Lesson Plan 23

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Title**: **Chapter 35: Interference** | | **Ref. No**: Week 13,  Day 1 | | |
| **Target Group/Population**: B. Sc students (CS, EEE and IPE) | | **Duration**: 90 min | | |
| **Aims/Rationale**: To give the students basic concepts of intensity in double-slit interference | | | | |
| **Learning Outcomes**: At the end of the session, the students will be able to understand and analyze above topics and apply this to solve related problems. | | | | |
| **Contents:** 35-3: Interference and double-slit intensity (coherence, Intensity in double-slit interference) | Method or  Technique | | Resource  or Aid | Time |
| **Introduction**:   * Welcome address * Rapport building * Review the main topics of last lecture * Importance/bridging the topic * Pre-assessment of student’s knowledge | Lecture  QA | | WB  MMP | 15 min |
| **Development**:  1.Prove that the intensity in double slit-interference is given by *I = 4I0cos2ϕ/2* and the phase difference between two waves is given by *φ = (2π/λ)dsinθ*. Hence find the conditions for intensity maxima and minima. Plot a figure for *I* as a function of *φ*. | Lecture  Discussion QA  Problem Solving | | WB  MMP | 60 min |
| **Conclusion**:   * Quick recap/summary * Feedback from the students * References * Forward planning |  | | WB  MMP | 15 min |
| Problems:  **SP35-2**: What is the distance on the screen between adjacent maxima (or minima) near the centre of the interference pattern? The wavelength *λ* of the light is 546 nm, the slit separation *d* is 0.12 mm, and the slit-screen separation *D* is 55 cm. Assume that *θ* is small enough to permit use of the approximation *sinθ ≈ tanθ ≈ θ* , in which *θ* is expressed in radian measure.  29. Two waves of the same frequency have amplitudes 1.00 and 2.00. They interfere at a point where their phase difference is 60.0°. What is the resultant amplitude? | | | | |