LESSON PLAN

Program Name	**Electrical Engg**
Course/Subject Name	**Applied Physics-II**
Course/Subject Code	**BS-104 & BS-106**
Course/Subject Coordinator Name	**Manoj Kumar**

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Applied physics-II & Applied Physics-II lab	TH |3+1(DCS) + 2 (Lab)	40	40	60	60
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			
			(v) Applied Physics-II by Manoj Kumar Saini & Amit Pathak, True Education Publications			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication. \

Teaching Plan:

L. No.	Topic Covered	Proposed Date	Actual Date	Remarks
1	**UNIT - 1: Wave motion and its applications-** Wave motion, transverse and longitudinal waves with examples.	27/01/2026		
2	Definitions of wave velocity, frequency and wavelength and their relationship	28/01/2026		
3	Sound and light waves and their properties	31/01/2026		
4	DCS	02/02/2026		
5	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,Principle of superposition of waves and beat formation	03/02/2026		

6	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	04/02/2026		
7	Acceleration, time period, frequency of SHM, Free, forced and resonant vibrations and their examples.	07/02/2026		
8	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	09/02/2026		
9	Methods to control reverberation time and their applications.	10/02/2026		
10	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	11/02/2026		
11	DCS	16/02/2026		
12	**UNIT - 2: Optics** -Basic optical laws- reflection and refraction	17/02/2026		
13	Refractive index, Images and image formation by mirrors,	18/02/2026		
14	Lens and thin lenses, lens formula, power of lens, magnification	21/02/2026		
15	Total internal reflection, Critical angle and conditions for total internal reflection,applications of total internal reflection in optical fiber.	23/02/2026		
16	Optical Instruments- simple and compound microscope	24/02/2026		
17	Astronomical telescope in normal adjustment and their magnifying power	25/02/2026		
18	DCS	28/02/2026		
19	**UNIT - 3: Electrostatics-** Coulomb's law, unit of charge.	02/03/2026		
20	Electric field, Electric lines of force and their properties.	03/03/2026		
21	Electric flux, Electric potential and potential difference	07/03/2026		
22	Gauss's law	10/03/2026		
23	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor	11/03/2026		
24	Series and parallel combination of capacitors (related numerical)	16/03/2026		
25	DCS	17/03/2026		
26	Dielectric and its effect on capacitance, dielectric break down	18/03/2026		
27	**UNIT - 4: Current Electricity-** Electric Current and its units, Direct and alternating current.	23/03/2026		
28	Resistance and its units, Specific resistance, Conductance, Specific conductance,	24/03/2026		
29	DCS	25/03/2026		
30	Series and parallel combination of resistances.	28/03/2026		
31	Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification	30/03/2026		

32	DCS	31/05/2026		
33	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)	01/04/2026		
34	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)	04/04/2026		
35	Advantages of Electric Energy over other forms of energy.	06/04/2026		
36	DCS	08/04/2026		
37	**UNIT - 5: Electromagnetism-** Types of magnetic materials: dia, para and ferromagnetic with their properties.	13/04/2026		
38	Magnetic field and its units, magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization	18/04/2026		
39	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.	20/04/2026		
40	DCS	21/04/2026		
41	Moving coil galvanometer; principle, construction and working	22/04/2026		
42	Conversion of a galvanometer into ammeter and voltmeter.	25/04/2026		
43	**UNIT - 6: Semiconductor Physics-**Energy bands in solids, Types of materials (insulator, semiconductor, conductor)	27/04/2026		
44	DCS	28/04/2026		
45	Intrinsic and Extrinsic semiconductors. p-n junction,Junction diode and V-I characteristics	29/04/2026		
46	Diode as rectifier – half wave and full wave rectifier (center taped).	02/05/2026		
47	Photocells, Solar cells; working principle and engineering applications.	11/05/2026		
48	DCS	12/05/2026		
49	**UNIT - 7: Modern Physics-** Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission	13/05/2026		
50	Population inversion, pumping methods, optical feedback.	16/05/2026		
51	Types of lasers;Ruby, He-Ne Laser	18/05/2026		
52	Semiconductor laser and engineering and medical applications of lasers. laser characteristics	19/05/2026		
53	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture	20/05/2026		
54	Fiber types, applications in; telecommunication, medical and sensors.	23/05/2026		
55	DCS	25/05/2026		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics	27/02/2026		
A-2	Electrostatics & Current electricity	03/04/2026		
A-3	Semiconductor & Modern Physics	08/05/2026		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of March 2026		
CT-II	Next 30% of the syllabus	2nd week of April 2026		
House Test	80% of the syllabus	2nd week of May2026		

