

Odd Sem 26-27 Vibration and Waves



MRPD GOVERNMENT COLLEGE TALWARA

Instruction Plan: 2026-27

Name of the Faculty Member	Dr. Rajesh Kumar
Programme	<u>B.Sc.</u> Non-medical (Physics)
Semester	3rd
Course Code & Name	Vibration, Waves and E.M. Theory (PHY-DSC-4 Min-302); Theory: Mon-Fri (11:00 am - 11:40 am) Practical: Fri (Group 1) -Sat (Group 2) (9:00 am - 11:00 am)
Total Credits	3 (Th) + 1 (Pr) = 4

Week	Unit / Chapter / Topic	Pedagogical Tool (Lecture / Demonstration / Case Study / PPT/ Video / Group Discussion)	References
1 (03-08 Aug 2026)	03 Aug: Simple harmonic motion	Lecture + Practical Demo., GD	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Mode rn)
	04 Aug: Simple harmonic motion (cont.)	Lecture + Practical Demo.	
	05 Aug: Energy of a SHM	Lecture	
	06 Aug: Compound Pendulum	Lecture + Practical Demo.	
	07 Aug: Compound Pendulum (cont.), Torsional Pendulum (Self)	Lecture	
2 (10-15 Aug 2026)	10 Aug: Electrical Oscillations	Lecture	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos,
	11 Aug: Transverse Vibrations of a mass on a string; Chapter End Discussion (Questions); Assignment 1 Delivery	Lecture + GD	

	12 Aug: No Class (Expert Lecture)		Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	13 Aug: Decay of free vibrations due to damping; Differential Eq. of Damped Harmonic Oscillator	Lecture	
	14 Aug: Differential Eq. of Damped Harmonic Oscillator (cont.)	Lecture	
3 (17-22 Aug 2026)	17 Aug: Differential Eq. of Damped Harmonic Oscillator (cont.); types of damping; Assignment 1 Discussion; Doubt Class; MCQ Discussion	Lecture + GD	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	18 Aug: Electromagnetic damping (Electrical oscillator)	Lecture	
	19 Aug: Determination of damping coefficient; Logarithmic Decrement	Lecture	
	20 Aug: Relaxation Time and Quality Factor; Chapter End Discussion (Questions); Assignment 2 Delivery; MCQ Discussion	Lecture	
	21 Aug: Doubt Class	GD	
4 (24-29 Aug 2026)	24 Aug: Student Presentation (Pardeep) Forced Oscillations, Differential equation for forced mechanical and electrical oscillators	Lecture + GD; Student Presentation PPT + Practical Demo.	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	25 Aug: Transient and steady state behaviour.	Flip Learning	
	26 Aug: Teej Festival Celebration		
	27 Aug: Unit Test 1	Test	
	28 Aug: Displacement and velocity variation with driving force frequency, Variation of phase with frequency, Resonance	Lecture	

5 (31 Aug-05 Sep 2026)	31 Aug: Assignment 2 Discussion; Doubt Class + Student Presentation (Arti, Tanu)	Student Presentation PPT	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	01 Sep: Displacement and velocity variation with driving force frequency, Variation of phase with frequency, Resonance cont.	Lecture	
	02 Sep: Power supplied to an oscillator and its variation with frequency	Lecture	
	03 Sep: Unit Test 2	Test	
	04 Sep: Holiday (Janamashtmi)		
6 (07-12 Sep 2026)	07 Sep: Q-value and bandwidth	Lecture	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	08 Sep: Student Presentation		
	09 Sep: Q-value and bandwidth (cont.), Chapter End Discussion (Questions); Assignment 3 Delivery; MCQ Discussion	Lecture + GD	
	10 Sep: Waves in physical media	Lecture + GD	
	11 Sep: Wave equation and its solution	Lecture	
7 (14-19 Sep 2026)	14 Sep: Assignment 3 Discussion; Doubt Class	GD	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	15 Sep: Student Presentation	Student Presentation PPT	
	16 Sep: Types of waves, particle velocity, acceleration and energy in progressive waves	Lecture	
	17 Sep: Transverse waves on a string	Lecture	
	18 Sep: Characteristic impedance of a string	Lecture	

