University of Pune

Three Year B. Sc. Degree Course in

PHOTOGRAPHY AND AUDIO VISUAL PRODUCTION

(VOCATIONAL)

S.Y.B.Sc. PHOTOGRAPHY AND AUDIO VISUAL PRODUCTION

Syllabus

(To be implemented from the Academic Year 2014-15)

Preamble:

The 3-year B.Sc. Vocational Course in *Photography and Audio Visual Production* (SPAVP) is conducted as part of the University of Pune approved course in B.Sc. Physics. SPAVP is offered as one of the four subjects at the First Year B.Sc. (F Y B Sc) level along with Physics, Mathematics and Electronic Science or Chemistry. At the Second Year B.Sc.(S.Y.B.Sc.) level one among the three subjects along with Physics - Mathematics, Physics - Chemistry or Physics - Electronic Science. At the Third year B Sc (T.Y.B.Sc.) level, there are two theory courses and one practical course to be offered along with four theory courses and two practical courses of T.Y.B.Sc. Physics.

The course '*Photography and Audio Visual Production*' is being coordinated and conducted by the Department of Physics (Photography) at the concerned centers.

It is therefore to be understood that this syllabus will only operate when it is offered to students who study Physics and Mathematics at the first year level.

In keeping with the purpose of introducing vocational courses in the affiliated colleges of the University of Pune, and as given in the previous statements of intent by the Board of Studies, the vocational courses are expected to:

1. Be specialized in the sense of being *non-conventional*.
2. Be *multi-faculty* as well as *multidisciplinary*.
3. Be *different* also because they are incorporated into conventional disciplines.
4. *Establish a linkage with main stream disciplines, market and industry*.

The concerned Board of Studies is supposed to keep a *holistic view* and *integrated approach*.

Introduction:

The Media and the Communication industry is expanding at a rapid pace. There is an increasing need of trained man power in the media industry. This course is focused on training young students, at the plus twelve level, so that they can join the media and the communication industry at an early stage. The course is designed and conducted in association of experts from industry. Students gain hands on experience of working in the fields of media and communication.

The courses are more practical oriented than theory oriented compared to the conventional courses.

Objectives to be achieved:

- To promote the possibility of self employment after B.Sc.
- To bridge up the gap between knowledge based conventional education and market demands and to provide an alternative to those pursuing higher education.

Eligibility

1. First Year B.Sc.:

Higher Secondary School Certificate (10+2) or its equivalent examination with Physics, Chemistry and Mathematics.

2. Second Year B.Sc.:

The students should pass in all subjects at the F.Y.B.Sc. level or at least keep terms (ATKT) of F Y B. Sc. with Photography and Audio Visual Production as one of the subjects. at the

3. Third Year B. Sc.:

The student should compulsorily clear all F Y B. Sc. and satisfactorily keep terms (at least ATKT) of S Y B. Sc. with Photography and Audio Visual Production as one of the subjects. *Students who may have passed in all subjects at the S.Y.B.Sc. level, but have not cleared all the courses at F.Y.B.Sc. level are not eligible to be admitted to the T.Y.B.Sc. class.*

Admissions will be given as per the selection procedure / policies adopted by the respective college keeping in accordance with conditions laid down by the University of Pune.

Reservation and relaxation will be as per the State Government rules.

Standard of Passing

i. In order to pass in the First Year Theory Examination, the candidate has to obtain at least 40 marks out of 100 in each Theory Course. (Minimum 32 marks must be obtained in the University Theory Examination).
ii. In order to pass in the Second Year and Third Year Theory Examinations, the candidate has to obtain at least 20 marks out of 50 in each course of each semester. (Minimum 16 marks must be obtained in the University Theory Examination).
iii. In order to pass in Practical Examination, the candidate has to obtain at least 40 marks out of 100 in each course. (Minimum 32 marks must be obtained in the University Examination).

