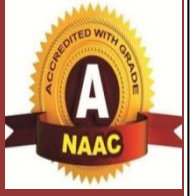




**Yashwantrao Chavan Maharashtra Open University**

**School of Sciences**

(Formerly School of Architecture, Science and Technology)



# **Counselling Schedule for A.Y. 2023-24**

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## **Brief Contents**

<b>List of Programme .....</b>	<b>2</b>
<b>V135: Diploma In Environmental Science {2021 Pattern}.....</b>	<b>5</b>
<b>V137: Diploma In Statistics {2021 Pattern} .....</b>	<b>9</b>
<b>V92: Bachelor of Science (Physics, Chemistry, Mathematics) {2015 Pattern} .....</b>	<b>15</b>
<b>V100: Bachelor of Science (Botany, Chemistry, Zoology){2023Pattern} ...</b>	<b>39</b>
<b>V130: Master of Science (Mathematics){2021Pattern} .....</b>	<b>49</b>
<b>V136: Master of Science (Environmental Science) {2021 Pattern} .....</b>	<b>53</b>
<b>V141: Master in Science (Physics){2022 Pattern}.....</b>	<b>57</b>
<b>V142: Master in Chemistry (Chemistry) {2022 Pattern}.....</b>	<b>64</b>
<b>V143: Master in Science (Zoology) {2022 Pattern} .....</b>	<b>71</b>
<b>V144: Master in Science (Botany) {2022 Pattern} .....</b>	<b>79</b>
<b>V151: Master in Science (Mathematics) {2023 Pattern}.....</b>	<b>86</b>
<b>V152: Master in Science (Environmental Science) {2023 Pattern} .....</b>	<b>92</b>
<b>V153: Master in Science (Physics) {2023 Pattern} .....</b>	<b>98</b>
<b>V154: Master in Science (Chemistry) {2023 Pattern} .....</b>	<b>105</b>
<b>V155: Master in Science (Zoology) {2023 Pattern}.....</b>	<b>111</b>
<b>V156: Master in Science (Botany) {2023 Pattern} .....</b>	<b>117</b>

**SCHOOL OF ARCHITECTURE, SCIENCE AND TECHNOLOGY, YCMOU, NASHIK**  
**STUDY CENTERS COUNSELING SCHEDULES FOR A.Y. 2023-24**

**LIST OF PROGRAMME**

SN	Name of Programme	Programme code	Level of Programme	Modes employed by the institution to provide academic counseling services for theory courses	Modes employed by the institution to provide academic counseling services for practical /Project courses	Year	Semester
1	Diploma in Environment Science	V135	Diploma	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling	First	1 & 2
2	Diploma in Statistics	V137	Diploma	1. Face to face counseling sessions	1. Face-to-face Counseling Sessions for interaction, problem solving and 2. Conduction of practical activities at Study Center	First	1 & 2
3	Bachelor of Science ( Physics, Chemistry, Mathematics)	V92	UG	1. Face to face counseling sessions	1. Face to face counseling sessions and 6. Laboratory based counseling	First, Second & Third	1,2,3,4,5 & 6
4	Bachelor of Science ( Botany, Chemistry, Zoology)	V100	UG	1. Face to face counseling sessions	1. Face to face counseling sessions and 6. Laboratory based counseling	First	1 & 2
5	Master of Science.			1. Face to face counseling	1. Face to face counseling	Second	

	(Mathematics) (2021 Pattern)	V130	PG	sessions	sessions and 2.		3 & 4
6	Master of Science. (EVS) (2021 Pattern)	V136	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2.	Second	3 & 4
7	Master of Science. (Physics)(2022 Pattern)	V141	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling	Second	3 & 4
8	Master of Science. (Chemistry)(2022 Pattern)	V142	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling	Second	3 & 4
9	Master of Science. (Botany)(2022 Pattern)	V143	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling	Second	3 & 4
10	Master of Science. (Zoology)(2022 Pattern)	V144	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling	Second	3 & 4
11	Master of Science. (Mathematics)(2023 Pattern)	V151	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar 4. OJT /Field Project	First	1 & 2
12	Master of Science. (EVS)(2023 Pattern)	V152	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar	First	1 & 2

					4. OJT /Field Project		
13	Master of Science. (Physics)(2023 Pattern)	V153	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar 4. OJT /Field Project	First	1 & 2
14	Master of Science. (Chemistry)(2023 Pattern)	V154	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar 4. OJT /Field Project	First	1 & 2
14	Master of Science. (Zoology)(2023 Pattern)	V155	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar 4. OJT /Field Project	First	1 & 2
15	Master of Science. (Botany)(2023 Pattern)	V156	PG	1. Face to face counseling sessions	1. Face to face counseling sessions and 2. Laboratory based counseling 3. Seminar 4. OJT /Field Project	First	1 & 2

## V135: DIPLOMA IN ENVIRONMENTAL SCIENCE {2021 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	Sem01: Course 1: Environmental Science and Biology	September	03/09/2023	10.30am- 11.30am	Theory	Background and scope of environmental science:
2.		September	10/09/2023			Use of technology, media and people in environmental science, decision making and applications of Environmental science
3.		September	17/09/2023			Human impact on environment and its consequences
4.		September	24/09/2023			Definition of Ecology and sub divisions
5.		October	01/10/2023			Community Ecology
6.		October	08/10/2023			Biomes
7.		October	22/10/2023			Principal and Scope of Biology
8.		October	29/10/2023			Classification of ecosystem
9.		November	05/11/2023			Succession
10.		November	19/11/2023			Forest ecology
11.		November	26/11/2023			Effect of fire on forest ecosystem
12.		December	03/12/2023			Marine environment
13.	Sem01: Course 2: Environmental Education, Polices and Legislation	September	03/09/2023	11.30am- 12.30pm	Theory	Environmental Education
14.		September	10/09/2023			Environmental Policy
15.		September	17/09/2023			State of India's Environment( with respect to)
16.		September	24/09/2023			Emerging environmental concerns in India
17.		October	01/10/2023			Awareness of Society with respect to global terminology
18.		October	08/10/2023			Environmental Awareness
19.		October	22/10/2023			Global Environment Conservation Strategy -1
20.		October	29/10/2023			Global Environment Conservation Strategy - 2
21.		November	05/11/2023			Environmental Conventions and Agreements
22.		November	19/11/2023			Environmental Acts-1

23.		November	26/11/2023			Environmental Acts-2
24.		December	03/12/2023			The National Green Tribunal Act, 2010
25.	Sem01: Course 3: Natural Resources and Their Conservation	September	03/09/2023	12.30pm- 1.30pm	Theory	Definition of resources, biotic and abiotic resources
26.		September	10/09/2023			Biodiversity: Conservation, Global and National Concerns
27.		September	17/09/2023			Biodiversity National Concerns
28.		September	24/09/2023			Wildlife management and conservation
29.		October	01/10/2023			Concept of sustainable use of wildlife
30.		October	08/10/2023			Indian ethos of wildlife conservation
31.		October	22/10/2023			Conservation of Wetlands, Watersheds, Ground water, Surface water
32.		October	29/10/2023			Land use, land cover and soil conservation
33.		November	05/11/2023			Methods of soil conservation and practices
34.		November	19/11/2023			Forest resources, plantations, social forestry
35.		November	26/11/2023			Human population growth and increasing demand for resources
36.		December	03/12/2023			Natural resource -conservation and Natural resource Accounting
37.	Sem01: Course 4: Lab Activities on Course 1, Course 2 and Course 3	September	03/09/2023	2.30pm – 4.30pm	Practical	Study of ecological pyramids (at least four)
38.		September	10/09/2023			Study of food chain – Any one example of fresh water, marine water and terrestrial food chain.
39.		September	17/09/2023			Estimation of Biomass of a given area
40.		September	24/09/2023			Study of pond ecosystem
41.		October	01/10/2023			Estimation of Dissolve oxygen(DO) of water sample
42.		October	08/10/2023			Estimation of CO <sub>2</sub> of given water sample
43.		October	22/10/2023			Estimation of hardness of water
44.		October	29/10/2023			Preparation of bio-fertilizer and study of its applications
45.		November	05/11/2023			Determination of SAR (sodium absorption ratio) of soil
46.		November	19/11/2023			Study of land degradation
47.		November	26/11/2023			Estimation of Ni & Co elements from soil sample
48.		December	03/12/2023			Measurement of intensity of solar radiations by Lux meter