8 (21-26 Sep 2026)	21 Sep: Unit Test 3	Test	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	22 Sep: Reflection and Transmission of transverse waves on a string at discontinuity	Lecture	
	23 Sep: Reflection and transmission of energy	Lecture	
	24 Sep: Impedance matching	Lecture	
	25 Sep: Impedance matching (cont.)	Lecture	
9 (28 Sep-03 Oct 2026)	28 Sep: Reflection and transmission of longitudinal waves at a boundary	Lecture	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	29 Sep: Reflection and transmission of longitudinal waves at a boundary (cont.)	Lecture	
	30 Sep: Energy of vibrating string	Lecture	
	01 Oct: Wave and group velocity; Chapter End Discussion (Questions); Assignment 4 Delivery; MCQ Discussion	Lecture + GD	
	02 Oct: Holiday (Mahatma Gandhi Jayanti)		
10 (05-10 Oct 2026)	05 Oct: Assignment 4 Discussion; Doubt Class	GD	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	06 Oct: EM Waves Introduction; Displacement Current and Maxwell's Equations	Lecture + GD	
	07 Oct: E.M. waves and wave equation in a medium having finite permeability, permittivity and conductivity	Lecture	
	08 Oct: Student Presentation	Student Presentation PPT	
	09 Oct: E.M. waves and wave equation in a medium having finite	Lecture	

	permeability, permittivity and conductivity (cont.)		
11 (12-17 Oct 2026)	12 Oct: Unit Test 4	Test	https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	13 Oct: E.M. waves and wave equation in a medium having finite permeability, permittivity and conductivity (cont.)	Lecture	
	14 Oct: Energy flow due to EM wave - Poynting vector	Lecture	
	15 Oct: Energy flow due to EM wave - Poynting vector (cont.)	Lecture	
	16 Oct: Energy flow due to EM wave - Poynting vector (cont.)	Lecture	
12 (19-24 Oct 2026)	19 Oct: Holiday (Dussehra)		https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Modern)
	20 Oct: Holiday (Dussehra)		
	21 Oct: Mid Semester Examination (Tentative); Theory	Exam	
	22 Oct: Impedance of a dielectric to EM waves	Lecture	
	23 Oct: Impedance of a dielectric to EM waves (cont.)	Lecture	
13 (26-31 Oct 2026)	26 Oct: Holiday (Maharishi Valmiki Jayanti)		https://www.rajeshkumar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and
	27 Oct: EM waves in a conducting medium and skin depth	Lecture	
	28 Oct: EM waves in a conducting medium and skin depth (cont.)	Lecture	
	29 Oct: EM waves in a conducting medium and skin depth (cont.)	Lecture	
	30-31 Oct (P): Mid Semester Examination (Tentative); Practical (Group 1-2)	Exam	

			Lasers(Dinesh/Mode rn)
14 (02-07 Nov 2026)	02 Nov: Impedance and Refractive index of a dielectric and a conductor	Lecture	https://www.rajeshku-mar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Mode rn)
	03 Nov: Impedance and Refractive index of a dielectric and a conductor (cont.)	Lecture	
	04 Nov: Impedance and Refractive index of a dielectric and a conductor (cont.); Chapter End Discussion (Questions); Assignment 5 Delivery, MCQ Discussion, Feedback Form Delivery	Lecture + GD	
	05 Nov: Revision and Doubt Class,	GD	
	06 Nov: Revision and Doubt Class	GD	
15 (09-14 Nov 2026)	09 Nov: Holiday (Diwali)		https://www.rajeshku-mar.org/teaching , Google Drive (Notes), YouTube Videos, Books: Text Book of Vibrations and Waves by S.P. Puri (Macmillan India Ltd.), Optics and Lasers(Dinesh/Mode rn)
	10 Nov: Assignment 5 Discussion	GD	
	11 Nov: Unit Test 5	Test	
	12 Nov: Revision and Doubt Class	GD	
	13 Nov: Revision and Doubt Class	GD	

NOTE:

- 1. Include Unit Test /Formative Assignments/ Unit or Chapter-wise troubleshoot session appropriately in the lesson plan**

Name & Signature: