

Anjuman Islam Janjira Degree College of Science

Lokmanya Tilak Road, Murud-Janjira dist. Raigad. Maharashtra 402401

Academic Calendar

Teaching Plan for Semester-I Year: 2024-2025

Course	F.Y.B.Sc. (Physics) NEP20202 (Vocational Skill Course)		Vertical	VSC
			04	
Course Code	USPHPVSC1			
Title	LABORATORY EQUIPMENT MAINTENANCE			
Credits	2 Credits			
Name of the Faculty	Mr. Altaf Isuf Fakir			
Month	Date	Topic	Lectures	Lecture per Month
	UNIT I			
Jul-24	4/7/2024	Testing of Passive Electronic Components using Digital Multimeter (DMM)		04
	11/7/2024	Passive components - resistors, capacitors, inductors, failures in fixed resistors, testing of resistors		
	18/7/2024	Passive components - resistors, capacitors, inductors, failures in fixed resistors, testing of resistors		
	25/7/2024	variable resistors, variable resistor as potentiometer, measuring resistors using color codes		
Aug-24	1/8/2024	variable resistors, variable resistor as potentiometer, measuring resistors using color codes		04
	8/8/2024	Testing of various types of capacitors & inductors		
	22/8/2024	Testing of various types of capacitors & inductors		
	29/8/2024	Testing of semiconductor devices, soldering and troubleshooting		
Sep-24	5/9/2024	Testing of semiconductor devices, soldering and troubleshooting		04
	12/9/2024	Semiconductor devices: diode, bipolar junction transistors etc, causes & types of failures in semiconductor devices.		
	19/9/2024	Semiconductor devices: diode, bipolar junction transistors etc, causes & types of failures in semiconductor devices.		
	26/9/2024	Basics of soldering: soldering alloy, soldering iron, soldering & desoldering, dry soldering and good contact.		
Oct-24	3/10/2024	Basics of soldering: soldering alloy, soldering iron, soldering & desoldering, dry soldering and good contact.		03
	10/10/2024	Laboratory Power supplies – basic testing and troubleshooting		
	17/10/2024	Laboratory Power supplies – basic testing and troubleshooting		
	24/10/2024	Revision		
	31/10/2024	Exam Preparation and Revisions		
		Tot. Lec.		15

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Course	F.Y.B.Sc. (Physics) NEP20202 (Vocational Skill Course) Vertical 04			VSC		
Course Code	USPHPVSC1					
Title	LABORATORY EQUIPMENT MAINTENANCE					
Credits	2 Credits					
Name of the Faculty	Mr. Altaf Isuf Fakir					
Month	Date	Topic	Batch	Lecture per Month		
Jul-24	4/7/2024	To identify different types of Wires, power cables, probes, fuses used in the laboratory and check their continuity using DMM	A	08		
	11/7/2024	Identification of various types passive components				
	18/7/2024	Measurement of resistors using colour codes & DMM and testing of capacitors and inductors.				
	25/7/2024	Identification of various types of semiconductor devices				
Aug-24	1/8/2024	Testing of semiconductor devices: diode, bipolar junction transistors, Field effect transistors etc.		A	08	
	8/8/2024	Soldering and desoldering of electronic components in a given circuit				
	22/8/2024	Mounting simple circuit on PCB and testing.				
	29/8/2024	Troubleshooting a given circuit.				
Sep-24	5/9/2024	Study of a.c power supply & troubleshooting			A	08
	12/9/2024	Study of d.c power supply and troubleshooting				
	19/9/2024	Revision				
	26/9/2024	Revision				
Oct-24	3/10/2024	Revision	A			06
	10/10/2024	Revision				
	17/10/2024	Exam Preparation and Revisions				
		Tot. Lec.				30

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Practical Plan for Semester-I Year: 2024-2025

Course	F.Y.B.Sc. (Physics) NEP20202 (Skill Enhancement Course)		V4	SEC		
Course Code	USPHPSEC1					
Title	Basic Instrumentation skills and Basic Mathematical Skills for Physics					
Credits	2 Credits					
Name of the Faculty	Mr. Altaf Isuf Fakir		Batch	Lecture per Month		
Month	Date	Topic				
Jul-24	6/7/2024	Study and use of Vernier Callipers & Micrometer Screw Gauge, Study and use of Travelling Microscope.	A	12		
	13/7/2024	Study and use of Spectrometer.				
	20/7/2024	Study and determination of Focal length of a convex lens.				
	27/7/2024	Fundamentals of Electronic Component, Use of Multimeter (analog, Digital), Voltmeter, Ammeter.				
Aug-24	3/8/2024	Use of CRO - voltage (AC, DC), Frequency and Phase measurement.		A	15	
	10/8/2024	Different types of power supplies., Logic gate IC Testing.				
	17/8/2024	Soldering electronic circuits.				
	24/8/2024	Study and use of Thevenin's theorem. Building Electronic Circuits using Breadboard.				
	31/8/2024	Graph plotting - plotting of graphs and finding slope and intercept.				
Sep-24	14/9/2024	Graph plotting - semi log graph paper.			A	09
	21/9/2024	Theory of errors and calculating-Error for given data				
	28/9/2024	Use of scientific Calculator, Basic trigonometry and its applications in physics				
Oct-24	5/10/2024	Concept of logarithm and its application to Physics	A			09
	19/10/2024	Concept of derivatives and its application to Physics				
		Concept of integration and its application to Physics				
	26/10/2024	Concept of differential equations (1st order) and its application to Physics				
		Tot. Lec.				45