Award of Class

The class will be awarded to the student on the aggregate marks obtained during the Second and Third year in the Principle subject only. The award of the class shall be as follows:

1	Aggregate 70% and above	: First Class with Distinction
2	Aggregate 60% and more but less than 70%	: First Class
3	Aggregate 55% and more but less than 60%	: Higher Second Class
4	Aggregate 50% and more but less than 55%	: Second Class
5	Aggregate 40% and more but less than 50%	: Pass Class
6	Below 40%	: Fail

ATKT Rules

While progressing from F. Y. B. Sc. to S. Y. B. Sc. Class, the student has to pass in at least 8 courses (out of total 12).

While going from S. Y. B. Sc. to T. Y. B. Sc., at least 12 courses (out of 20) should be cleared.

*A student will not be able to progress from S.Y.B.Sc. to T.Y.B.Sc. unless all his / her F. Y. B. Sc. courses are cleared***.**

Equivalence of Previous Syllabus

No equivalence required at S. Y. B. Sc. level, the course titles are same as previous syllabus.

External Students

There shall be no external students.

University Terms

Dates for commencement and conclusion for the First and Second Terms will be declared by the Pune University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 80 percent attendance at theory and practical course and satisfactory performance during the term.

Medium of Instruction: The medium of instruction for the course shall be English.

Course Structure:

Duration: The duration of B.Sc. (Photography and Audio Visual Production) degree program shall be three years.

The syllabi have been structured to introduce and discuss the concepts and working areas of the media and communication industry. The training for skill sets required to perform the tasks in the industry has been developed through the three-year course.

In the **First Year**, students will be introduced the concept of communication. Its importance and different types will also be discussed in some details at the first year. Different theories and models of communication will be introduced with familiar examples. Students will be exposed to the Print, the Audio and the Visual media. Various aspects of the social media will be also discussed.

Photography is introduced at this stage at an introductory level. Stress is given on making students aware of photography as a strong medium of visual communication. The science and the technology of photography is discussed in depth at this stage. Importance and scope of photography in various fields is also discussed.

Camera handling skills and understanding of photographic lighting is developed in the first year. Students are exposed to different photographic situations through various assignments. Photographic

aesthetics is also discussed so that a student develops a good photographic vision at the end of the first year.

In the **Second Year**, the need and importance of 'sound' in media is discussed. Studio acoustics is discussed at length. Different mike, speakers, and recording systems are also studied. The theory behind these equipments is discussed at this stage.

The science and technology involved in the digital and analog signal transmission is introduced in the second year.

Photography is practiced at advanced level in the second year. Detailed study of different camera lenses, various filters, light sources and lighting techniques are discussed in the theory classes. Colour theory and various theoretical aspects of digital photography are discussed. Studio and the outdoor assignments are designed to enhance the photographic skills so that students can handle independent projects.

In the **Third Year (TY)**, the students offer physics as their major subject. Out of the six theory papers per semester at the TY, two papers per semester are vocational papers. In the first semester of TY, students are trained to produce an Audio-Visual (AV) production. This includes the pre-production, the production and the post production stages. Students are trained to use professional video equipment for the assignments base on this course. The science and technology of the video recording and reproduction is discussed production in the other course in the first semester of TY.

The second semester of TY is training students for Radio production. Various aspects of radio production are discussed. More stress is given on hands on experience. A course on 'Entrepreneurship Development is introduced in the second semester of TY.

Students produce a short film as their project in TY.

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F. Y. B. Sc. Photography and Audio-Visual Production

Paper	Course Title	Marks	Lectures
Paper - I	Basic Photography and Appreciation of Media	100	Three Hours/Week per Paper (Total 36/Paper per Term)
Paper - II	Introduction to Mass Communication and Media Scene in India	100	
Practical Course	Practical Course	100	Four Hours / Week (Total 96 – Term I & II)

Examination Pattern

Theory papers:	University Examination	– 80 marks (at the end of 2nd term)
	Internal Examination	– 20 marks
Practical course:	University Examination	– 80 marks (at the end of 2nd term)
	Internal Examination	– 20 marks

Theory examination will be of three hours duration for each theory course. There shall be 5 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	8 sub-questions, each of 2 marks; answerable in 2 -3 line and based on entire syllabus
Question 2 and 3	4 out of 6 – short answer type questions; answerable in 6 – 8 lines
Question 4	2 out of 4 – long answer type questions; answerable in 12 – 16 lines
Question 5	1 out of 2 – essay / long answer type question; answerable in 25 – 30 lines

Internal examination: Internal assessment of the student by respective teacher will be comprehensive and continuous, based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Choice Questions, True / False, Definitions, questions related to practical situations, Application based questions. There shall be 20 questions, each question of 0.5 marks.

