

**Kanya Maha Vidyalaya (Autonomous), Jalandhar**

**SCHEME AND CURRICULAM OF EXAMINATION OF CERTIFICATE COURSE**

**Certificate Course in Household Physics**

**Session 2024-25**

**Semester-I**

Course Code	Course Title	Credit	Course Type	Max Marks			Examination Time (In Hours)
				Total	Ext.		
					L	P	
CPHM-1391	Household Physics	2	C	50	35	15	3 Hours

**C- Compulsory**

**Duration- 30 hours**

**Eligibility- 10+2**

**P.G. DEPARTMENT OF PHYSICS**

**CPHM-1391**

**Certificate Course in Household Physics**

**Number of Credits: 2**

**Marks: 50**

**Number of Hours: 30**

**Lectures: 30**

**Eligibility:** 10+2 of any streams.

**Course Objective:** This course is designed to provide students with the foundational knowledge of Physics. Students will attain the ability to repair household machines and switching devices, how to use appropriate power tools, understand all procedures and electrical safety rules, residential electrical installation within the context of household activities.

**Module wise Course Syllabus**

**Module 1: Fundamentals of Physics (7 hours)**

Introduction to Basic Physics (1 hours), Recognition of Basic components, Basic series and parallel connections, Understanding Electricity (2 hours), Voltage, current, resistance, Ohm's Law, Circuit diagram and Design, Practical circuit designing exercises (4 Hours)

**Module 2: Electrical Appliances and Systems (8 hours)**

Working Principles of Electrical Appliances: Electric Press, Room Heater, Electric Fan, Understanding component functionalities (4 hours), Energy Efficiency and Consumption: Electric meters and measurement techniques, Energy-saving strategies, Safety (2 hours), Measures and Regulations: Electrical safety standards, Safe handling and maintenance practices (2 hours)

**Module 3: Applied Household Physics (8 hours)**

Thermal Dynamics in Household Appliances: Heat transfer mechanisms, Insulation and heat dissipation (2 hours), Optics and Lighting: Light sources and illumination, Energy-efficient lighting technologies (3 hours), Hands-on practical integrating household physics principles (3 Hours)

**Module 4: Innovation and Creativity (7 hours)**

Introduction to Innovation Hub resources and facilities (3 hour), Collaborative innovative assignment and Demonstration (4 hour)

**References:**

1. A self teaching guide "Basic Physics" by Karl F. KUHN and Frank Noschese, Wiley.
2. Dixon, G. (1995). Electrical Appliances: The Complete Guide to the Maintenance and Repair of Domestic Electrical Appliances. United Kingdom: Haynes.
3. S C Bhargava (2020) Household Electricity and Appliances. (n.p.): BSP Books.

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**SCHEME AND CURRICULAM OF EXAMINATION OF CERTIFICATE COURSE**

**Certificate Course in Household Physics**

**Session 2024-25**

**Semester-II**

Course Code	Course Title	Credit	Course Type	Max Marks			Examination Time (In Hours)
				Total	Ext.		
					L	P	
CPHM-2391	Household Physics	2	C	50	35	15	3 Hours

**C- Compulsory**

**Duration- 30 hours**

**Eligibility- 10+2**

**P.G. DEPARTMENT OF PHYSICS**

**CPHM-2391**

**Certificate Course in Household Physics**

**Number of Credits: 2**

**Marks: 50**

**Number of Hours: 30**

**Lectures: 30**

**Eligibility:** 10+2 of any streams.

**Course Objective:** This course is designed to provide students with the foundational knowledge of Physics. Students will attain the ability to understand the mechanics involved in the simple machines available at home, ventilation in the home along with the optics of devices like TV, mobiles etc. Students will be able to learn how to dispose e-waste.

**Module wise Course Syllabus**

**Module 1:**

**Mechanics (6 hours)**

Physics of everyday objects such as doors, ramps, and simple machines like levers and pulleys Exploring the physics of fluids in plumbing systems, including pressure, flow rate, and the principles behind faucets, showers, and toilets, Ventilation and airflow in the home.

**Acoustics (2 Hours)**

Physics behind musical Instruments Like, Sitar, Tabla, Guitar, Flute

**Module 2: Electronics at Home (5 hours)**

The operation of common electronic devices like TVs, computers, and smartphones.

EM waves and radiations in microwave cavities.

**Environmental Considerations (3 hours)**

Recycling and waste management.

**Module 3: Optics (4 hours)**

Optics in household devices (mirrors, cameras, lenses, etc.).

**Structural Properties (3 hours)**

Structural Integrity of buildings and Seismology

**Module 4: Innovation and Creativity (7 hours)**

Presentation of projects and Internal mentoring and External mentoring for science awareness among the masses

**References:**

1. A self teaching guide “Basic Physics” by Karl F. KUHN and Frank Noschese, Wiley.
2. Dixon, G. (1995). Electrical Appliances: The Complete Guide to the Maintenance and Repair of Domestic Electrical Appliances. United Kingdom: Haynes.
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