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Academic Calendar

Teaching Plan for Semester-III Year: 2024-2025

Course	S.Y.B.Sc. (Physics)			Paper: I	
Course Code	USPH301				
Title	THERMODYNAMICS AND TEMPERATURE TRANSDUCERS				
Credits	2 Credits (45 Lectures)				
Name of the Faculty	Mr. Altaf Isuf Fakir		Lectures	Lecture per Month	
Month	Date	Topic			
	UNIT I			5	
Jun-24	12/6/2024	Introductory lecture (Bridge Course)			
	18/06/2024	Reversible and irreversible process, Heat Engines, Carnot's cycle			
	18/06/2024	Effective way to increase Efficiency, Carnot's Engines and refrigerator			
	24/06/2024	Coefficient of performance, Second Law of Thermodynamics - Statements			
	25/06/2024	Carnot Theorem, Steam Engine			
	25/06/2024	Otto Engine, Diesel Engine			
Jul-24	1/7/2024	Otto Engine, Diesel Engine		13	
	2/7/2024	Maxwell's thermodynamics relation			
	2/7/2024	Maxwell's thermodynamics relation			
	8/7/2024	Some Applications of the Momentum Principle , System of Variable Mass			
	9/7/2024	Some Applications of the Momentum Principle , System of Variable Mass			
	9/7/2024	Applications of Maxwell's thermodynamic relations: Specific Heat Equation			
	15/7/2024	Joule Thomson Cooling			
	22/7/2024	Joule Thomson Cooling			
	24/7/2024	Temperature Change in Adiabatic Process			
	24/7/2024	Clausius – Clapeyron equation			
	UNIT-II				
	29/7/2024	Concept of Entropy, Change in Entropy			
	31/7/2024	Change in Entropy in Adiabatic Process			
	31/7/2024	Change in Entropy in Reversible cycle, Principle of increase of Entropy			
UNIT : III INSTRUMENTATION					
Aug-24	5/8/2024	Change in Entropy in Irreversible Process, T – S diagram, Physical Significance of Entropy		12	
	6/8/2024	Entropy of a perfect gas, Kelvin's thermodynamic Scale of temperature			
	6/8/2024	The size of a Degree, Zero of Absolute scale			
	12/8/2024	Identity of perfect Gas Scale and Absolute scale			

	13/8/2024	Third Law of thermodynamics, Zero-point energy		
	13/8/2024	Negative temperatures		
	19/8/2024	Heat Death of the Universe.		
	20/8/2024	Low temp physics: Different methods of liquefaction of gases		
	20/8/2024	Method of freezing, Cooling by Evaporation under reduced Pressure		
	26/8/2024	Cooling by Adiabatic Expansion		
	27/8/2024	Principle of Regenerative Cooling		
	27/8/2024	Liquefaction of Oxygen		
	UNIT: III			
Sep-24	2/9/2024	Introduction to Temperature Transducers		9
	3/9/2024	Resistance Temperature Detector (RTD)		
	3/9/2024	Platinum Thin Film Sensors,		
	17/9/2024	Resistance Thermometer: its types		
	17/9/2024	working principles and applications, Thermistors		
	23/9/2024	Thermocouple		
	24/9/2024	Semiconductor Diode Temperature Sensor		
	24/9/2024	Semiconductor Diode Temperature Sensor		
	30/9/2024	IC Type Sensor		
Oct-24	1/10/2024	Pyrometers		6
	1/10/2024	Total Radiation Pyrometer (TRP)		
	7/10/2024	Total Radiation Pyrometer (TRP)		
	8/10/2024	Infrared Pyrometers		
	8/10/2024	Optical Pyrometer		
	14/10/2024	Ultrasonic Temperature Transducer		
		Revision		
		Exam Preparation and Revisions		
		Tot. Lec.		45