49.	Sem02: Course 5: Environmental Sustainability [MOOC]	February	04/02/2024	10.30am- 11.30am	Theory	Introduction to environment and society
50.		February	11/02/2024			Introduction to Terms of Significance
51.		February	18/02/2024			Trade & Environment- Concepts, issues and recent developments
52.		February	25/02/2024			The Case of Western Ghats- The Gadgil Report
53.		March	03/03/2024			The Forest Conservation Act, 1980
54.		March	10/03/2024			Managing our environment for sustainability- Solar Energy
55.		March	17/03/2024			Live Examples of Environment Friendly Technologies
56.		March	31/03/2024			Sensitivity towards environment and environmental issues
57.		April	07/04/2024			Awareness through knowledge
58.		April	28/04/2024			Local strategies and innovations in Environmental Protection
59.		May	05/05/2024			Active Participation in the resolution of Environmental Challenges
60.		May	12/05/2024			Motivational Sustainability Environmental Sustainability – the conclusion
61.	Sem02: Course 6: Environmental Chemistry	February	04/02/2024	11.30am- 12.30pm	Theory	Fundamentals of Environmental Chemistry
62.		February	11/02/2024			Soil Chemistry
63.		February	18/02/2024			Properties of water, water pollutants
64.		February	25/02/2024			Chemical composition of Air and Water
65.		March	03/03/2024			Radioactivity, it's Types, Sources and Hazards
66.		March	10/03/2024			Biological effects of radiation exposure
67.		March	17/03/2024			Water treatment and environmental chemistry 1
68.		March	31/03/2024			Water treatment and environmental chemistry 2
69.		April	07/04/2024			Tertiary treatment and Advanced waste water treatments
70.		April	28/04/2024			Classical Methods
71.		May	05/05/2024			Toxic chemicals
72.		May	12/05/2024			Biochemical aspects
73.	Sem02: Course 7:	February	04/02/2024			Principles
74.		February	11/02/2024			Interior of the Earth, earth's materials
75.		February	18/02/2024			The earth systems and biosphere
76.		February	25/02/2024			Elements
77.		March	03/03/2024			Biochemical factors



78.	Environmental geosciences and Computer Applications	March	10/03/2024	12.30pm- 1.30pm	Theory	The Ocean Environment
79.		March	17/03/2024			Climate
80.		March	31/03/2024			Remote Sensing in Environmental Monitoring
81.		April	07/04/2024			Geographical Information System (GIS)
82.		April	28/04/2024			Information and communication technology in Environmental Science
83.		May	05/05/2024			Introduction to web browsing
84.		May	12/05/2024			Computer applications in environmental modelling
85.		Sem02: Course 8: Lab Activities on Course 5, Course 6 and Course 7	February			04/02/2024
86.	February		11/02/2024	Analysis of Total hardness of water		
87.	February		18/02/2024	Estimation of halides in water samples		
88.	February		25/02/2024	Estimation of sulphate in water samples		
89.	March		03/03/2024	Estimation of carbon di-oxide in water samples		
90.	March		10/03/2024	Estimation of non-respirable dust in air using dust samples		
91.	March		17/03/2024	Studies of models of various rock types		
92.	March		31/03/2024	Study of various ground water sources and its quality		
93.	April		07/04/2024	Study of various meteorological parameters and climate		
94.	April		28/04/2024	Student Tests		
95.	May		05/05/2024	Sample manuscript writing		
96.	May		12/05/2024	Study and use of various computer applications/models for environmental use		

## V137: DIPLOMA IN STATISTICS {2021 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	Sem01: DSS011:Basic Mathematics 01	September	03/09/2023	10.30am- 11.30am	Theory	Logic
2.		September	10/09/2023			Quantifiers
3.		September	17/09/2023			Sets Preliminaries
4.		September	24/09/2023			Properties of set operations, Venn Diagrams, Function or Mapping
5.		October	01/10/2023			The Real Number System
6.		October	08/10/2023			Extended Real Number System, Intervals in R, Bounded sets.
7.		October	22/10/2023			Completeness Axiom, Archimedean property of R, Open, Closed and Countable sets in R.
8.		October	29/10/2023			Algorithm
9.		November	05/11/2023			Basics of Sequences
10.		November	19/11/2023			Convergence of Sequences, Important theorems of Convergence of sequences
11.		November	26/11/2023			Preliminaries of Convergent Series
12.		December	03/12/2023			Series of Non negative terms
13.	Sem01: DSS012:Basic Mathematics 02	September	03/09/2023	11.30am- 12.30pm	Theory	Limit of function, Theorems on Limit.
14.		September	10/09/2023			Continuity, Types of discontinuity.
15.		September	17/09/2023			Theorems on Continuity, Some special types of functions.
16.		September	24/09/2023			Derivative of function, Differentiation Rules, Successive Differentiation.
17.		October	01/10/2023			Leibnitz's Theorem, Partial Differentiation, Euler's Theorem, Mean Value Theorem.
18.		October	08/10/2023			Indeterminate Forms and L' Hospital Rule, Maximum and Minimum Values.
19.		October	22/10/2023			Definite Integrals.
20.		October	29/10/2023			Properties of Definite Integrals.
21.		November	05/11/2023			Integrals of Irrational function

22.		November	19/11/2023			Matrix, Various types of Matrices, Arithmetic Operations on Matrices, Multiplication of Matrices, Determinant of Square Matrices, Inverse of Matrix.			
23.		November	26/11/2023			Elementary Transformation of Matrix, Rank of matrix, System of simultaneous Linear Equations.			
24.		December	03/12/2023			Linear Independence of Vectors, Eigen Value Problems, Cayley-Hamilton Theorem.			
25.	Sem01: DSS013:Fundamentals of Statistics	September	03/09/2023	12.30pm- 1.30pm	Theory	Basic Definitions and Concepts, Variables, Levels of Measurement, Distributions			
26.		September	10/09/2023			Graphing Distributions: Frequency Tables, Pie Charts, Bar Charts			
27.		September	17/09/2023			Graphing Quantitative Distributions: Stem and Leaf Displays, Histogram, Frequency Polygon, Box Plots, Line Graphs, DotPlots.			
28.		September	24/09/2023			Measure of Central Location- Arithmetic Mean, Median, Mode, Geometric Mean. Measure of Variability- Range, Coefficient of Range			
29.		October	01/10/2023			Variance, Standard Deviation, Percentiles, Quartiles, z-score, Empirical Rule, Chebyshev's Theorem Moments, Skewness and Kurtosis.			
30.		October	08/10/2023			Basic Concepts of Probability			
31.		October	22/10/2023			Permutation and Combination, Sample Space			
32.		October	29/10/2023			Events and their Probabilities, Complements, Intersections, Unions, Conditional Probability and Independent Events.			
33.		November	05/11/2023			Discrete Probability Distributions			
34.		November	19/11/2023			Discrete Random Variables, Probability Distributions for Discrete Random Variables, Mean, Standard Deviation			
35.		November	26/11/2023			Binomial Distribution, Cumulative Probability Distribution Function for Binomial			
36.		December	03/12/2023			Standard Discrete Distributions – Uniform, Poisson, Multinomial, Hypergeometric, Geometric, Negative Binomial.			
37.			September			03/09/2023			To start MS Excel, Enter Data, Edit and Manage Data.

38.	Sem01:DSS014:Excel Applications in Statistics	September	10/09/2023	2.30pm – 4.30pm	Practical	To apply simple arithmetic operations on data.			
39.		September	17/09/2023			To represent raw data using graphs and diagrams: line plot, Bar plot, subdivided bar plot, pie diagram, and histogram.			
40.		September	24/09/2023			To draw frequency table for given data (raw, grouped), draw Frequency curve, less than and more than cumulative frequency curve, frequency polygon.			
41.		October	01/10/2023			To draw Stem and Leaf diagram, box plot.			
42.		October	08/10/2023			To calculate Mean (AM, GM, HM), Median, Mode for Raw Data.			
43.		October	22/10/2023			To calculate Mean (AM, GM, HM), Median, Mode for Grouped Data.			
44.		October	29/10/2023			To calculate Range, Variance Standard Deviation, Coefficient of Variation.			
45.		November	05/11/2023			To calculate Mean Deviation about Mean, Median, Mode.			
46.		November	19/11/2023			To find Covariance and Correlation.			
47.		November	26/11/2023			To find probabilities for Bernoulli, Binomial, Poisson Distribution.			
48.		December	03/12/2023			Fitting of Binomial Distribution, Fitting of Poisson Distribution, Fitting of Normal Distribution.			
49.		Sem02: DSS021:Inferential Statistics	February			04/02/2024	10.30am- 11.30am	Theory	The Mean and Standard Deviation of the Sample Mean
50.			February			11/02/2024			The Sampling Distribution of Sampling Mean, The Sample Proportion.
51.	February		18/02/2024	Large Sample Estimation of Population Mean, Small Sample Estimation of Population Mean					
52.	February		25/02/2024	Large Sample Estimation of Population Proportion, Sample Size Determination.					
53.	March		03/03/2024	The Elements of hypotheses Testing, Large Sample Tests for Population Mean, Observed Significance of Test					
54.	March		10/03/2024	Small Sample Tests for Population Proportion					
55.	March		17/03/2024	Large Sample Tests for Population Proportion, Examples					
56.	March		31/03/2024	Comparison of Two Population Mean: Large, Independent Samples.					

