

# Presentation Plan

## 1. Choosing the Topic

**Topic:** Fiber Optics – How They Are Powering the World

Reason for choosing the topic:

The topic is related to physics, engineering, and modern communication technology. It is specific and focused on fiber-optic cables and data transmission. It is interesting because fiber optics play a key role in the internet, medicine, and aerospace technology.

## 2. Introduction

What fiber optics are

Why fiber-optic technology is important today

Purpose of the presentation

## 3. How Is a Fiber-Optic Cable Built?

Structure of a fiber-optic cable (core, cladding, coating)

Materials used in fiber optics

What a fiber-optic cable looks like in cross-section

## 4. Why Doesn't the Light Escape?

Basic explanation of light behavior in optical fibers

Total internal reflection

Snell's Law and its role in guiding light through the fiber

## 5. Why Are Fiber-Optic Cables Faster Than Copper Cables?

Light signals vs electrical signals

Signal loss over distance

Comparison between fiber-optic and copper cables

## 6. Advantages and Disadvantages of Fiber Optics

### Advantages:

Very high bandwidth

Low signal loss

No electromagnetic interference

Lightweight and thin

**Disadvantages:**

More fragile than copper cables

Installation requires high precision

Higher equipment cost

**7. Main Applications of Fiber Optics**

Telecommunications (internet, data transmission)

Medical technology (endoscopy, imaging)

Military and aerospace applications

**8. Conclusion**

Summary of the main points

Importance of fiber-optic technology in the modern world

Future development of fiber-optic systems