Practical Examination: Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of minimum 6 hours duration, carried over in two sessions. There shall be 10 marks for maintaining a laboratory journal, 10 marks for viva-voce and minimum three experiments. Certified journal is compulsory to appear for practical examination. There shall be two experts and two examiners per batch for the practical examination.

Setting question papers: Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. Application of a concept to a practical situation should be tested.

S. Y. B. Sc. Photography and Audio-Visual Production

	Paper	Course Title	Marks	Lectures
Semester I	VOC_PAVP_211	Still Photography, Processing and Printing	50	Four Hours/Week per Paper (Total 48/Paper per Semester)
	VOC_PAVP_212	Acoustics	50	
Semester II	VOC_PAVP_221	Colour Photography	50	
	VOC_PAVP_222	Principles and Applications of Analog & Digital Communication	50	
Semester I & II	Practical Course	Practical Course	100	Four Hours / Week (Total 96 – Semester I & II)

Examination Pattern

Theory paper:	University Examination	– 40 marks (at the end of each semester)
	Internal Examination	– 10 marks
Practical course:	University Examination	– 80 marks (at the end of 2nd semester)
	Internal Examination	– 20 marks

Theory examination will be of two hours duration for each theory course. There shall be 4 questions each carrying equal marks. The pattern of question papers shall be:

Question 1	10 sub-questions, each of 1 marks; objective type and based on entire syllabus
Question 2 and 3	2 out of 3 sub-questions, each of 5 marks; short answer type questions; answerable in 10 – 15 lines
Question 4	1 out of 2 – long answer type questions; answerable in 20 – 25 lines

Internal examination: Internal assessment of the student by respective teacher will be comprehensive and continuous, based on written test, 10 marks each term. The written test shall comprise of objective type questions – Multiple Choice Questions, True / False, Definitions, questions related to practical situations, Application based questions. There shall be 20 questions, each question of 0.5 marks.

Practical Examination: Practical examination shall be conducted by the respective college at the end of the academic year. Practical examination will be of minimum 6 hours duration, carried over in two sessions. There shall be 10 marks for maintaining a laboratory journal, 10 marks for viva-voce and minimum three experiments. Certified journal is compulsory to appear for practical examination. There shall be two experts and two examiners per batch for the practical examination.

Setting question papers: Questions should be designed to test the conceptual knowledge and understanding of the basic concepts of the subject. Application of a concept to a practical situation should be tested.

Qualification of Teachers:

Professional experience in media / photography / communication or related fields.

PHOTOGRAPHY AND AUDIO VISUAL PRODUCTION (Vocational)

S.Y.B.Sc. Semester-I:

(VOC_PAVP_211) Theory Paper I: Still Photography, Camera Accessories

Objectives:

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

I. Still Photography: Shutter types and their limitations. 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/ blurr. **6**

II. Camera Lens: Optical materials, Plastics/ Glass, Lens coating, Types of lenses- Normal/ Standard, Telephoto, Teleconverter, Wide angle, Fish eye lens, Zoom,Micro lens, Macro lens, Supplementary lenses-Close up lens, Extension tubes. Faults in lenses, Aberrations, Resolution, Flare, and Ghost image etc. Lenses for digital camera, cropping factor. **8**

III. Exposure: Methods of estimation. Thumb Rule. Law of reciprocity, Reciprocity failure. Exposure meter- types and comparison, differences between hand-held exposure meter and TTL exposure meter, spot meter, flash meter. Reading exposure levels, interpreting the meter reading. **6**