57.		April	07/04/2024			Comparison of Two Population Mean: Small, Independent Samples
58.		April	28/04/2024			Comparison of Two Population Mean: Paired Samples, Comparison of Two Population Proportions, Sample Size Determination.
59.		May	05/05/2024			Chi-Square Tests and F- Tests: Chi-Square Test for Independence
60.		May	12/05/2024			Chi-Square One Sample Goodness of Fit Test, F-test for Equality of Two Variances, F- Test in One Way ANOVA, Examples.
61.	Sem02: DSS022:Sampling Theory and Regression	February	04/02/2024	11.30am- 12.30pm	Theory	Fundamentals of sampling, Simple Random Sampling
62.		February	11/02/2024			Stratified Sampling, Ratio Method of Estimation
63.		February	18/02/2024			Regression Method of Estimation
64.		February	25/02/2024			Varying Probability Sampling, Double Sampling, Two Stage Sampling
65.		March	03/03/2024			Systematic Sampling, Cluster Sampling
66.		March	10/03/2024			Sampling in Successive Occasion, Non Sampling Errors.
67.		March	17/03/2024			Types of Correlation–Positive, Negative, Simple, Multiple, Linear, Nonlinear
68.		March	31/03/2024			Methods of studying Correlation-Scatter Diagram Method, „ Graphic Method
69.		April	07/04/2024			Karl Pearson’s Coefficient of Correlation Method, Method of Least Squares, Linear Relationships Between Variables, Linear Correlation Coefficient
70.		April	28/04/2024			Simple Linear Regression Model, Goodness of fit of Straight Line to Data
71.		May	05/05/2024			The Least Square Regression Line, The Sum of Standard Errors
72.		May	12/05/2024			Confidence Interval for $\beta_1$ , Testing Hypotheses about $\beta_1$ , The Coefficient of Determination, Estimation and Prediction.
73.		February	04/02/2024			One way classification, Two way classification under Fixed Effect Model
74.		February	11/02/2024			Two way classification without interaction, Two way

						classification with interaction,
75.	Sem02: DSS023:Design of Experiment	February	18/02/2024	12.30pm- 1.30pm	Theory	Tukey's Test for nonadditivity, Comparison of Variances, Fixed Effects Models, Random Effects Models, Mixed Effects Models.
76.		February	25/02/2024			Basic terms, Principles of Experimental Design: Randomization, Replication, and Local Control
77.		March	03/03/2024			Complete and Incomplete Block designs, Completely Randomize Designs (CRD): Layout of CRD, Procedure, Analysis, Expectations, Distributions, Decision Rules.
78.		March	10/03/2024			Randomized Block Design (RBD): Layout and Analysis. Latin Square Design (LSD): Latin Square, Standard form, Orthogonal Latin Square, Greco- Latin Square, Analysis of LSD. Missing Plot Technique
79.		March	17/03/2024			Factorial Experiments with Factors at 2 levels (22 Factorial Experiments) 23 Factorial Experiments
80.		March	31/03/2024			2n Factorial Experiments, Standard Order for Treatment Combinations
81.		April	07/04/2024			Confounding Arrangement, Orthogonal Treatment Combinations
82.		April	28/04/2024			Analysis of Variance in case of Confounded effects
83.		May	05/05/2024			Introduction to Analysis of Covariance Model, One way classification
84.		May	12/05/2024			Two way classification (with one observation per cell).
85.	Sem02: DSS024:R Programming for Statistics	February	04/02/2024	2.30pm – 4.30pm	Practical	Introduction to R, R-commands (creating Vectors, Replication of Numbers, Sequence Generation), Arithmetic Operations on Vectors, Matrix Operations.
86.		February	11/02/2024			To Draw Bar Plot, Multiple Bar Diagram, Sub-divided BarDiagram, Pie Chart, Stem and Leaf Diagram, Box Plot.
87.		February	18/02/2024			To Draw Frequency Distribution Table, Histogram, Frequency Polygon, Ogive Curve.
88.		February	25/02/2024			To Calculate Mean (A.M., G.M. ,H.M.) Median, Mode, Quartiles, Percentile.
89.		March	03/03/2024			To Calculate Range, Mean Deviation about (Mean, Median,Mode,), Variance, Coefficient Of Variation,

					Standard Deviation, Skewness, Kurtosis.
90.		March	10/03/2024		To Find Probabilities Based On Real Life Examples, To Find Probabilities for Binomial, Poisson, Geometric, Negative-Binomial Distributions
91.		March	17/03/2024		To Find Probabilities for Uniform, Exponential, Normal, Standard-Normal, Chi-Square, t, F Distributions.
92.		March	31/03/2024		To Find Correlation Using Scattered Plot, Karl – Pearson’s Coefficient Of Correlation.
93.		April	07/04/2024		To Draw Sample From-Simple Random Sampling With Replacement and Without Replacement, Stratified Sampling, Systematic Sampling.
94.		April	28/04/2024		One Sample Z-Test, One Sample t-Test, Two Sample t-Test, Paired t-Test.
95.		May	05/05/2024		Chi-Square Goodness Of Fit Test, Chi-Square Test Of Independence.
96.		May	12/05/2024		One-Way ANOVA, Two-Way ANOVA.

## V92: BACHELOR OF SCIENCE (PHYSICS, CHEMISTRY, MATHEMATICS) {2015 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/Practical course	Topic
1.	AEC111 : English Communication	September	03/09/2023	9:30am -10:30am	Theory	Introduction, Language of Communication, Speaking Skills
2.		September	10/09/2023			Understanding the Basis of Verbal Communication, Working with Customers
3.		September	17/09/2023			Developing Professional Telephone Skills, Improving Informal Communication
4.		September	24/09/2023			Reading and Understanding, Writing Skills,
5.		October	01/10/2023			Uncovering the Secrets of Clear writing, Communicating with E-Mail and Memos
6.		October	08/10/2023			Developing Reports and Proposals, Writing for Employment
7.		October	22/10/2023			Identifying and Defining Problems
8.		October	29/10/2023			Solving the Problem, Thinking Critically
9.		November	05/11/2023			Group Decision Making and Problem Solving
10.		November	19/11/2023			Working in Groups and Teams
11.		November	26/11/2023			Exploring Team Roles and Processes, Building and Developing Teams
12.		December	03/12/2023			Presenting yourself Professionally, Developing Your Interpersonal Skills
13.	S34121: Physics- 01	September	03/09/2023	10:30am -11:30am	Theory	Ordinary Differential Equations
14.		September	10/09/2023			Laws of Motion
15.		September	17/09/2023			Dynamics of a system of particles, Centre of Mass.
16.		September	24/09/2023			Vectors
17.		October	01/10/2023			Momentum and Energy
18.		October	08/10/2023			Rotational Motion
19.		October	22/10/2023			Gravitation



20.		October	29/10/2023			Oscillations
21.		November	05/11/2023			Kinetic and Potential Energy, Total Energy and their time averages
22.		November	19/11/2023			Elasticity
23.		November	26/11/2023			Special Theory of Relativity
24.		December	03/12/2023			Relativistic addition of velocities
25.	S37131: Chemistry-01	September	03/09/2023	11:30am -12:30pm	Theory	Atomic Structure
26.		September	10/09/2023			Quantum mechanics
27.		September	17/09/2023			Electronic configurations of the atoms
28.		September	24/09/2023			Ionic Bonding
29.		October	01/10/2023			Covalent bonding
30.		October	08/10/2023			Resonance and resonating structures, MO Approach
31.		October	22/10/2023			Physical Effects, Electronic Displacements
32.		October	29/10/2023			Structure, shape and reactivity of organic molecules, Reactive Intermediates
33.		November	05/11/2023			Strength of organic acids and bases, Stereochemistry
34.		November	19/11/2023			Aliphatic Hydrocarbons
35.		November	26/11/2023			Alkanes, Alkenes, Alkynes
36.		December	03/12/2023			Reactions
37.	S41141 : Mathematics- 01	September	03/09/2023	12:30pm -1:30pm	Theory	Limit and Continuity
38.		September	10/09/2023			Types of discontinuities
39.		September	17/09/2023			Differentiability of functions
40.		September	24/09/2023			Successive differentiation, Leibnitz's theorem
41.		October	01/10/2023			Partial differentiation, Euler's theorem on homogeneous functions
42.		October	08/10/2023			Tangents and normal, Curvature, Asymptotes, Singular points,

43.		October	22/10/2023			Parametric representation of curves and tracing of parametric curves
44.		October	29/10/2023			Rolle's theorem, Mean Value theorems
45.		November	05/11/2023			Taylor's theorem with Lagrange's and Cauchy's forms of remainder
46.		November	19/11/2023			Maxima and Minima, Indeterminate forms.
47.		November	26/11/2023			Taylor's series
48.		December	03/12/2023			Maclaurin's series
49.	S34122 : Physics- 01	September	03/09/2023	2:30pm - 4:30pm	Practical	Measurements of length (or diameter) using Vernier calliper
50.		September	10/09/2023			Measurements of length (or diameter) using screw gauge
51.		September	17/09/2023			Measurements of length (or diameter) using travelling microscope
52.		September	24/09/2023			To determine the Height of a Building using a Sextant
53.		October	01/10/2023			To determine the Moment of Inertia of a Flywheel.
54.		October	08/10/2023			To determine the Young's Modulus of a Wire by Optical Lever Method
55.		October	22/10/2023			To determine the Modulus of Rigidity of a Wire by Maxwell's needle
56.		October	29/10/2023			To determine the Elastic Constants of a Wire by Searle's method.
57.		November	05/11/2023			To determine g by Bar Pendulum
58.		November	19/11/2023			To determine g by Kater's Pendulum.
59.		November	26/11/2023			To determine g and velocity for a freely falling body using Digital Timing Technique
60.		December	03/12/2023			To study the Motion of a Spring and calculate (a) Spring Constant (b) Value of g
61.			September			03/09/2023
62.		September	10/09/2023			Estimation of oxalic acid by titrating it with KMnO <sub>4</sub> .