Lab Plan:

Exp. No.	Name of experiment	Actual date		Remarks
		G-1	G-2	
1	To verify laws of reflection from a plane mirror/ interface.			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To determine focal length and magnifying power of a convex lens.			
4	To verify Ohm's law by plotting a graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			
9	To convert a galvanometer into a voltmeter.			

(Signature of Teacher)

(Signature of HOD

LESSON PLAN

Program Name	Mechanical Engg
Course/Subject Name	Applied Physics-II
Course/Subject Code	BS-104 & BS-106
Course/Subject Coordinator Name	Manoj Kumar

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Applied physics-II & Applied Physics-II lab	TH [3+1(DCS) + 2 (Lab)	40	40	60	60
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			
			(v) Applied Physics-II by Manoj Kumar Saini & Amit Pathak, True Education Publications			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication. \

Teaching Plan:

L. No.	Topic Covered	Proposed Date	Actual Date	Remarks
1	**UNIT - 1: Wave motion and its applications-** Wave motion, transverse and longitudinal waves with examples.	28/01/2026		
2	Definitions of wave velocity, frequency and wavelength and their relationship	29/01/2026		
3	Sound and light waves and their properties	30/01/2026		
4	DCS	02/02/2026		
5	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,Principle of superposition of waves and beat formation	04/02/2026		

6	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	05/02/2026		
7	Acceleration, time period, frequency of SHM, Free, forced and resonant vibrations and their examples.	06/02/2026		
8	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	09/02/2026		
9	Methods to control reverberation time and their applications.	11/02/2026		
10	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	12/02/2026		
11	DCS	13/02/2026		
12	**UNIT - 2: Optics** -Basic optical laws- reflection and refraction	16/02/2026		
13	Refractive index, Images and image formation by mirrors,	18/02/2026		
14	Lens and thin lenses, lens formula, power of lens, magnification	19/02/2026		
15	Total internal reflection, Critical angle and conditions for total internal reflection,applications of total internal reflection in optical fiber.	20/02/2026		
16	Optical Instruments- simple and compound microscope	23/02/2026		
17	Astronomical telescope in normal adjustment and their magnifying power	25/02/2026		
18	DCS	26/02/2026		
19	**UNIT - 3: Electrostatics-** Coulomb's law, unit of charge.	27/02/2026		
20	Electric field, Electric lines of force and their properties.	02/03/2026		
21	Electric flux, Electric potential and potential difference	05/03/2026		
22	Gauss's law	06/03/2026		
23	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor	09/03/2026		
24	Series and parallel combination of capacitors (related numerical)	11/03/2026		
25	DCS	12/03/2026		
26	Dielectric and its effect on capacitance, dielectric break down	13/03/2026		
27	**UNIT - 4: Current Electricity-** Electric Current and its units, Direct and alternating current.	16/03/2026		
28	Resistance and its units, Specific resistance, Conductance, Specific conductance,	18/03/2026		
29	DCS	19/03/2026		
30	Series and parallel combination of resistances.	20/03/2026		
31	Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification	23/03/2026		

