, resolution for printing), Bit depth and colours | 12 |
| Unit - V | Digital photography: Digital photography terminology, Prosumer digicams, Digital SLRs, Choosing a Digital SLR System, Check list of essential equipment, Digital camera sensors and their types (CCD & CMOS), Spectral response of a sensor, Anatomy of a sensor, Sensor characteristics, Sensor sizes (Cropped & full frame), Crop factor, Lenses for digital camera, Histogram, Dynamic range. Analog to Digital Conversion in a digital camera. | 10 |

PAPER CODE: VPH2402: Principles & Applications of Digital and Analogue Communication

OBJECTIVES:

1. To understand fundamentals of the communications systems.
2. To understand functioning of the systems using block diagram or construction diagram.
3. To understand functions and handling of frequently used communication systems and devices used in media.

PAPER CODE: VPH2402

PAPER –II: Principles & Applications of Digital and Analogue Communication**No of Credits: 3****No. of Lectures: 48**

| | Title and Contents | No. of Lectures |
|-------------------|--|------------------------|
| Unit -I | Basics of communication systems: Introduction, Basic Communication System, Base band common & modulation, Need of modulation, Types of modulation system, Data communication, Representation of data (ASCII, EBCDIC, Baudot Code), Data transmission i.e. Parallel, Serial, signalling rate or Bit rate, Modes of Data transmission (Asynchronous, Synchronous), Simplex, Duplex, Transmission channels & it's characteristics, Transmission medium. | 09 |
| Unit -II | Analog Modulation: Principles of AM, FM, Angle modulation, its mathematical representations, Power relations of AM wave, Modulation of Several waves, AM transmitter, SSB, DSB, DSBFC, DSBC, VSB, Characteristics of receiver i.e. Sensitivity, Selectivity, Fidelity etc. Demodulator, Automatic gain controller(AGC) | 09 |
| Unit – III | Digital modulation techniques for MODEM: Role, types and comparison of MODEM, Data multiplexers, FSK, PSK, BPSK, QPSK, Digital continuous wave modulation techniques for modem. | 05 |
| Unit – IV | Sampling & Pulse Modulation: Analog and discrete time signals and systems, Sampling process, Sampling theorem, Nyquist rate, reconstruction of original signal, aliasing, Effect of non ideal filter, Sampling techniques, Pulse modulations (PAM, PWM, PPM) generation, detection & Comparison, Multiplexing (FDM, TDM, PAM/TDM system), Signaling rate, Crosstalk, Guard times, Intersymbol interference. | 10 |
| Unit –V | Digital Pulse Modulation & Source Coding techniques: Introduction to digital communication, Pulse code modulation, PCM encoder / decoder, CODECS, Codec IC 2910 (Internal block diagram) quantization process, Types of quantization, Signal to quantization ratio, signal to noise ratio, Compandings, Multiplexing hierarchy, Linear delta modulation, Transmitter & Receiver, Adaptive delta modulation (ADM), Comparisons of PCM, DM, ADM, Scramblers and unscramblers. | 08 |
| Unit – VI | Present communication methods: Digital multiplexing, Classification of digital multiplexing, Comparison of analogue and digital communication, OFDM spread spectrum, DSL, sonnet, ISDN, PSTN, Cell-phone fundamental and working. | 07 |

References:

1. Principles of electronic communication systems, Louis E Frenzel, 3rd Edition.
2. Electronic communications: Roody-Coolean
3. Electronic-communication: J. S. Chitode
4. Principles of communication engineering: Anok Sinha
5. Modern electronic communication: Miller Beasley (PHI)

The theory lectures will be supported by demonstrations and supplementary experiments.

PAPER CODE: VPH2403: Practical Course IV

Objectives:

1. To train students to take up commercial and professional assignments.
2. To train students to develop image processing skills.

Note: All the assignments and practicals are designed and conducted so that the student learns advanced camera handling skills and image processing skills.

Students will work on one group (2 / 3 students) assignment and one individual assignment related to a given topic.

Students will cover various events on the college campus and maintain a stock of photographs.

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| <p>PAPER CODE: VPH2403 PAPER –III: PRACTICAL COURSE IV</p> |
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No of Credits: 2

No. of Assignments: 10 (A + B)

A: Studio assignments: All assignments will be assessed by considering Treatment of the Subject, Aesthetic Values, Lensing and creativity.

| | Title of Assignment |
|---|----------------------------|
| 1 | Fashion photography |
| 2 | Portfolio shooting |
| 3 | Layout Shooting |
| 4 | High Key lighting |
| 5 | Low Key lighting |

B: Image processing assignments: All assignments are designed to train students in developing thorough understanding in composition, elements of composition, and principles of composition.

| | Title of Assignment |
|---|--|
| 1 | Creating desktop / mobile device wallpapers. |
| 2 | Creating own brushes/brush presets |
| 3 | Creating custom shapes in Photoshop |
| 4 | Album designing |
| 5 | Catalogue Designing |

After successful completion of these assignments, students will be able to create Photoshop workflow and design a creative layout.

Note:

1. In addition to these assignments students will also work on Black and White Photography.
2. Each student has to prepare a work folio for successful completion of his / her course. The work folio will include A-4 sized photographs showcasing skills acquired by him / her as a photographer. Concerned faculty will help in this selection.