63.	S37132: Chemistry-01	September	17/09/2023	4:30pm - 6:30pm	Practical	Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$ .
64.		September	24/09/2023			Estimation of Fe (II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator
65.		October	01/10/2023			Estimation of Cu (II) ions eudiometrically using $Na_2S_2O_3$ .
66.		October	08/10/2023			Detection of extra elements (N, S, Cl, Br, I) in organic compounds
67.		October	22/10/2023			Separation of mixtures by Chromatography
68.		October	29/10/2023			Measure the Rf value in each case (combination of two compounds to be given)
69.		November	05/11/2023			Identify and separate the components of a given mixture of two amino acids (glycine) by paper chromatography
70.		November	19/11/2023			Identify and separate the components of a given mixture of two amino acids (aspartic acid) by paper chromatography
71.		November	26/11/2023			Identify and separate the components of a given mixture of two amino acids ( glutamic acid) by paper chromatography
72.		December	03/12/2023			Identify and separate the sugars present in the given mixture by paper chromatography.
73.	S41142 : Mathematics- 01	December	10/12/2023	9:30am 11:30am	Practical	Assignment 01 on Limit
74.		December	10/12/2023	11:30am 1:30pm		Assignment 02 on Differentiation
75.		December	10/12/2023	2:30pm 4:30pm		Assignment 03 on Tangents
76.		December	10/12/2023	4:30pm 6:30pm		Assignment 04 on Normal
77.		December	17/12/2023	9:30am 11:30am		Assignment 05 on Curves
78.		December	17/12/2023	11:30am 1:30pm		Assignment 06 on Rolle's, and
79.		December	17/12/2023	2:30pm 4:30pm		Assignment 07 on Mean Value
80.		December	17/12/2023	4:30pm 6:30pm		Assignment 08 on Taylor's theorem
81.		December	24/12/2023	9:30am 11:30am		Assignment 09 on Maclaurin's series
82.		December	17/12/2023	11:30am 1:30pm		Assignment 10 on Maxima
83.		December	17/12/2023	2:30pm 4:30pm		Assignment 11 on Minima
84.		December	17/12/2023	4:30pm 6:30pm		Assignment 12 on Indeterminate forms

85.	SEC311: IT and E Learning Skills	September	03/09/2023	9:30am -10:30am	Theory	Block Diagram of a Computer
86.		September	10/09/2023			Input & Output Devices
87.		September	17/09/2023			Memory
88.		September	24/09/2023			Functions of Operating System
89.		October	01/10/2023			Utility Programs: Antivirus, CD/DVD burner, VLC media player, Adobe Reader
90.		October	08/10/2023			Word-processing, Presentation, Spread sheets
91.		October	22/10/2023			E-Learning definition, scope, trends, attributes & opportunities
92.		October	29/10/2023			Pedagogical designs for e-learning
93.		November	05/11/2023			Online learning management systems
94.		November	19/11/2023			Online learning course development models
95.		November	26/11/2023			Evaluating the impacts of e-learning
96.		December	03/12/2023			Management and implementation of e-learning
97.	S34321: Physics-03	September	03/09/2023	10:30am -11:30am	Theory	Zeroth Law of thermodynamics
98.		September	10/09/2023			First Law of thermodynamics and its Application
99.		September	17/09/2023			Various Thermodynamical Processes
100.		September	24/09/2023			Second Law of thermodynamics
101.		October	01/10/2023			Third Law of thermodynamics
102.		October	08/10/2023			Joule-Thompson Effect
103.		October	22/10/2023			Kinetic Theory of Gases
104.		October	29/10/2023			Transport Phenomena: Viscosity, Conduction and Diffusion
105.		November	05/11/2023			Theory of Radiation
106.		November	19/11/2023			Maxwell-Boltzmann law
107.		November	26/11/2023			Fermi-Dirac distribution law
108.		December	03/12/2023			Bose-Einstein distribution law

109	S37331: Chemistry-03	September	03/09/2023	11:30am -12:30pm	Theory	Thermodynamics of ideal solutions
110		September	10/09/2023			Partial miscibility of liquids
111		September	17/09/2023			Phase Equilibrium
112		September	24/09/2023			Conductance
113		October	01/10/2023			Electrochemistry
114		October	08/10/2023			Thermodynamics of a reversible cell, calculation of thermodynamic properties
115		October	22/10/2023			Organic Chemistry
116		October	29/10/2023			Amines and Diazonium Salts. Amines (Aliphatic and Aromatic)
117		November	05/11/2023			Diazonium salts: Preparation: from aromatic amines. Reactions
118		November	19/11/2023			Amino Acids, Peptides and Proteins
119		November	26/11/2023			Carbohydrates
120		December	03/12/2023			Determination of configuration of monosaccharaides
121	S41341: Mathematics- 03	September	03/09/2023	12:30pm -1:30pm	Theory	Finite and infinite sets
122		September	10/09/2023			completeness property of R, Archimedean property of R, intervals
123		September	17/09/2023			Concept of cluster points and statement of Bolzano-Weierstrass theorem.
124		September	24/09/2023			Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences
125		October	01/10/2023			Cauchy's theorem on limits, order preservation and squeeze theorem
126		October	08/10/2023			Monotone sequences and their convergence (monotone convergence theorem without proof)
127		October	22/10/2023			Infinite series, Cauchy convergence criterion for series
128		October	29/10/2023			positive term series, geometric series, alternating series
129		November	05/11/2023			Leibnitz's test, Root test, Ratio test

130		November	19/11/2023			Sequences and series of functions
131		November	26/11/2023			Mn-test, M-test
132		December	03/12/2023			differentiability of functions, Power series and radius of convergence
133	S34322: Physics- 03	September	03/09/2023	2:30pm - 4:30pm	Practical	To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method
134		September	10/09/2023			Measurement of Planck's constant using black body radiation
135		September	17/09/2023			To determine Stefan's Constant
136		September	24/09/2023			To determine the coefficient of thermal conductivity of copper by Searle's Apparatus
137		October	01/10/2023			To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
138		October	08/10/2023			To determine the coefficient of thermal conductivity of a bad conductor by Lee
139		October	22/10/2023			To determine the coefficient of thermal conductivity of a bad conductor by Charlton's disc method
140		October	29/10/2023			To determine the temperature co-efficient of resistance by Platinum resistance thermometer
141		November	05/11/2023			To study the variation of thermo emf across two junctions of a thermocouple with temperature
142		November	19/11/2023			To record and analyse the cooling temperature of an hot object as a function of time using a thermocouple and suitable data acquisition system
143		November	26/11/2023			To calibrate Resistance Temperature Device (RTD) using Null Method
144		December	03/12/2023			To calibrate Resistance Temperature Device (RTD) using Off- Balance Bridge
145			September			03/09/2023
146		September	10/09/2023			Construction of the phase diagram of a binary system (simple eutectic) using cooling curves.

