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

Syllabus

for

S. Y. B. Sc.

PHOTOGRAPHY AND AUDIO VISUAL PRODUCTION (Vocational)

[Pattern 2019]

(B.Sc. Semester-III and Semester-IV)

From Academic Year

2020-21

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.

Structure of the B.Sc. Vocational Course
Photography and Audio Visual Production

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
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	2
	VPH2302	Acoustics and Sound for Media	CORE-6	2
	VPH2303	Practical Course III	PCORE-3	2
IV	VPH2401	Colour Theory and Digital Photography	CORE-7	2
	VPH2402	Principles and Applications of Analog & Digital Communication	CORE-8	2
	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:

1. **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:

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

Deccan Education Society's
Fergusson College (Autonomous), Pune

S.Y.B.Sc. Subject (Pattern 2019)

From academic year 2020-21

Particulars	Name of Paper	Paper Code	Title of Paper	No. of Credits
S.Y. B.Sc. Semester III	Theory Paper - 1	VPH2301	Advanced Photography	2
	Theory Paper - 2	VPH 2302	Acoustics and Sound for Media	2
	Practical Paper - 1	VPH 2303	Practical Course III	2
S.Y. B.Sc. Semester IV	Theory Paper - 3	VPH 2401	Colour Theory and Digital Photography	2
	Theory Paper - 4	VPH 2402	Principles and Applications of Analog & Digital Communication	2
	Practical Paper - 2	VPH 2403	Practical Course IV	2

S.Y. B.Sc. Semester III

Subject PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -1 (VPH**2301), Paper title: Advanced Photography**

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Understand the photographic equipment and the science and technology behind it.
CO2 Understand the role of light in photography.
CO3 To be able to analyze the photographic image technically and aesthetically.
CO4 Take some photographic assignments independently.

Unit	Details	Lectures
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.	**[12]**
II	**A)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. **B) 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]**
III	**Filters used in Photography:** Need of filters, types of filters, their uses, law of transmission and absorption, filter factor, factors governing filter factors. Filters for digital photography. Optical limitations of filters, Filter mount. Classification of filters, Optical materials	**[12]**

Books-

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

S.Y. B.Sc. Semester III

Subject: PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -II (VPH**2302), Paper title: Acoustics and Sound for Media**

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Understand the basic principles of Acoustics and their applications.
CO2 Understand the basic mechanism of Audio equipment.
CO3 Handle Audio equipment independently.
CO4 Understand the requirements of acoustics of auditoria studios/classrooms.

Unit	Details	Lectures
I	**A) 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 ITD. 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. **B) Basics of Architectural Acoustics:** Reverberation time, Sabine equation and Eyring Formula (Without derivation), Active enclosures with sound reinforcement systems. Synthetic reverberation, Audio delayers, Anechoic chambers. Requirement of an auditorium, acoustic insulation. Acoustic characteristics of film, radio & T.V. Studios	**[12]**
II	**A) 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. **B) 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.	**[12]**
III	**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 disc and playback process. P. A. System - block diagram, Home Theatre Systems - block diagram and use.	**[12]**

Books-

1. Fundamental of Acoustics: Kinsler & Frey
2. Elements of Acoustical Engineering: Olson.
3. Acoustic Measurements: Berenek.
5. Audio and video system: R. G. Gupta

S.Y. B.Sc. Semester III

Subject: PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -III (VPH**2303), Paper title: Practical Course III**

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Take up commercial and professional photography assignments independently.

CO2 Process a digital image.

List of practicals (Compulsory 10 + 2 Activity)

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 m odes, 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

Activity:

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.**

S.Y. B.Sc. Semester IV

Subject: PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -I (VPH**2401), Paper title: Colour Theory and Digital Photography**

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Understand basic colour theory.
CO2 Understand the concepts of colour photography.
CO3 Understand the science and technology of digital photography.
CO4 Apply the concepts of colour theory and digital photography in various forms.

Unit	Details	Lectures
I	**A) 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). **B) 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	**[12]**
II	**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. Colour calibration, Colours in various display screens.	**[12]**
III	**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 & CMOS0, Spectral response of a sensor, Anotomy 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. Concept of white balance and its relation to colour temperature.	**[12]**

Books-

1. The Book of Colour: The beginner's Guide to Colour Theory, Polina Traore
2. Design Elements: Colour Fundamnetals, Aaris Sherin
3. Contemporary Colour: Theory and Use, Steven Bleicher
4. Theory of Colours, J. W. Goethe
5. Digital Photography Book, Scott Kelby

S.Y. B.Sc. Semester IV

Subject: PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -II (VPH**2402),**

Paper title: Principles & Applications of Digital and Analogue Communication

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Understand fundamentals of the communications systems.
CO2 Understand functioning of the systems using block diagram or construction diagram.
CO3 Understand functions and handling of frequently used communication systems and devices used in media.

Unit	Details	Lectures
I	**A) Basics of communication systems:** Introduction, Basic Communication System, Need of modulation, Data communication, Representation of data (ASCII, Baudot Code), Data transmission i.e. Parallel, Serial, Modes of Data transmission (Asynchronous, Synchronous), Simplex, Duplex, Transmission channels & it's characteristics, Transmission medium. **B) Analog Modulation:** Principles of AM, FM, Power relations of AM wave, SSB, DSB, DSBFC, DSBC, VSB, Characteristics of receiver i.e. Sensitivity, Selectivity, Fidelity etc. Demodulator, Automatic gain controller(AGC)	**[12]**
II	**Digital modulation techniques for MODEM:** Role, types and comparison of MODEM, Data multiplexers, FSK, PSK, QPSK, Digital continuous wave modulation techniques for modem. **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.	**[12]**
III	**Digital Pulse Modulation & Source Coding techniques:** Introduction to digital communication, Pulse code modulation, PCM encoder/ decoder, CODECS, Types of quantization, Signal to quantization ratio, Compandings, Multiplexing & Multiplexing hierarchy, Linear delta modulation, Transmitter & Receiver, Adaptive delta modulation (ADM), **Present communication methods:** Digital multiplexing, Classification of digital multiplexing, OFDM spread spectrum, DSL, Sonnet, ISDN, PSTN, Cell-phone fundamental and working.	**[12]**

Books-

1. Principles of electronic communication sstems, 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)

S.Y. B.Sc. Semester IV

Subject: PHOTOGRAPHY & AUDIO VISUAL PRODUCTION

Paper -III (VPH**2403), Paper title: Practical Course IV**

[Credits-2]

Course Outcomes

At the end of this course, students will be able to

CO1 Take up commercial and professional photography assignments independently.

CO2 Process a digital image.

List of practicals: (Compulsory 10 + 2 Activity)

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.

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.

Activities:

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.**