(LessonPlan)

MCM DAV College for Women, Sector – 36A,
ChandigarhMonthly TeachingPlans(OddSemester)
Session–(2022-2023)

Name of theTeacher: Dr.IshitaSharma

Department: Physics

Class: B.Sc(II)

Subject: Optics AndLasers-I

Section(s): Non-MedicalSectionandVocational

S.No.	Date(Monthly)		Topicsto be Covered	Academic ActivityUndertaken*
	From	To		
1	22nd Aug. 2022	31th Aug. 2022	Concept of coherence, spatialandtemporalcoherence, coherencetime,coherencelength,areaofcoherence.Conditionsforobservinginterference fringes. Interferencebywavefrontdivisionandamplitudedivision.Young'sdoubleslit experiment.	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes (v) Numerical Problems
2	1st Sept.2022	30thSept.2022	Lloyd's mirror and Fresnel'sbiprism,phasechangeonreflection.Newton'srings, Michelsoninterferometer—working, principle and natureoffringes.Interferenceinthinfilms,Roleofinterferenceinanti-reflection.Multiplebeaminterference,Fabry-Perotinterferometer,natureoffringes,finesse. Huygen-Fresnaltheoryhalfperiodzones,zoneplates.DistinctionbetweenFresnelandFraunhoferdiffraction. Fraunhoferdiffractiondueto	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems

			singleslitandintensitydistribution,doubleslits&multipleslits (qualitative). Fraunhoferdiffractionatrectangular (qualitative discussion)andcircularapertures.Effectsofdiffractioninopticalimaging.	
3	1st Oct. 2022	31th Oct. 2022	Fraunhoferdiffractionatrectangular (qualitative discussion)andcircularapertures.Effectsofdiffraction in optical imagingresolvingpowerofmicroscopeandtelescope,diffractiongrating,itsuseasaspectroscopicelement,resolvingpower, Moire'sfringes,Conceptandanalyticaltreatmentofunpolarised,planepolarizedandellipticallypolarizedlight. Double refraction Nicolprism,sheetpolarizers,retardation plates. Productionandanalysisofpolarizedlight (quarter and half waveplates)	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practical's (v) Numerical Problems
4	1st Nov. 2022	30th Nov. 2022	Fraunhoferdiffractionatrectangular (qualitative discussion)andcircularapertures.Effectsofdiffraction in optical imagingresolvingpowerofmicroscopeandtelescope,diffractiongrating,itsuseasaspectroscopicelement,resolvingpower, Moire'sfringes,Conceptandanalyticaltreatmentofunpolarised,planepolarizedandellipticallypolarizedlight. Double refraction Nicolprism,sheetpolarizers,retardation plates. Productionandanalysisofpolarizedlight (quarter and half waveplates)	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems

(LessonPlan)

MCM DAV College for Women, Sector – 36A,
ChandigarhMonthly TeachingPlans (Even Semester)
Session–(2022-2023)

Name of theTeacher: Dr. Ishita Sharma
Department: Physics
Class: B.Sc(II)
Subject: Optics And Lasers-II
Section(s): Non-Medical Section and Vocational

S.No.	Date(Monthly)		Topicsto be Covered	Academic ActivityUndertaken*
	From	To		
1	16th Jan. 2023	31st Jan. 2023	Absorption, spontaneousemission, stimulatedemission,Wavemechanicalexplanation, Properties ofSpectralLines, Temporalandspatial coherence,Charatertisticsofstimulatedemission, Einstein coefficients and theirrelations,	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems
2	1stFeb. 2023	28th Feb. 2023	Light amplification andthresholdcondition,Population inversion,Kinetics of optical absorption(qualitative account only),QualitativeaccountofCollisional broadening,Doppler broadening &Natural broadening,MechanismofLuminescence. Lasingaction,Componentsof Laser, Elementary theoryof optical cavity, longitudinalandtransversemodes,Principal pumping schemes,Threeleveland fourlevel laserschemes.	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems

3	1st March 2023	31st March 2023	Typesoflasers,RubyandNd :YAGlasers.He–Ne,DyeandCO2lasers–construction, mode of creating populationinversionandoutput characteristics	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems
4	1st April2023	15th April2023	Applicationsoflasers—ageneral outline, Holography.Principle,recordingofhologramand reconstructionofimage.*Fiber Optics*:Photonics,Opticalfibre,Construction,Numerical aperture, acceptanceangle,skipdistance,	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) Numerical Problems
5	16th April 2023	Till exams	Stepindexfibre–singlemode and multimode,Gradedindexfibre,Lossesinoptical fibre, Material lossesand Rayleigh scattering,bendinglosses,Intermodalandintramodal dispersion. Splicingtechniques,Optical fibrebasedcommunicationsystem,Medicalapplications	(i) Lecturemethod (ii) PPt (iii) Groupdiscussion (iv) Notes,Practicals (v) NumericalProblems