147	S37332: Chemistry-03	September	17/09/2023	4:30pm - 6:30pm	Practical	Determination of the critical solution temperature and composition of the Phenol water system and study of the effect of impurities on it.
148		September	24/09/2023			Study of the variation of mutual solubility temperature with concentration for the phenol water system and determination of the critical solubility temperature
149		October	01/10/2023			Determination of cell constant
150		October	08/10/2023			Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
151		October	22/10/2023			Perform the following conductometric titrations: Strong acid vs. strong base
152		October	29/10/2023			Separation of amino acids by paper chromatography
153		November	05/11/2023			Determination of the concentration of glycine solution by formulation method.
154		November	19/11/2023			Titration curve of glycine
155		November	26/11/2023			Action of salivary amylase on starch
156		December	03/12/2023			Effect of temperature on the action of salivary amylase on starch.
157	S41342: Mathematics- 03	December	10/12/2023	9:30am 11:30am	Practical	Assignment 01
158		December	10/12/2023	11:30am 1:30pm		Assignment 02
159		December	10/12/2023	2:30pm 4:30pm		Assignment 03
160		December	10/12/2023	4:30pm 6:30pm		Assignment 04
161		December	17/12/2023	9:30am 11:30am		Assignment 05
162		December	17/12/2023	11:30am 1:30pm		Assignment 06
163		December	17/12/2023	2:30pm 4:30pm		Assignment 07
164		December	17/12/2023	4:30pm 6:30pm		Assignment 08

165		December	24/12/2023	9:30am 11:30am		Assignment 09
166		December	24/12/2023	11:30am 1:30pm		Assignment 10
167		December	24/12/2023	2:30pm 4:30pm		Assignment 11
168		December	24/12/2023	4:30pm 6:30pm		Assignment 12
169	SEC511: Financial and Investment skills	September	03/09/2023	9:30am -10:30am	Theory	Introduction to Stock Markets - 01
170		September	10/09/2023			Introduction to Stock Markets - 02
171		September	17/09/2023			Introduction to Stock Markets - 03
172		September	24/09/2023			Fundamental Analysis - 01
173		October	01/10/2023			Fundamental Analysis - 02
174		October	08/10/2023			Fundamental Analysis – 03
175		October	22/10/2023			Technical Analysis - 01
176		October	29/10/2023			Technical Analysis - 02
177		November	05/11/2023			Technical Analysis – 03
178		November	19/11/2023			Markets and Taxation
179		November	26/11/2023			Trading Psychology and Risk Management
180		December	03/12/2023			Mutual Funds And Financial Planning
181	S34521: Physics-05	September	03/09/2023	10:30am -11:30am	Theory	Digital Circuits
182		September	10/09/2023			Boolean Algebra
183		September	17/09/2023			Binary Addition and Subtraction
184		September	24/09/2023			Semiconductor Devices
185		October	01/10/2023			Amplifiers
186		October	08/10/2023			Bipolar Junction transistors
187		October	22/10/2023			Operational Amplifiers (Black Box approach)
188		October	29/10/2023			Applications of Op-Amps
189		November	05/11/2023			Sinusoidal Oscillators



190		November	19/11/2023			Introduction to CRO
191		November	26/11/2023			Power Supply
192		December	03/12/2023			Timer IC
193	S37531: Chemistry 05	September	03/09/2023	11:30am -12:30pm	Theory	Introduction to Molecular Modelling
194		September	10/09/2023			Potential Energy Surfaces and Molecular Graphics
195		September	17/09/2023			Force Fields 01
196		September	24/09/2023			Force Fields 02
197		October	01/10/2023			Energy Minimization and Computer Simulation
198		October	08/10/2023			Simple thermodynamic properties and Phase Space
199		October	22/10/2023			Molecular Dynamics & Monte Carlo Simulation
200		October	29/10/2023			Molecular Dynamics at constant temperature and pressure
201		November	05/11/2023			Models used in Monte Carlo simulations of polymers.
202		November	19/11/2023			Structure Prediction and Drug Design
203		November	26/11/2023			Predicting protein structures by 'Threading', Molecular docking
204		December	03/12/2023			Structure based de novo ligand design, Drug Discovery – Chemo informatics – QSAR.
205		S41641: Mathematics 05	September			03/09/2023
206	September		10/09/2023	Standard basis for $R$		
207	September		17/09/2023	Concept of Linear Independence and examples of different bases. Subspaces of $R^2, R^3$		
208	September		24/09/2023	Translation, Dilation, Rotation, Reflection in a point, line and plane		
209	October		01/10/2023	Matrix form of basic geometric transformations		
210	October		08/10/2023	Interpretation of eigen values and eigen vectors for such transformations and eigen spaces as invariant subspaces		
211	October		22/10/2023	Types of matrices		
212	October		29/10/2023	Rank of a matrix		

213		November	05/11/2023			Invariance of rank under elementary transformations
214		November	19/11/2023			Matrices in diagonal form
215		November	26/11/2023			Computation of matrix inverses using elementary row operations
216		December	03/12/2023			Illustrative examples of above concepts from Geometry, Physics, Chemistry, Combinatorics and Statistics
217	S34522: Physics 05	September	03/09/2023	2:30pm - 4:30pm	Practical	To measure (a) Voltage, and (b) Frequency of a periodic waveform using a CRO
218		September	10/09/2023			To verify and design AND, OR, NOT and XOR gates using NAND gates
219		September	17/09/2023			Half adder, Full adder and 4-bit Binary Adder.
220		September	24/09/2023			To design an astable multivibrator of given specifications using 555 Timer.
221		October	01/10/2023			To design a monostable multivibrator of given specifications using 555 Timer.
222		October	08/10/2023			To study IV characteristics of PN diode, Zener and Light emitting diode
223		October	22/10/2023			To study the characteristics of a Transistor in CE configuration
224		October	29/10/2023			To design a CE amplifier of a given gain (mid-gain) using voltage divider bias.
225		November	05/11/2023			To design an inverting amplifier of given gain using Op-amp 741 and study its frequency response.
226		November	19/11/2023			To design a non-inverting amplifier of given gain using Op-amp 741 and study its Frequency Response
227		November	26/11/2023			To study a precision Differential Amplifier of given I/O specification using Opamp.
228		December	03/12/2023			To investigate the use of an op-amp as a Differentiator
229		September	03/09/2023			Compare the optimized C-C bond lengths in ethane, ethene, ethyne and benzene.
230		September	10/09/2023			Perform a conformational analysis of butane

231	S375332: Chemistry 05	September	17/09/2023	4:30pm - 6:30pm	Practical	Determine the enthalpy of isomerization of cis and trans 2-butene.			
232		September	24/09/2023			Visualize the electron density and electrostatic potential maps for LiH, HF, N <sub>2</sub> , NO and CO and comment.			
233		October	01/10/2023			Relate the charge on the hydrogen atom in hydrogen halides with their acid character			
234		October	08/10/2023			Compare the basicities of the nitrogen atoms in ammonia, methylamine, dimethylamine and trimethylamine.			
235		October	22/10/2023			Compare the shapes of the molecules: 1-butanol, 2-butanol, 2-methyl-1-propanol, and 2-methyl-2-propanol. Note the dipole moment of each molecule			
236		October	29/10/2023			Build and minimize organic compounds of your choice containing the following functional groups. Note the dipole moment of each compound			
237		November	05/11/2023			Determine the heat of hydration of ethylene			
238		November	19/11/2023			Compare the optimized bond angles H <sub>2</sub> O, H <sub>2</sub> S, H <sub>2</sub> Se			
239		November	26/11/2023			Compare the HAH bond angles for the second row dihydrides and compare with the results from qualitative MO theory.			
240		December	03/12/2023			Arrange 1-hexene, 2-methyl-2-pentene, (E)-3-methyl-2-pentene, (Z)-3-methyl-2-pentene, and 2,3-dimethyl-2-butene in order of increasing stability			
241		S41542: Mathematics 05	December			10/12/2023	9:30am 11:30am	Practical	Assignment 01
242			December			10/12/2023	11:30am 1:30pm		Assignment 02
243	December		10/12/2023	2:30pm 4:30pm	Assignment 03				
244	December		10/12/2023	4:30pm 6:30pm	Assignment 04				
245	December		17/12/2023	9:30am 11:30am	Assignment 05				
246	December		17/12/2023	11:30am 1:30pm	Assignment 06				

247		December	17/12/2023	2:30pm 4:30pm		Assignment 07
248		December	17/12/2023	4:30pm 6:30pm		Assignment 08
249		December	24/12/2023	9:30am 11:30am		Assignment 09
250		December	24/12/2023	11:30am 1:30pm		Assignment 10
251		December	24/12/2023	2:30pm 4:30pm		Assignment 11
252		December	24/12/2023	4:30pm 6:30pm		Assignment 12
253	AEC211: Environmental Science	February	04/02/2024	9:30am -10:30am	Theory	The Multidisciplinary Nature Of Environmental Studies
254		February	11/02/2024			Natural Resources
255		February	18/02/2024			Ecosystems
256		February	25/02/2024			Biodiversity And Its Conservation
257		March	03/03/2024			Environmental Pollution
258		March	10/03/2024			Disaster Management
259		March	17/03/2024			Social Issues And The Environment
260		March	31/03/2024			Environmental Ethics
261		April	07/04/2024			Environment Protection Act
262		April	28/04/2024			Human Population And The Environment
263		May	05/05/2024			Nutrition, health and human rights
264		May	12/05/2024			Field Work
265	S34221: Physics 02	February	04/02/2024	10:30am -11:30am	Theory	Vector Analysis
266		February	11/02/2024			Gauss-divergence theorem and Stoke's theorem of vectors
267		February	18/02/2024			Electrostatics - 01
268		February	25/02/2024			Electrostatics - 02
269		March	03/03/2024			Polarization, Displacement vector
270		March	10/03/2024			Parallel plate, spherical and cylindrical condenser