IV. Lighting: Types of light Sources, natural and artificial light. Hard & soft light. Basic lighting set up for a portrait. Key, Fill, Back & Top light. Brightness ratio and lighting ratio. Lighting for different subjects / situations. Flash light, Flash curves, Guide number. Electronic flash. Flash synchronization for different shutter speeds. Studio flash lights. **6**

V. Techniques of Photographing Action: Lazy shutter, Freeze-action Blurring, Superimposition, double exposure, and multiple exposures. **4**

VI. 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. **4**

VII. Analysis of photographic image: Effect of exposure on the photographic image. **4**

VIII. Sensitometry/ Densitometry: Characteristic curve and its significance. Use of the Characteristic curve for the analysis of a photographic image. **4**

IX. Aesthetics: Different formats and their use. Geometric elements of composition. **6**

References:

1. The 35 mm Hand Book- Michael Freeman
2. Focal encyclopedia of Photography, Focal Press.
3. Basic Photography- M.J. Langford, Focal Press.
4. Advanced Photography (Vol.-I & Vol.-II) - M.J. Langford, Focal Press.
8. Creative Colour Photography Techniques- Marshall Cavendish.
9. Colour How to see it, How to paint it- Judy Martin (Chartwell Books Inc.)
10. Making Colour Prints- Jack H.Coote (Focal Press)
11. Applied Photographic Optics- Sidney F. Ray; Focal Press
12. The Practical Guide to Photographic Lighting, John Tarrant, Focal Press
13. Light Science and Magic, An Introduction to Photographic Lighting, Fill Hunter, Steven Biver, Paul Fuqua, Focal Press

S.Y.B.Sc. Semester-I:

(VOC_PAVP_212) Theory Paper II: Principles of Acoustics & 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 of Audio equipment.
3. To make students familiar with the use of various Audio Equipment
4. To make students familiar with the requirements of acoustics of auditoria/ studios/classrooms.

I. Basic Definitions: Intensity & Intensity level, Bel and Decibel, Analogy between electrical, mechanical and acoustical quantities. **6**

II. 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 characteristics of film, radio & T.V. Studios. **10**

III. 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. **10**

IV. Microphones: Characteristics and requirements of a microphone. Different types of microphones. Special types:lapel, wireless, shotgun. 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. **10**

V. Sound reproducing Systems: Monophonic, Stereophonic, Surround System. Hi-Fi system.P.A. system: block diagram and use of. Home Theater Systems. **6**

VI. Sound Recording: Principles of Sound recording: Magnetic Recording/ Reproduction. Audio CD Recording/ Reproduction. **6**

Reference 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

STILL PHOTOGRAPHY AND AUDIO VISUAL PRODUCTION (Vocational)
S.Y.B. Sc.

S.Y.B.Sc. Semester-II:
(VOC_PAVP_221) Theory Paper I: Colour Photography and Digital Photography

Objectives:
1. To understand basic colour theory.
2. To understand basics of colour photography.
3. To understand the basics of digital photography.

I. Colour Theory: Theory of colour, characteristics of colour, additive and subtractive colours. Theory of colour vision. Types of light sources and their colour characteristics. Colour temperature (Kelvin and Mired Scale), Mired shift and its use in colour photography. **8**

II. Filters for Colour Photography: Need of filters in colour photography. UV filter, Polarizing Filter, Sky-light Filter, Colour conversion filters, colour compensation filter, colour/ light balancing filters. **6**

III. Colour Materials: Cross-section of an integral tripac film. Characteristic curves for colour negative and colour transparency films. Cross-section of colour papers and their types. **6**

IV. Colour Enlarger: Construction of colour enlarger, Colour Head, sources of light and filters used in a colour enlarger, dichroic filters, manual printing and auto printing. **3**

V. Colour Theory: Primary and secondary colours, Colour attributes, Munsell system and CIE system, Classification of colours, Use of colours in photography, **8**