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Academic Calendar				
Teaching Plan for Semester-III Year: 2024-2025				
Course	S.Y.B.Sc. (Physics)		Paper: II	
Course Code	USPH302			
Title	ELECTRONICS			
Credits	2 Credits (45 Lectures)			
Name of the Faculty	Mr. Altaf Isuf Fakir		Lectures Lecture per Month	
Month	Date	Topic		
	UNIT I		6	
Jun-24	15/06/2024	Faithful amplification		
	19/06/2024	Transistor Biasing		
	22/06/2024	Inherent Variations of Transistor Parameters		
	24/06/2024	Essentials of a Transistor Biasing Circuit		
	26/06/2024	Methods of Transistor Biasing		
	29/06/2024	Base Resistor Method		
Jul-24	1/7/2024	Emitter Bias Circuit	13	
	3/7/2024	Circuit analysis of Emitter Bias		
	6/7/2024	Voltage Divider Bias Method.		
	8/7/2024	Concept of amplification, amplifier notations,		
	10/7/2024	current gain, Voltage gain, power gain		
	13/07/2024	input resistance, output resistance		
	15/07/2024	frequency response, Decibel gain and Band width		
	20/07/2024	General theory of feedback		
	22/07/2024	reasons for negative feedback, loop gain		
	24/07/2024	Numericals		
		UNIT-II		
	27/07/2024	Oscillators: Introduction		
	29/07/2024	effect of positive feedback		
	31/07/2024	Requirements for oscillations		
Aug-24	3/8/2024	phase shift oscillator	13	
	5/8/2024	Wien Bridge Oscillator		
	7/8/2024	Colpitt's oscillator.		
	10/8/2024	Introduction, Schematic symbol of OPAMP		
	12/8/2024	Output voltage from OPAMP, Bandwidth of an OPAMP		
	14/8/2024	Slew rate, Frequency Response of an OPAMP		
	17/8/2024	Virtual ground concept , gain , offset voltage and current		
	19/8/2024	OPAMP with Negative feedback, Inverting Amplifier, Non-Inverting Amplifier		
21/8/2024	Voltage Follower, Summing Amplifier, Applications of Summing amplifier			

	24/8/2024	OPAMP Integrator and Differentiator		
	26/8/2024	Critical frequency of Integrator, Comparator.		
	28/8/2024	Numerical		
	UNIT: III			
	31/8/2024	Flip Flops : RS Flip-Flops		
Sep-24	2/9/2024	Gated FlipFlops		9
	4/9/2024	Edge-Triggered RS Flip-Flop		
	14/9/2024	Edge- Triggered D Flip-Flop,		
	18/9/2024	EdgeTriggered J-K Flip-Flop		
	21/9/2024	JK Master- Slave Flip-Flops.		
	23/9/2024	SISO		
	25/9/2024	SIPO		
	28/9/2024	PISO		
	30/9/2024	PIPO		
Oct-24	5/10/2024	Asynchronous counter -3 bit		5
	7/10/2024	Synchronous counter only mod 8		
	9/10/2024	Synchronous counter only mod 8		
	14/10/2024	Decade Counters Mod 5 and Mod 10		
	16/10/2024	Numericals		
		Revision		
		Exam Preparation and Revisions		
			Tot. Lec.	

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Academic Calendar

Teaching Plan for Semester-III Year: 2024-2025

Course	S.Y.B.Sc. (Physics)			Paper: III	
Course Code	USPH303				
Title	MATHEMATICAL METHODS & APPLIED PHYSICS - I				
Credits	2 Credits (45 Lectures)				
Name of the Faculty	Mr. Altaf Isuf Fakir		Lectures	Lecture per Month	
Month	Date	Topic			
	UNIT I			7	
Jun-24	13/06/2024	Differential Equations: Introduction			
	19/06/2024	Differential Equations: Introduction			
	20/06/2024	first order homogeneous DE			
	20/06/2024	first order homogeneous DE			
	26/06/2024	Numericals on Ordinary differential equations:			
	27/06/2024	Ordinary differential equations			
	27/06/2024	non- homogeneous DE with variable coefficients,			
Jul-24	3/7/2024	Variable separable method		12	
	4/7/2024	exact differentials equation			
	4/7/2024	General first order Linear Differential equation			
	10/7/2024	Numericals on General first order Linear DE			
	11/7/2024	2 ND -order homogeneous DE with const.coe.			
	11/7/2024	2 ND -order homogeneous DE with const.coe.			
	18/07/2024	Problems depicting physical situations like LC and RL circuits.			
	18/07/2024	Numericals			
	UNIT : II				
	24/07/2024	2 nd -order non homogeneous equ. with const. coe.			
	25/07/2024	Numericals			
	25/07/2024	partial differential equations			
	31/07/2024	Numericals on partial differential equations			
	Aug-24	1/8/2024	some important partial DE in physics		
1/8/2024		method of separation of variables			
7/8/2024		method of separation of variables			
8/8/2024		Numericals on method of separation of variables			
8/8/2024		Applications of Partial differential Equation:			
14/08/2024		Applications of Partial differential Equation:			
21/08/2024		Laplace's equation in two dimensions,			
22/08/2024		Laplace's equation in two dimensions,			
22/08/2024		Numericals on Laplace's equation in two dimensions			
28/08/2024		Solution of wave equation and Helmholtz's equation.			
29/08/2024	Solution of wave equation and Helmholtz's equation.				