271		March	17/03/2024			Magneto-statics
272		March	31/03/2024			Divergence and curl of magnetic field
273		April	07/04/2024			Magnetic properties of materials
274		April	28/04/2024			Electromagnetic Induction
275		May	05/05/2024			Maxwell`s equations
276		May	12/05/2024			Electromagnetic wave propagation
277	S37231: Chemistry 02	February	04/02/2024	11:30am -12:30pm	Theory	Chemical Energetics
278		February	11/02/2024			Chemical Equilibrium
279		February	18/02/2024			Variation of enthalpy of a reaction with temperature – Kirchhoff`s equation
280		February	25/02/2024			Ionic Equilibria
281		March	03/03/2024			Ionization of weak acids and bases
282		March	10/03/2024			Buffer solutions
283		March	17/03/2024			Aromatic hydrocarbons
284		March	31/03/2024			Alkyl and Aryl Halides
285		April	07/04/2024			Aryl Halides Preparation
286		April	28/04/2024			Alcohols
287		May	05/05/2024			Phenols:
288		May	12/05/2024			Ethers (aliphatic and aromatic)
289	S41241: Mathematics 02	February	04/02/2024	12:30pm -1:30pm	Theory	First order exact differential equations
290		February	11/02/2024			Integrating factors, rules to find an integrating factor
291		February	18/02/2024			First order higher degree equations solvable for x, y, p
292		February	25/02/2024			Methods for solving higher-order differential equations
293		March	03/03/2024			Basic theory of linear differential equations, Wronskian, and its properties
294		March	10/03/2024			Solving a differential equation by reducing its order
295		March	17/03/2024			Solving a differential equation by reducing its order
296		March	31/03/2024			Linear non-homogenous equations

297		April	07/04/2024			The Cauchy-Euler equation
298		April	28/04/2024			Order and degree of partial differential equations
299		May	05/05/2024			Formation of first order partial differential equations
300		May	12/05/2024			Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only
301	S34222: Physics 02	February	04/02/2024	2:30pm - 4:30pm	Practical	To use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, and (d) checking electrical fuses.
302		February	11/02/2024			Ballistic Galvanometer: (i) Measurement of charge and current sensitivity (ii) Measurement of CDR
303		February	18/02/2024			Ballistic Galvanometer :(i) Determine a high resistance by Leakage Method (iii) To determine Self Inductance of a Coil by Rayleigh's Method.
304		February	25/02/2024			To compare capacitances using De'Sauty's bridge.
305		March	03/03/2024			Measurement of field strength B and its variation in a Solenoid (Determine dB/dx)
306		March	10/03/2024			To study the Characteristics of a Series RC Circuit
307		March	17/03/2024			To study the a series LCR circuit and determine its (a) Resonant Frequency
308		March	31/03/2024			To study a parallel LCR circuit and determine its Anti-resonant frequency
309		April	07/04/2024			To study a parallel LCR circuit and determine its Quality factor Q
310		April	28/04/2024			To determine a Low Resistance by Carey Foster's Bridge
311		May	05/05/2024			To verify the Thevenin and Norton theorem
312		May	12/05/2024			To verify the Superposition, and Maximum Power Transfer Theorem
313		February	04/02/2024			Determination of heat capacity of calorimeter for different volumes
314		February	11/02/2024			Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide

315	S37232: Chemistry 02	February	18/02/2024	4:30pm - 6:30pm	Practical	Determination of enthalpy of ionization of acetic acid			
316		February	25/02/2024			Determination of integral enthalpy of solution of salts (KNO <sub>3</sub> , NH <sub>4</sub> Cl).			
317		March	03/03/2024			Determination of enthalpy of hydration of copper sulphate			
318		March	10/03/2024			Study of the solubility of benzoic acid in water and determination of $\Delta H$ .			
319		March	17/03/2024			Ionic equilibria - pH measurements			
320		March	31/03/2024			Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter			
321		April	07/04/2024			Preparation of buffer solutions: (i) Sodium acetate-acetic acid (ii) Ammonium chloride-ammonium hydroxide			
322		April	28/04/2024			Purification of organic compounds by crystallization (from water and alcohol) and distillation.			
323		May	05/05/2024			Criteria of Purity: Determination of melting and boiling points			
324		May	12/05/2024			Preparations: Mechanism of various reactions involved to be discussed.			
325		S41242: Mathematics 02	May			18/05/2024	9:30am 11:30am	Practical	Assignment 01 on First order exact differential equations
326			May			18/05/2024	11:30am 1:30pm		Assignment 02 on First order exact differential equations
327	May		18/05/2024	2:30pm 4:30pm	Assignment 03 on First order exact differential equations				
328	May		18/05/2024	4:30pm 6:30pm	Assignment 04 on Higher-order differential equations				
329	May		19/05/2024	9:30am 11:30am	Assignment 05 on Higher-order differential equations				
330	May		19/05/2024	11:30am 1:30pm	Assignment 06 on Higher-order differential equations				
331	May		19/05/2024	2:30pm 4:30pm	Assignment 07 on Linear equations				
332	May		19/05/2024	4:30pm 6:30pm	Assignment 08 on Linear equations				

333		May	26/05/2024	9:30am 11:30am		Assignment 09 on Linear equations
334		May	26/05/2024	11:30am 1:30pm		Assignment 10 on Partial differential equations
335		May	26/05/2024	2:30pm 4:30pm		Assignment 11 on Partial differential equations
336		May	26/05/2024	4:30pm 6:30pm		Assignment 12 on Partial differential equations
337	SEC411: Research methodology	February	04/02/2024	9:30am -10:30am	Theory	Meaning of Research, Scientific Inquiry
338		February	11/02/2024			Research Interdisciplinary Approach
339		February	18/02/2024			Ethics in Research, Survey Research
340		February	25/02/2024			Experiment, Case Study, Framing Aim, Objectives and Hypothesis
341		March	03/03/2024			Population and Sample Part I
342		March	10/03/2024			Population and Sample Part II
343		March	17/03/2024			Tools of Data Collection
344		March	31/03/2024			Analysis of Qualitative Data
345		April	07/04/2024			Hypothesis Testing Chi Square Test
346		April	28/04/2024			Measures of Central Tendency, Normal Probability Curve (NPS)
347		May	05/05/2024			Independent and Dependent Variables, Selection of Statistical Techniques: How to Select different statistical technique for Research design depending
348	May	12/05/2024	Interpretation of Results and Discussion			
349	S34421: Physics 04	February	04/02/2024	10:30am -11:30am	Theory	Superposition of Two Collinear Harmonic oscillations
350		February	11/02/2024			Superposition of Two Perpendicular Harmonic Oscillations
351		February	18/02/2024			Waves Motion- General
352		February	25/02/2024			Fluids
353		March	03/03/2024			Viscosity
354		March	10/03/2024			Sound
355		March	17/03/2024			Wave Optics



356		March	31/03/2024			Interference			
357		April	07/04/2024			Michelson's Interferometer			
358		April	28/04/2024			Diffraction			
359		May	05/05/2024			Half-period zones			
360		May	12/05/2024			Polarization			
361	S37431: Chemistry 04	February	04/02/2024	11:30am -12:30pm	Theory	Transition Elements (3d series)			
362		February	11/02/2024			ability to form complexes and stability of various oxidation states			
363		February	18/02/2024			Lanthanoids and actinoids			
364		February	25/02/2024			Coordination Chemistry			
365		March	03/03/2024			Crystal Field Theory			
366		March	10/03/2024			Spectrochemical series			
367		March	17/03/2024			Kinetic Theory of Gases			
368		March	31/03/2024			Maxwell Boltzmann distribution laws of molecular velocities and molecular energies and their importance			
369		April	07/04/2024			Liquids			
370		April	28/04/2024			Solids			
371		May	05/05/2024			Chemical Kinetics			
372		May	12/05/2024			Theories of Reaction Rates			
373		S41441: Mathematics 04	February			04/02/2024	12:30pm -1:30pm	Theory	Definition and examples of groups
374			February			11/02/2024			Cyclic groups from number systems
375	February		18/02/2024	Complex roots of unity, circle group					
376	February		25/02/2024	The general linear group $GL_n(n, R)$					
377	March		03/03/2024	Group of quaternions					
378	March		10/03/2024	concept of a subgroup generated by a subset					
379	March		17/03/2024	Examples of subgroups including the centre of a group					
380	March		31/03/2024	Normal subgroups					
381	April		07/04/2024	Definition and examples of rings, examples of					

