Lesson Plan 22

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| **Title**: **Chapter 35: Interference** | | **Ref. No**: Week 12,  Day 2 | | |
| **Target Group/Population**: B. Sc students (CS, EEE and IPE) | | **Duration**: 90 min | | |
| **Aims/Rationale**: To give the students basic concepts of wave front, plane wave and circular wave, Huygens’ principle, monochromatic light, coherent light and Young’s double-slit interference experiment | | | | |
| **Learning Outcomes**: At the end of the session, the students will be able to understand and analyze above topics and apply those to solve related problems. | | | | |
| **Contents:** 35-1: Light as a wave, Diffraction, 35-2: Young’s interference experiment (diffraction, Young’s interference experiment, locating the fringes) | 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. What are the wave front, plane wave and circular wave? Using a sketch, explain Huygens’ principle.  2.What is a monochromatic light? Distinguish between coherent an incoherent light. What are the conditions of interference?  3. Derive the angular positions of maxima and minima for Young’s double-slit interference experiment.  4. Derive the positions (*ym*) of *mth*maxima and minima for Young’s double-slit interference experiment. | 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:  20. Monochromatic green light, of wavelength 550 nm, illuminates two parallel narrow slits 7.70 mm apart. Calculate the angular deviation of the third-order bright fringe (a) in radians and (b) in degrees.  93. If the distance between the first and tenth minima of a double-slit pattern is 18.0 mm and the slits are separated by 0.150 mm with the screen 50.0 cm from the slits, what is the wavelength of the light used? | | | | |