VI. Colour printing: Photo print, digital print, laser print **3**

VII. Digital Cameras: Megapixels, Digital photography terminology, Prosumer digicams, Digital SLRs, Choosing a Digital SLR System, Check list of essential equipment, Digital camera sensors and their types, Comparison between digital and film photography **6**

VIII. Asset Management: Digital asset management, Workflow sequence. **4**

IX. Exposure: Intensity and duration, TTL light meters, Flash meter **4**

References:

1. The 35 mm Hand Book- Michael Freeman
2. Focal encyclopedia of Photography, Focal Press.
3. Basic Photography- M.J. Langford, Focal Press.
4. Advanced Photography (Vol.-I & Vol.-II) - M.J. Langford, Focal Press.
5. Creative Colour Photography Techniques- Marshall Cavendish.
6. Colour How to see it, How to paint it- Judy Martin (Chartwell Books Inc.)
7. Making Colour Prints- Jack H.Coote (Focal Press)
8. Digital Photography in Available Light- Essential Skills- mark Galer, (Focal Press)
9. Studio Photography- Essential Skills- John Child, (Focal Press)
10. The Art of Digital Photography, John Hedgecoe, DK ltd, UK
11. Mastering Digital SLR Photography, David D. Bush, Thomson

S.Y.B.Sc. Semester-II:

(VOC_PAVP_222) Theory Paper II: Principles and Applications of Analog and Digital Communications

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.

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, signaling rate or Bit rate, Modes of Data transmission(Asynchronous, Synchronous), Simplex, Duplex, Transmission channels & it's characteristics **10**

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) **10**

III. 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**

IV. 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.. Comparison of analog and digital communication. **10**

V. Digital modulation techniques for MODEM: Role, types and comparison of MODEM, Data multiplexers,FSK, PSK, BPSK, QPSK, Digital continuous wave modulation techniques for modem. **8**

References:

1. Electronic communications: Roody-Coolean.
2. Electronic-communication: J.S.Chitode.
3. Principles of communication engineering: Anok sinha.
4. Modern electronic communication: Miller Beasley (PHI)

VOC_PAVP_203: Practical Course, Paper III

List of assignments / experiments

A: List of Experiments/Assignments: Sound / Acoustics

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

B: List of Experiments/Assignments: Photography

1. Lighting for form and shape
2. Lighting for texture
3. Lighting for still life: Earthen ware, Metal ware, Fruits, Glass ware (Front lit & Back lit), Crockery, Jewellery, Flowers, Food
4. Lighting for a product
5. High Key lighting
6. Low Key lighting
7. Silhouette
8. News Photography
9. Linear Perspective
10. Night Photography

C: List of Experiments/Assignments: Photoshop

1. Image Mixing
2. Image Cutting
3. Text Building Effect
4. Blurr Effect
5. Transformation Tools
6. Clip Mask
7. Photo Filter

8. Bucket Tool
9. Stamping Tool
10. Cover page design for a magazine

- 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.

Annexure-II

Structure/ Pattern of Syllabus must be as follows:

1) Title of the Course: Photography and Audio-Visual Production (Vocational)
2) Introduction: Pattern Semester
3) Eligibility: Should have offered Photography and Audio-Visual Production (Vocational) at F.Y.B.Sc. and Passed F.Y.B. Sc. as per Pune University Rules
4) Examination
   A) Pattern of examination
      i) 40:10 (University semester examination of 40 marks & internal assessment of 10 Marks) Details as per the syllabus
      ii) Pattern of the question paper: As per the specimen given
   B) Standard of Passing: As per Pune University norms
   C) ATKT Rules: As per Pune University norms
   D) Award of Class: As per Pune University norms
   E) External Students: As per Pune University norms
   F) Setting of Question paper/ Pattern of Question paper: As per Pune University norms
   G) Verification of Revaluation: As per Pune University norms
5) Structure of the Course:
   i) Optional
   ii) Medium of instruction: English
6) Equivalence subject/ papers & Transitory Provision: Photography and Audio Visual Production (Vocational)
7) University terms: As per Pune University Norms
8) Subject wise detail syllabus: Attached
9) Recommended books: Mentioned in syllabus

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