Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Proposed Syllabus for Four Year Multidisciplinary UG Program with DSC as Major (e.g. Four Year B.Sc. Honours/Research Program)

Programme: B.Sc.
(Academic Session 2024-25)
Syllabus

SKILL ENHANCEMENT COURSE (SEC)

Semester III courses in
Physics
Syllabus under Autonomy

Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Syllabus for B. Sc. II (SEM-III) w.e.f. 2024-25

Skill Enhancement Course (SEC-II)

Course: BASIC WORKSHOP SKILLS IN PHYSICS

(Credits: 02) 60 Hours

Practical Component only

Lab (Credit: 02) **60 Hours**

Course description:

The course is designed for the students of science faculty who choose Physics as major in their B.Sc. Programme. The course deals with concepts in Physics and commonly used electrical, electronic and mechanical tools and instruments in Physics.

Course Objectives:

The aim of this course is to enable the student to understand the basic concepts, familiarize and have hands on experience of the mechanical and electrical tools and instruments in Physics.

Course learning outcomes: Upon completion of this course students will be able to

CO1: Develop an understanding about basic instruments in Physics and their applications in measurement of various parameters.

CO2: Learn some Mechanical, Electrical and Electronic skills related to physics that can be used in day-to-day life.

CO3: Get hands-on training to handle the instruments.

CO4: Design and trouble shoot (locate and correct faults in) electric circuits and household appliances.

Syllabus

Unit-I

Introduction: Measuring units, conversion to SI and CGS, familiarization with meter scale, vernier caliper, screw gauge, travelling microscope and their applications.

Unit-II

Electrical and Electronic Skills: Resistors, capacitors, inductors, diodes, transistors, voltage, current, power, resistance and capacitance in series and parallel, transformer, ac and dc

voltages, step up and step down voltage using transformer, familiarization with voltmeter, ammeter, multimeter.

Unit-III

Single phase and three phase ac source. Electrical protections: fuse, relay, circuit breakers (LCB), Cathode Ray Oscilloscope and its applications.

Laboratory (02 Credit, 60 Hours)

1. To measure the dimensions of solids using vernier caliper and screw gauge.
2. To measure radius of capillary tube using travelling microscope.
3. To determine volume of cylinder, diameter of thin wire, thickness of metal sheet.
4. Construct an electronic circuit using R, L, C, diode, Transistor etc.
5. To design a power supply.
6. To determine value of resistance, capacitance from their color codes and numbers
7. To design a voltage divider circuit and measure the voltage at each point.
8. To conduct energy audit of house and determine electric consumption and electric bill.
9. Use of multimeter, voltmeter, ammeter to measure different voltages, current, resistances etc.
10. To measure ac and dc voltage using CRO.
11. Determine the frequency and amplitude of ac and dc voltage using CRO
12. Study of waveforms using CRO.

Reference Books:

1. A text book in Electrical Technology - B L Theraja - S Chand & Co.
2. Principles of Electronics, V. K. Mehta, Rohit Mehta- S Chand & Co.
3. Basics of electronics-Solid State, B. L. Thereja- S Chand & Co.
4. A Textbook of Electrical Technology – B L Theraja (S Chand & Co.)
5. Mechanical Workshop Practices- K C John. (PHI Ltd. 2010)
6. Workshop Processes, Practices and Materials- B J Black2005, 3rd Edition, (Newness).

Note: Mode of evaluation:

End semester examination + Continuous Internal Assessment(Poster presentation / Project/ Presentation/ Assignment/ quiz)

Total Mark: 50

Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Proposed Syllabus for Four Year Multidisciplinary UG Program with DSC as Major (e.g. Four Year B.Sc. Honours/Research Program)

Programme: B.Sc.
(Academic Session 2024-25)
Syllabus

VOCATIONAL SKILL ENHANCEMENT COURSE (VSEC)

Semester III courses in
Physics
Syllabus under Autonomy

Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Syllabus for B. Sc. II (SEM-III) w.e.f. 2024-25

Vocational Skill Enhancement Course (VSEC-II)

Course: MAINTENANCE AND TROUBLESHOOTING OF HOUSEHOLD APPLIANCES

(Only Practical Component)

(Credits: 02) (60 Hours)

Course Description:
The course Maintenance and Troubleshooting of Household Appliances is designed for students of undergraduate stream. It is a hands-on course for Understanding and Troubleshooting of household appliances. This course will be of 60 hours practical. This is two credits course.

Learning Objective:
Maintenance and Troubleshooting of Household Appliances course will facilitate under graduate students with detailed knowledge of household appliances. The students will be able to understand and find out the fault in the household appliances and will eventually repair it. This course will provide the students with an opportunity for self-employment.

Course Learning Outcome: Upon completion of this course students will be able to

CO1: Classify and explain various types of household appliances.
CO2: Examine different household appliances.
CO3: Analyse the faulty appliances.
CO4: Assemble the appliances after repair.
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Laboratory Sessions (02 Credit, 60 Lectures)

The students have to study working principal, testing of faults and troubleshooting **any ten (10)** of the following household appliances.