32	DCS	25/03/2026		
33	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)	27/03/2026		
34	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)	01/04/2026		
35	Advantages of Electric Energy over other forms of energy.	02/04/2026		
36	DCS	04/04/2026		
37	**UNIT - 5: Electromagnetism-** Types of magnetic materials: dia, para and ferromagnetic with their properties.	06/04/2026		
38	Magnetic field and its units, magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization	08/04/2026		
39	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.	09/04/2026		
40	DCS	13/04/2026		
41	Moving coil galvanometer; principle, construction and working	16/04/2026		
42	Conversion of a galvanometer into ammeter and voltmeter.	17/04/2026		
43	**UNIT - 6: Semiconductor Physics-**Energy bands in solids, Types of materials (insulator, semiconductor, conductor)	20/04/2026		
44	DCS	22/04/2026		
45	Intrinsic and Extrinsic semiconductors. p-n junction,Junction diode and V-I characteristics	23/04/2026		
46	Diode as rectifier – half wave and full wave rectifier (center taped).	24/04/2026		
47	Photocells, Solar cells; working principle and engineering applications.	27/04/2026		
48	DCS	29/04/2026		
49	**UNIT - 7: Modern Physics-** Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission	30/04/2026		
50	Population inversion, pumping methods, optical feedback.	11/05/2026		
51	Types of lasers;Ruby, He-Ne Laser	13/05/2026		
52	Semiconductor laser and engineering and medical applications of lasers. laser characteristics	14/05/2026		
53	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture	15/05/2026		
54	Fiber types, applications in; telecommunication, medical and sensors.	18/05/2026		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics	27/02/2026		
A-2	Electrostatics & Current electricity	03/04/2026		
A-3	Semiconductor & Modern Physics	08/05/2026		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of March 2026		
CT-II	Next 30% of the syllabus	2nd week of April 2026		
House Test	80% of the syllabus	2nd week of May2026		

Lab Plan:

Exp. No.	Name of experiment	Actual date		Remarks
		G-1	G-2	
1	To verify laws of reflection from a plane mirror/ interface.			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To determine focal length and magnifying power of a convex lens.			
4	To verify Ohm's law by plotting a graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			
9	To convert a galvanometer into a voltmeter.			

(Signature of Teacher)

(Signature of HOD

LESSON PLAN

Program Name	**CIVIL ENGG**
Course/Subject Name	**Applied Physics-II**
Course/Subject Code	**BS-104 & BS-106**
Course/Subject Coordinator Name	**Amit Pathak & Manoj Kumar**

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	**Applied physics-II & Applied Physics-II lab**	**TH [3+1(DCS) + 2 (Lab)**	**40**	**40**	**60**	**60**
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			
			(v) Applied Physics-II by Manoj Kumar Saini & Amit Pathak, True Education Publications			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication.

Teaching Plan:

L. No.	Topic Covered	Proposed Date	Actual Date	Remarks
1	**UNIT - 1: Wave motion and its applications-** Wave motion, transverse and longitudinal waves with examples.	28/01/2026		
2	Definitions of wave velocity, frequency and wavelength and their relationship	30/01/2026		
3	Sound and light waves and their properties	31/01/2026		
4	DCS	02/02/2026		
5	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,Principle of superposition of waves and beat formation	04/02/2026		
6	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	06/02/2026		
7	Acceleration, time period, frequency of SHM, Free, forced and resonant vibrations and their examples.	07/02/2026		
8	DCS	09/02/2026		