					commutative and non-commutative rings	
382		April	28/04/2024		Zn the ring of integers modulo n	
383		May	05/05/2024		Subrings and ideals, Integral domains and fields	
384		May	12/05/2024		Field of rational functions	
385	S34422: Physics 04	February	04/02/2024	2:30pm - 4:30pm	Practical	To investigate the motion of coupled oscillators
386		February	11/02/2024			To determine the Frequency of an Electrically Maintained Tuning Fork by Melde's Experiment and to verify $\lambda^2 - T$ Law.
387		February	18/02/2024			To study Lissajous Figures
388		February	25/02/2024			Familiarization with Schuster's focussing; determination of angle of prism
389		March	03/03/2024			To determine the Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).
390		March	10/03/2024			To determine the Refractive Index of the Material of a given Prism using Sodium Light
391		March	17/03/2024			To determine the value of Cauchy Constants of a material of a prism.
392		March	31/03/2024			To determine the Resolving Power of a Prism.
393		April	07/04/2024			To determine wavelength of sodium light using Fresnel Biprism
394		April	28/04/2024			To determine wavelength of sodium light using Newton's Rings
395		May	05/05/2024			To determine the wavelength of Laser light using Diffraction of Single Slit
396		May	12/05/2024			To determine the Resolving Power of a Plane Diffraction Grating
397		S37432: Chemistry 04	February			04/02/2024
398	February		11/02/2024	Estimate the amount of nickel present in a given solution as bis (dimethylglyoximate) nickel(II) as oximate in a given solution gravimetrically.		
399	February		18/02/2024	Estimate the amount of nickel present in a given solution		

						as bis (dimethylglyoximato) aluminium as oximate in a given solution gravimetrically.
400		February	25/02/2024			Estimation of $Mg^{2+}$ by complexometric titrations using EDTA.
401		March	03/03/2024			Estimation of $Zn^{2+}$ by complexometric titrations using EDTA.
402		March	10/03/2024			Estimation of total hardness of a given sample of water by complexometric titration
403		March	17/03/2024			Surface tension measurement (use of organic solvents excluded): Determination of the surface tension of a liquid or a dilute solution using a stalagmometer.
404		March	31/03/2024			Surface tension measurement (use of organic solvents excluded): Study of the variation of surface tension of a detergent solution with concentration
405		April	07/04/2024			Viscosity measurement (use of organic solvents excluded)
406		April	28/04/2024			Viscosity measurement (use of organic solvents excluded)
407		May	05/05/2024			Chemical Kinetics: Study the kinetics of the following reactions: 1.Initial rate method: Iodide-per sulphate reaction 2. Integrated rate method
408		May	12/05/2024			Chemical Kinetics: Study the kinetics of the following reactions: a. Acid hydrolysis of methyl acetate with hydrochloric acid. b. Saponification of ethyl acetate. c. Compare the strengths of HCl and $H_2SO_4$ by studying kinetics of hydrolysis of methyl acetate
409	S41442: Mathematics 04	May	18/05/2024	9:30am 11:30am	Practical	Assignment 01
410		May	18/05/2024	11:30am 1:30pm		Assignment 02
411		May	18/05/2024	2:30pm 4:30pm		Assignment 03
412		May	18/05/2024	4:30pm 6:30pm		Assignment 04
413		May	19/05/2024	9:30am 11:30am		Assignment 05
414		May	19/05/2024	11:30am 1:30pm		Assignment 06
415		May	19/05/2024	2:30pm 4:30pm		Assignment 07

416		May	19/05/2024	4:30pm 6:30pm		Assignment 08
417		May	26/05/2024	9:30am 11:30am		Assignment 09
418		May	26/05/2024	11:30am 1:30pm		Assignment 10
419		May	26/05/2024	2:30pm 4:30pm		Assignment 11
420		May	26/05/2024	4:30pm 6:30pm		Assignment 12
421	SEC611: Personality and Career skills	February	04/02/2024	9:30am -10:30am	Theory	Soft Skills
422		February	11/02/2024			Self-Discovery, Forming Values
423		February	18/02/2024			Developing Positive Attitude
424		February	25/02/2024			Improving Perception
425		March	03/03/2024			Career Planning
426		March	10/03/2024			The Art of Writing E-mail
427		March	17/03/2024			Team Building and Teamwork:
428		March	31/03/2024			Group Discussion
429		April	07/04/2024			Etiquette and Manners
430		April	28/04/2024			Preparing Resume
431		May	05/05/2024			Interview Skills
432		May	12/05/2024			Time Management and Stress Management
433		S34621: Physics 06	February			04/02/2024
434	February		11/02/2024	Elemental description of embedded processors and microcontrollers.		
435	February		18/02/2024	Review of microprocessors		
436	February		25/02/2024	8051 microcontroller		
437	March		03/03/2024	Program Counter and ROM memory map		
438	March		10/03/2024	8051 I/O port programming		
439	March		17/03/2024	Programming of 8051		
440	March		31/03/2024	Timer and counter programming		
441	April		07/04/2024	Interfacing 8051 microcontroller to peripherals		
442	April		28/04/2024	Serial port programming with and without interrupt:		

						Introduction to 8051 interrupts, programming timer interrupts, programming			
443		May	05/05/2024			Programming Embedded Systems: Structure of embedded program, infinite loop, compiling, linking and locating			
444		May	12/05/2024			Embedded system design and development			
445	Sec37631: Chemistry 06	February	04/02/2024	11:30am -12:30pm	Theory	Principles of Green Chemistry			
446		February	11/02/2024			Designing of Green Chemistry			
447		February	18/02/2024			Chemical synthesis of Green Chemistry			
448		February	25/02/2024			Energy requirements for reactions – alternative sources of energy: use of microwaves and ultrasonic energy			
449		March	03/03/2024			Selection of starting materials			
450		March	10/03/2024			Use of catalytic reagents			
451		March	17/03/2024			Green Synthesis of the following compounds			
452		March	31/03/2024			Microwave assisted reactions in water			
453		April	07/04/2024			Ultrasound assisted reactions			
454		April	28/04/2024			Healthier fats and oil by Green Chemistry			
455		May	05/05/2024			Development of Fully Recyclable Carpet			
456		May	12/05/2024			Future Trends in Green Chemistry			
457		S41641: Mathematics 06	February			04/02/2024	12:30pm -1:30pm	Theory	Algorithms, Convergence, Bisection method
458			February			11/02/2024			False position method
459	February		18/02/2024	Fixed point iteration method					
460	February		25/02/2024	Newton's method, Secant method					
461	March		03/03/2024	LU decomposition, Gauss-Jacobi					
462	March		10/03/2024	Gauss-Siedel and SOR iterative methods.					
463	March		17/03/2024	Lagrange interpolation					
464	March		31/03/2024	Newton interpolation					
465	April		07/04/2024	linear and higher order, finite difference operators.					
466	April		28/04/2024	Numerical differentiation					

467		May	05/05/2024			Integration: trapezoidal rule, Simpson's rule
468		May	12/05/2024			Euler's method.
469	S34622: Physics 06	February	04/02/2024	2:30pm - 4:30pm	Practical	To find that the given numbers is prime or not
470		February	11/02/2024			To find the factorial of a number
471		February	18/02/2024			Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number
472		February	25/02/2024			Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's
473		March	03/03/2024			Program to glow first four LED then next four using TIMER application
474		March	10/03/2024			Program to rotate the contents of the accumulator first right and then left
475		March	17/03/2024			Program to run a countdown from 9-0 in the seven segment LED display
476		March	31/03/2024			To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display
477		April	07/04/2024			To toggle '1234' as '1324' in the seven segment LED.
478		April	28/04/2024			Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction
479		May	05/05/2024			Application of embedded systems: Temperature measurement
480		May	12/05/2024			Application of embedded systems: Some information on LCD display, interfacing a keyboard.
481	S37632: Chemistry 06	February	04/02/2024	4:30pm - 6:30pm	Practical	Safer starting materials: Preparation of nanoparticles of gold using tea leaves
482		February	11/02/2024			Safer starting materials: characterization of nanoparticles of gold using tea leaves
483		February	18/02/2024			Using renewable resources: Preparation of biodiesel from vegetable/ waste cooking oil
484		February	25/02/2024			Avoiding waste: Principle of atom economy

485		March	03/03/2024			Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper
486		March	10/03/2024			Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
487		March	17/03/2024			Use of enzymes as catalysts
488		March	31/03/2024			Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide
489		April	07/04/2024			Alternative Green solvents
490		April	28/04/2024			Extraction of D-limonene from orange peel using liquid CO <sub>2</sub> prepared form dry ice
491		May	05/05/2024			Mechanochemical solvent free synthesis of azomethines
492		May	12/05/2024			Alternative sources of energy
493		S41642: Mathematics 06	May			18/05/2024
494	May		18/05/2024	11:30am 1:30pm	Assignment 02	
495	May		18/05/2024	2:30pm 4:30pm	Assignment 03	
496	May		18/05/2024	4:30pm 6:30pm	Assignment 04	
497	May		19/05/2024	9:30am 11:30am	Assignment 05	
498	May		19/05/2024	11:30am 1:30pm	Assignment 06	
499	May		19/05/2024	2:30pm 4:30pm	Assignment 07	
500	May		19/05/2024	4:30pm 6:30pm	Assignment 08	
501	May		26/05/2024	9:30am 11:30am	Assignment 09	
502	May		26/05/2024	11:30am 1:30pm	Assignment 10	
503	May		26/05/2024	2:30pm 4:30pm	Assignment 11	
504	May		26/05/2024	4:30pm 6:30pm	Assignment 12	