1. Household Automatic and non-automatic Electric Iron.
2. Household electric kettle.
3. Household electric toaster.
4. Household electric oven.
5. Household electric geyser.
6. Household electric reflector and blower type room heater.
7. Household electric drill machine.
8. Household electric mixer grinder.
9. Household electric cabin fan.
10. Household electric ceiling fan.
11. Household electric table fan.
12. Household electric domestic floor mill.
13. Household electric vacuum cleaner.

14. Household electric cooler.

Reference Books:

- Handbook Of Repair and Maintenance of Domestic Electronics Appliances, First Edition by Shashi Bhushan Sinha, BPB Publication.
- The Complete Guide to the Maintenance and Repair of Domestic Electrical Appliances by Graham Dixon, Haynes Publications.
- How to Repair Electrical Appliances by Gershon J. Wheeler, Barnes & Noble Books Publications.
- Troubleshooting and Repairing Major Appliances, 2nd Ed. By Eric Kleinert, McGraw-Hill Education.

Note: Mode of evaluation:

- **End semester examination + Continuous Internal Assessment(Poster presentation / Project/ Presentation/ Assignment/ quiz)**
- **Total Mark: 50**

Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Proposed Syllabus for Four Year Multidisciplinary UG Program with DSC as Major (e.g. Four Year B.Sc. Honours/Research Program)

Programme: B.Sc.
(Academic Session 2024-25)
Syllabus

SKILL ENHANCEMENT COURSE (SEC)

Semester IV course in
Physics
Syllabus under Autonomy

Shiksha Mandal's

Bajaj College of Science, Wardha (Autonomous)

Syllabus for B. Sc. II (SEM-IV) w.e.f. 2024-25

Skill Enhancement Course (SEC-III)

Course: Digital Film Production

(Only Practical Component)

Credits: 02 **60 Hours**

Course Description:
Digital Film Production course is designed for students of undergraduate stream. It is a hands-on course for Digital Film Production. This course will be of 60 hours practical which carry 2 credits.

Course Objectives:
The Course Objectives of this course are as follows:
• To introduce the students to the art of digital video making and editing
• To learn about the tools required for video making and editing
• To learn about the various aspects in pre and post production of videos.

Course Outcome:
On completion of this course students will be able to
CO1: Understand the importance of various aspects of audio-video production
CO2: Prepare an effective layout for making an effective video.
CO3: Apply the tools required for video production and editing.

Practical Sessions (02 Credit, 60 Hours)

Unit 1: Introduction, Financial Planning and Budgeting (15 hours)
Audio Production: Concept of Sound, Types of sound, Audio range, Know your equipment's (Acoustic, Microphone, Recorder, Audio Mixer, Cables & connectors), Process of recording, Mixing, Sound processing, Recording level, Audio Editing, Dubbing & voiceover (Process, steps) Digital Film Production

Unit 2: (15 hours)
Video Production (Pre-Production): Concept, What is pre-production, Concept/visualization, R & D, Screen play writing, Storyboard making, Shooting script writing, Peoples involved in pre-production, Set making, Copyright, Music making, Budgeting, Production Design, Location hunting, Hiring of equipment & crew members

Unit 3: (15 hours)
Video Production (Production): Know your equipment, Camera & accessories, Lights & Camera support, Clapboard, Sound equipment, Field Monitor, Blocking, Rehearsal, Lighting, Shooting.

Unit 4: **(15 hours)**

Video Production (Post Production): Compiling the concept and Shooting material to final stage, Peoples involved in Post-production, Know your equipment, Editing, Color grading, Publicity, Transmission, Distribution and Rating

Practical Exercises and Projects

1. Recording & mixing of multi-track audio
2. Budget Making & Script writing 05 minutes program
3. Shooting for 05 minutes program (News / Music Video / Documentary / Feature / Chat show / Discussion etc.)
4. Editing of 05 minutes video program

Audio Production (Project)

5. Knowing the audio equipment's & software
6. Recording process
7. Mixing & editing of various sound
8. Exporting sound in various audio formats & project

Video Production (Project)

9. Story writing, Storyboard making, Shooting script writing
10. Location hunting, Breakdown making, Budget making
11. Set making, Lighting, Shooting
12. Editing, BGM posting, Colour grading, Publicity, Exhibition & Transmission

Reference Books:

- Digital Filmmaking for Beginners A Practical Guide to Video Production (ELECTRONICS) by Michael K. Hughes, McGraw Hill TAB.
- Digital Filmmaking for Beginners A Practical Guide to Video Production, McGraw Hill TAB
- The Digital Filmmaking Handbook, Mark Brindle
- Video Production, Vasuvi Belavdi, Oxford Higher Education

Note: Mode of evaluation:
End Semester Exam + Continuous Internal Assessment (Poster presentation / Project/ Presentation/ Assignment/ quiz)
Total Mark: 50