		UNIT III		
	29/8/2024	Acoustics of Buildings: Reverberation,		
Sep-24	4/9/2024	Explanation and Importance of Sabine's formula,		11
	5/9/2024	Absorption Coefficient,		
	5/9/2024	Factors Affecting Acoustics of Buildings,		
	12/9/2024	Sound Distribution in an Auditorium.		
	12/9/2024	Radio communication: Basics of Communication:		
	18/9/2024	types of communication system:		
	19/9/2024	types of communication system:		
	19/9/2024	base band and broad band communication		
	25/9/2024	Noise concept and types, signal to noise ratio, noise figure, noise temperature		
	26/9/2024	Amplitude Modulation: Need of modulation, concept of modulation, AM waveform,		
	26/9/2024	mathematical expression of AM, AM Receiver: TRF and super heterodyne receiver.		
Oct-24	3/10/2024	Frequency Modulation: Definition, mathematical representation, frequency spectrum.		3
	3/10/2024	Frequency Modulation: Definition, mathematical representation, frequency spectrum.		
	9/10/2024	Concept of ASK, PSK, FSK, PAM, PWM, PPM, PCM.		
		Revision		
		Exam Preparation and Revisions		
		Tot. Lec.		45

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Academic Calendar						
Practical Plan for Semester-III Year: 2024-2025						
Course	S.Y.B.Sc. (Physics)			Paper: III		
Course Code	USPHP3					
Title	PHYSICS PRACTICAL COURSE					
Credits	2					
Name of the Faculty	Mr. Altaf Isuf Fakir			Batch	Lecture per Month	
Month	Day	Topic				
Jun-24	20/06/2024	Helmholtz resonator		A	18	
	21/06/2024	Thevenin's Theorem:				
	22/06/2024	Study of MS-JK flip flop				
	27/06/2024	Helmholtz resonator				
	28/06/2024	Thevenin's Theorem:				
	29/06/2024	Study of MS-JK flip flop				
Jul-24	04/07/2024	Y by bending			A	36
	05/07/2024	Norton's Theorem				
	06/07/2024	Half adder and full adder				
	11/07/2024	Y by bending				
	12/07/2024	Norton's Theorem				
	13/07/2024	Half adder and full adder				
	18/07/2024	Flat spiral spring (n)				
	19/07/2024	Opamp: Inverting amplifier				
	20/07/2024	Opamp: Differentiator				
	25/07/2024	Verification of Stefan's law				
	26/07/2024	Non-inverting amplifier				
27/07/2024	Opamp: Differentiator					
Aug-24	01/08/2024	Verification of Stefan's law		A	42	
	02/08/2024	CE amplifier: variation of gain with load				
	03/08/2024	Opamp: Integrator				
	08/08/2024	Soldering technique				
	09/08/2024	CE amplifier				
	10/08/2024	Opamp: Integrator				
	16/08/2024	Maximum Power Transfer Theorems				
	17/08/2024	Wiring of a simple circuit using bread board				
	22/08/2024	Use of DMM				
	23/08/2024	Maximum Power Transfer Theorems				
	24/08/2024	Wiring of a simple circuit using bread board				
	29/08/2024	Use of DMM				
	30/08/2024	Use of oscilloscope				
31/08/2024	Radius of ball bearings (single pan balance)					
Sep-24	12/09/2024	PC simulations: graph, curve fitting, etc		A	27	
	13/09/2024	Revision of Thevenin's Theorem: & Norton's Theorem				
	14/09/2024	Revision of Study of MS-JK flip flop				
	19/09/2024	Revision of Y by bending				
	20/09/2024	Revision of Opamp: Inverting & Non-inverting				
	21/09/2024	Revision of Study of MS-JK flip flop				
26/09/2024	Revision of Verification of Stefan's law					

	27/09/2024	Revision of CE amplifier& Maximum Power Transfer Theorems		
	28/09/2024	Revision of Half adder and full adder (7486, 7408)		
Oct-24	03/10/2024	Journal Checking		09
	04/10/2024	Journal Certification		
	05/10/2024	Journal Certification		
			Tot. Lec.	