9	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	11/02/2026		
10	Methods to control reverberation time and their applications.	13/02/2026		
11	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	16/02/2026		
12	DCS	18/02/2026		
	UNIT - 2: Optics -Basic optical laws- reflection and refraction	20/02/2026		
13	Refractive index, Images and image formation by mirrors,	21/02/2026		
14	Lens and thin lenses, lens formula, power of lens, magnification	23/02/2026		
15	DCS	25/02/2026		
16	Total internal reflection, Critical angle and conditions for total internal reflection,applications of total internal reflection in optical fiber.	27/02/2026		
17	Optical Instruments- simple and compound microscope	28/02/2026		
18	Astronomical telescope in normal adjustment and their magnifying power	2/03/2026		
19	DCS	06/03/2026		
20	**UNIT - 3: Electrostatics-** Coulomb's law, unit of charge.	07/03/2026		
21	Electric field, Electric lines of force and their properties.	09/03/2026		
22	Electric flux, Electric potential and potential difference	13/03/2026		
23	DCS	16/03/2026		
24	Gauss's law	18/03/2026		
25	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor	20/03/2026		
26	Series and parallel combination of capacitors (related numerical)	23/03/2026		
27	Dielectric and its effect on capacitance, dielectric break down	25/03/2026		
28	**UNIT - 4: Current Electricity-** Electric Current and its units, Direct and alternating current.	27/03/2026		
29	Resistance and its units, Specific resistance, Conductance, Specific conductance,	28/03/2026		
30	DCS	30/03/2026		
31	Series and parallel combination of resistances.	01/04/2026		
32	Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification	04/04/2026		
33	DCS	06/04/2026		
34	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)	08/04/2026		
35	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)	10/04/2026		
36	Advantages of Electric Energy over other forms of energy.	17/04/2026		
37	DCS	18/04/2026		
38	**UNIT - 5: Electromagnetism-** Types of magnetic materials: dia, para and ferromagnetic with their properties.	20/04/2026		
39	Magnetic field and its units, magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization	22/04/2026		
40	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.	24/04/2026		
41	DCS	25/04/2026		
42	Moving coil galvanometer; principle, construction and working	27/04/2026		
43	Conversion of a galvanometer into ammeter and voltmeter.	29/04/2026		
44	**UNIT - 6: Semiconductor Physics-**Energy bands in solids, Types of materials (insulator, semiconductor, conductor)	02/05/2026		
45	DCS	11/05/2026		
46	Intrinsic and Extrinsic semiconductors. p-n junction,Junction diode and V-I characteristics	13/05/2026		
47	Diode as rectifier – half wave and full wave rectifier (center taped).	15/05/2026		
48	Photocells, Solar cells; working principle and engineering applications.	16/05/2026		
49	**UNIT - 7: Modern Physics-** Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission	18/05/2026		
50	Population inversion, pumping methods, optical feedback.	20/05/2026		
51	Types of lasers;Ruby, He-Ne Laser	22/05/2026		

52	Semiconductor laser and engineering and medical applications of lasers. laser characteristics	23/05/2026		
53	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture, Fiber types, applications in; telecommunication, medical and sensors.	25/05/2026		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics	27/02/2026		
A-2	Electrostatics & Current electricity	03/04/2026		
A-3	Semiconductor & Modern Physics	08/05/2026		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of March 2026		
CT-II	Next 30% of the syllabus	2nd week of April 2026		
House Test	80% of the syllabus	2nd week of May2026		

Lab Plan:

Exp. No.	Name of experiment	Actual date		Remarks
		G-1	G-2	
1	To verify laws of reflection from a plane mirror/ interface.			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To determine focal length and magnifying power of a convex lens.			
4	To verify Ohm's law by plotting a graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			
9	To convert a galvanometer into a voltmeter.			

(Signature of Teacher)

(Signature of HOD)

LESSON PLAN

Program Name	Computer & IOT
Course/Subject Name	Applied Physics-II
Course/Subject Code	BS-104 & BS-106
Course/Subject Coordinator Name	Amit Pathak

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Applied physics-II & Applied Physics-II lab	TH [3+1(DCS) + 2 (Lab)	40	40	60	60
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			
			(v) Applied Physics-II by Manoj Kumar Saini & Amit Pathak, True Education Publications			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication.

Teaching Plan:

L. No.	Topic Covered	Proposed Date	Actual Date	Remarks
1	**UNIT - 1: Wave motion and its applications-** Wave motion, transverse and longitudinal waves with examples.	28/01/2026		
2	Definitions of wave velocity, frequency and wavelength and their relationship	29/01/2026		
3	Sound and light waves and their properties	31/01/2026		
4	DCS	02/02/2026		
5	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,Principle of superposition of waves and beat formation	04/02/2026		
6	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	05/02/2026		
7	Acceleration, time period, frequency of SHM, Free, forced and resonant vibrations and their examples.	07/02/2026		

8	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	09/02/2026		
9	Methods to control reverberation time and their applications.	11/02/2026		
10	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	12/02/2026		
11	DCS	16/02/2026		
12	**UNIT - 2: Optics** -Basic optical laws- reflection and refraction	18/02/2026		
13	Refractive index, Images and image formation by mirrors,	19/02/2026		
14	Lens and thin lenses, lens formula, power of lens, magnification	21/02/2026		
15	Total internal reflection, Critical angle and conditions for total internal reflection,applications of total internal reflection in optical fiber.	23/02/2026		
16	Optical Instruments- simple and compound microscope	25/02/2026		
17	Astronomical telescope in normal adjustment and their magnifying power	26/02/2026		
18	DCS	28/02/2026		
19	**UNIT - 3: Electrostatics-** Coulomb's law, unit of charge.	02/03/2026		
20	Electric field, Electric lines of force and their properties.	05/03/2026		
21	Electric flux, Electric potential and potential difference	07/03/2026		
22	Gauss's law	11/03/2026		
23	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor	12/03/2026		
24	DCS	16/03/2026		
25	Series and parallel combination of capacitors (related numerical) Dielectric and its effect on capacitance, dielectric break down	18/03/2026		
26	**UNIT - 4: Current Electricity-** Electric Current and its units, Direct and alternating current.	19/03/2026		
27	Resistance and its units, Specific resistance, Conductance, Specific conductance,Series and parallel combination of resistances.	23/03/2026		
28	DCS	25/03/2026		
29	Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification	28/03/2026		
30	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)	30/03/2026		
31	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)	30/03/2026		
32	Advantages of Electric Energy over other forms of energy.	01/04/2026		
33	**UNIT - 5: Electromagnetism-** Types of magnetic materials: dia, para and ferromagnetic with their properties.	02/04/2026		
34	DCS	04/04/2026		
35	Magnetic field and its units, magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization	06/04/2026		
36	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.	09/04/2026		
37	Moving coil galvanometer; principle, construction and working	13/04/2026		
38	Conversion of a galvanometer into ammeter and voltmeter.	16/04/2026		
39	DCS	18/04/2026		
40	**UNIT - 6: Semiconductor Physics-**Energy bands in solids, Types of materials (insulator, semiconductor, conductor)	22/04/2026		
41	Intrinsic and Extrinsic semiconductors. p-n junction,Junction diode and V-I characteristics	23/04/2026		
42	Diode as rectifier – half wave and full wave rectifier (center taped).	25/04/2026		
43	DCS	27/04/2026		
44	Photocells, Solar cells; working principle and engineering applications.	29/04/2026		
45	**UNIT - 7: Modern Physics-** Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission	30/04/2026		
46	Population inversion, pumping methods, optical feedback.	02/05/2026		
47	DCS	11/05/2026		
48	Types of lasers;Ruby, He-Ne Laser	13/05/2026		
49	Semiconductor laser and engineering and medical applications of lasers. laser characteristics	14/05/2026		

50	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture	16/05/2026		
51	Fiber types, applications in; telecommunication, medical and sensors.	18/05/2026		
52	DCS	20/05/2026		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics	27/02/2026		
A-2	Electrostatics & Current electricity	03/04/2026		
A-3	Semiconductor & Modern Physics	08/05/2026		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of March 2026		
CT-II	Next 30% of the syllabus	2nd week of April 2026		
House Test	80% of the syllabus	2nd week of May2026		

Lab Plan:

Exp. No.	Name of experiment	Actual date		Remarks
		G-1	G-2	
1	To verify laws of reflection from a plane mirror/ interface.			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To determine focal length and magnifying power of a convex lens.			
4	To verify Ohm's law by plotting a graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			
9	To convert a galvanometer into a voltmeter.			

(Signature of Teacher)

(Signature of HOD)

LESSON PLAN

Program Name	**COMPUTER ENGG**
Course/Subject Name	**Applied Physics-II**
Course/Subject Code	**BS-104 & BS-106**
Course/Subject Coordinator Name	**Amit Pathak**

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	**Applied physics-II & Applied Physics-II lab**	**TH [3+1(DCS) + 2 (Lab)**	**40**	**40**	**60**	**60**
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			
			(v) Applied Physics-II by Manoj Kumar Saini & Amit Pathak, True Education Publications			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication. \

Teaching Plan:

L. No.	Topic Covered	Proposed Date	Actual Date	Remarks
1	**UNIT - 1: Wave motion and its applications-** Wave motion, transverse and longitudinal waves with examples.	27/01/2026		
2	Definitions of wave velocity, frequency and wavelength and their relationship	29/01/2026		
3	Sound and light waves and their properties	30/01/2026		
4	DCS	02/02/2026		
5	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,Principle of superposition of waves and beat formation	03/02/2026		

6	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity	05/02/2026		
7	Acceleration, time period, frequency of SHM, Free, forced and resonant vibrations and their examples.	06/02/2026		
8	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound	09/02/2026		
9	Methods to control reverberation time and their applications.	10/02/2026		
10	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.	12/02/2026		
11	DCS	13/02/2026		
12	**UNIT - 2: Optics** -Basic optical laws- reflection and refraction	16/02/2026		
13	Refractive index, Images and image formation by mirrors,	17/02/2026		
14	Lens and thin lenses, lens formula, power of lens, magnification	19/02/2026		
15	Total internal reflection, Critical angle and conditions for total internal reflection,applications of total internal reflection in optical fiber.	20/02/2026		
16	Optical Instruments- simple and compound microscope	23/02/2026		
17	Astronomical telescope in normal adjustment and their magnifying power	24/02/2026		
18	DCS	26/02/2026		
19	**UNIT - 3: Electrostatics-** Coulomb's law, unit of charge.	27/02/2026		
20	Electric field, Electric lines of force and their properties.	02/03/2026		
21	Electric flux, Electric potential and potential difference	03/03/2026		
22	Gauss's law	5/03/2026		
23	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor	06/03/2026		
24	Series and parallel combination of capacitors (related numerical)	09/03/2026		
25	DCS	12/03/2026		
26	Dielectric and its effect on capacitance, dielectric break down	13/03/2026		
27	**UNIT - 4: Current Electricity-** Electric Current and its units, Direct and alternating current.	16/03/2026		
28	Resistance and its units, Specific resistance, Conductance, Specific conductance,	17/03/2026		
29	DCS	19/03/2026		
30	Series and parallel combination of resistances.	20/03/2026		
31	Factors affecting resistance of a wire, carbon resistances and colour coding, Ohm's law and its verification	23/03/2026		

32	DCS	24/03/2026		
33	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)	27/03/2026		
34	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)	30/03/2026		
35	Advantages of Electric Energy over other forms of energy.	31/03/2026		
36	DCS	02/04/2026		
37	**UNIT - 5: Electromagnetism-** Types of magnetic materials: dia, para and ferromagnetic with their properties.	06/04/2026		
38	Magnetic field and its units, magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization	07/04/2026		
39	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.	09/04/2026		
40	DCS	10/04/2026		
41	Moving coil galvanometer; principle, construction and working	16/04/2026		
42	Conversion of a galvanometer into ammeter and voltmeter.	17/04/2026		
43	**UNIT - 6: Semiconductor Physics-**Energy bands in solids, Types of materials (insulator, semiconductor, conductor)	20/04/2026		
44	DCS	21/04/2026		
45	Intrinsic and Extrinsic semiconductors. p-n junction,Junction diode and V-I characteristics	23/04/2026		
46	Diode as rectifier – half wave and full wave rectifier (center faped).	24/04/2026		
47	Photocells, Solar cells; working principle and engineering applications.	27/04/2026		
48	DCS	28/04/2026		
49	**UNIT - 7: Modern Physics-** Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission	30/04/2026		
50	Population inversion, pumping methods, optical feedback.	11/05/2026		
51	Types of lasers;Ruby, He-Ne Laser	12/05/2026		
52	Semiconductor laser and engineering and medical applications of lasers, laser characteristics	14/05/2026		
53	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture	15/05/2026		
54	Fiber types, applications in; telecommunication, medical and sensors.	18/05/2026		
55	DCS	19/05/2026		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics	27/02/2026		
A-2	Electrostatics & Current electricity	03/04/2026		
A-3	Semiconductor & Modern Physics	08/05/2026		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	2nd week of March 2026		
CT-II	Next 30% of the syllabus	2nd week of April 2026		
House Test	80% of the syllabus	2nd week of May2026		

Lab Plan:

Exp. No.	Name of experiment	Actual date		Remarks
		G-1	G-2	
1	To verify laws of reflection from a plane mirror/ interface.			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To determine focal length and magnifying power of a convex lens.			
4	To verify Ohm's law by plotting a graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			
9	To convert a galvanometer into a voltmeter.			

(Signature of Teacher)

(Signature of HOD)