## V100: BACHELOR OF SCIENCE (BOTANY, CHEMISTRY, ZOOLOGY){2023PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	AEC111 : English Communication	September	03/09/2023	9:30am - 10:30am	Theory	Introduction, Language of Communication, Speaking Skills
2.		September	10/09/2023			Understanding the Basis of Verbal Communication, Working with Customers
3.		September	17/09/2023			Developing Professional Telephone Skills, Improving Informal Communication
4.		September	24/09/2023			Reading and Understanding, Writing Skills,
5.		October	01/10/2023			Uncovering the Secrets of Clear writing, Communicating with E-Mail and Memos
6.		October	08/10/2023			Developing Reports and Proposals, Writing for Employment
7.		October	22/10/2023			Identifying and Defining Problems
8.		October	29/10/2023			Solving the Problem, Thinking Critically
9.		November	05/11/2023			Group Decision Making and Problem Solving
10.		November	19/11/2023			Working in Groups and Teams
11.		November	26/11/2023			Exploring Team Roles and Processes, Building and Developing Teams
12.		December	03/12/2023			Presenting yourself Professionally, Developing Your Interpersonal Skills
13.	BNY101: Plant diversity	September	03/09/2023	10:30am - 11:30am	Theory	Viruses & Bacteria
14.		September	10/09/2023			Algae & Life-Cycles of Algae
15.		September	17/09/2023			Fungi
16.		September	24/09/2023			True Fungi
17.		October	01/10/2023			Lichens-Symbiotic Associations
18.		October	08/10/2023			Mycorrhiza
19.		October	22/10/2023			Bryophytes
20.		October	29/10/2023			Morphology, Anatomy And Reproduction of Bryophytes
21.		November	05/11/2023			Pteridophytes
22.		November	19/11/2023			Morphology, Anatomy And Reproduction of Pteridophytes



23.		November	26/11/2023			Gymnosperms & Morphology, Anatomy And Reproduction of Gymnosperms
24.		December	03/12/2023			Morphology of Angiosperms & Anatomy of Angiosperms
25.	S37131: Chemistry-01	September	03/09/2023	11:30am - 12:30pm	Theory	Atomic Structure
26.		September	10/09/2023			Quantum mechanics
27.		September	17/09/2023			Electronic configurations of the atoms
28.		September	24/09/2023			Ionic Bonding
29.		October	01/10/2023			Covalent bonding
30.		October	08/10/2023			Resonance and resonating structures, MO Approach
31.		October	22/10/2023			Physical Effects, Electronic Displacements
32.		October	29/10/2023			Structure, shape and reactivity of organic molecules, Reactive Intermediates
33.		November	05/11/2023			Strength of organic acids and bases, Stereochemistry
34.		November	19/11/2023			Aliphatic Hydrocarbons
35.		November	26/11/2023			Alkanes, Alkenes, Alkynes
36.		December	03/12/2023			Reactions
37.		ZGY101: Animal Diversity	September			03/09/2023
38.	September		10/09/2023	Subkingdom-Protista& Subkingdom Parazoa		
39.	September		17/09/2023	Subkingdom-Metazoa & Phylum-Platyhelminthes		
40.	September		24/09/2023	Phylum-Aschelminthes & Phylum-Annelida		
41.	October		01/10/2023	Phylum-Arthropoda		
42.	October		08/10/2023	Phylum Mollusca		
43.	October		22/10/2023	Phylum Echinodermata		
44.	October		29/10/2023	Phylum-Chordata		
45.	November		05/11/2023	Introduction to subphylum – Vertebrata		
46.	November		19/11/2023	Introduction to Superclass		
47.	November		26/11/2023	Class Reptiles		
48.	December		03/12/2023	Class Aves		
49.		September	03/09/2023			EMs/Models of viruses – T-Phage and TMV, Line drawing/Photograph of Lytic and

	BNY102: Plant Diversity Practical			2:30pm - 4:30pm	Practical	Lysogenic Cycle. Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.
50.		September	10/09/2023			Gram staining & Study of vegetative and reproductive structures of Nostoc, Chlamydomonas (electron micrographs), Oedogonium, Vaucheria, Sargassum and Polysiphonia through temporary preparations and permanent slides.(*Sargassum-Specimen and permanent slides)
51.		September	17/09/2023			Rhizopus and Penicillium: Asexual stage from temporary mounts and sexual structures through permanent slides. Alternaria: Specimens, Photographs and tease mounts.
52.		September	24/09/2023			Puccinia: Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves; section/tease mounts of spores on Wheat and permanent slides of both the hosts.
53.		October	01/10/2023			Agaricus: Specimens of button stage and full grown mushroom; Sectioning of gills of Agaricus.
54.		October	08/10/2023			Lichens: Study of growth forms of lichens (Crustose, Foliose and Fruticose) .Mycorrhiza: Ecto Mycorrhiza and Endo Mycorrhiza (Photographs) Marchantia- Morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemmacup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
55.		October	22/10/2023			Funaria-Morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
56.		October	29/10/2023			Selaginella- Morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m. microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
57.		November	05/11/2023			Equisetum-Morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry), (temporary slides); t.s. rhizome (permanent slide).
58.		November	19/11/2023			Pteris-Morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).
59.	November	26/11/2023	Cycas-Morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v. s. microsporophyll, w. m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).			

60.		December	03/12/2023			Pinus-Morphology (long and dwarf shoots, w.m. dwarf shoot, male and female),w.m.dwarfshoot,t.s.needle,t.s.stem,,l.s./t.s.malecone,w.m.microsporophyll,w.m. microspores (temporary slides), l.s.female cone, t.l.s. & r.l.s. stem (permanent slide). Study of Vegetative Morphology of Angiosperms:-root (type & modification), stem (branching pattern & modification), leaves (type, phyllotaxy, venation, modification),study of reproductive morphology of angiosperms:- inflorescence (cymose, racemose, special), flower (types, parts of flower), fruit (types), study of anatomy of primary structure in:- dicot: root, stem & leaf eg. Sunflower, monocot: root, stem & leaf eg. Maize),study of anatomy of secondary structure in dicot stem e.g. Moringa
61.	S37132: Chemistry- 01	September	03/09/2023	4:30pm - 6:30pm	Practical	Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture
62.		September	10/09/2023			Estimation of oxalic acid by titrating it with KMnO <sub>4</sub> .
63.		September	17/09/2023			Estimation of water of crystallization in Mohr's salt by titrating with KMnO <sub>4</sub> .
64.		September	24/09/2023			Estimation of Fe (II) ions by titrating it with K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> using internal indicator
65.		October	01/10/2023			Estimation of Cu (II) ions eudiometrically using Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> .
66.		October	08/10/2023			Detection of extra elements (N, S, Cl, Br, I) in organic compounds
67.		October	22/10/2023			Separation of mixtures by Chromatography
68.		October	29/10/2023			Measure the R <sub>f</sub> value in each case (combination of two compounds to be given)
69.		November	05/11/2023			Identify and separate the components of a given mixture of two amino acids (glycine) by paper chromatography
70.		November	19/11/2023			Identify and separate the components of a given mixture of two amino acids (aspartic acid) by paper chromatography
71.		November	26/11/2023			Identify and separate the components of a given mixture of two amino acids ( glutamic acid) by paper chromatography
72.		December	03/12/2023			Identify and separate the sugars present in the given mixture by paper chromatography.
73.	ZGY102: Animal	December	10/12/2023	9:30am 11:30am	Practical	Study of whole mount of <i>Amoeba</i> , <i>Euglena</i> , <i>Plasmodium</i> , <i>Paramecium</i> Study of museum specimen from Phylum Porifera <i>Sycon</i> , <i>Hyalonema</i> , and <i>Euplectella</i>
74.		December	10/12/2023	11:30am 1:30pm		Study of museum specimen from Phylum Cnidaria <i>Obelia</i> , <i>Physalia</i> , <i>Aurelia</i> , <i>Tubipora</i> , <i>Metridium</i> Study of museum specimen from Phylum Platyhelminthes <i>Planaria</i> , <i>Taeniasolium</i> ,

	Diversity- Practical				<i>Fasciola hepatica</i>
75.		December	10/12/2023	2:30pm 4:30pm	Study of museum specimen from Phylum Nematoda-Male and female <i>Ascaris lumbricoides</i> Study of museum specimen from Phylum Annelida, <i>Aphrodite, Nereis, Pheretima, Hirudinaria</i>
76.		December	10/12/2023	4:30pm 6:30pm	Study of museum specimen from Phylum Arthropoda <i>Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus, Periplaneta, Apis</i> Study of museum specimen from Phylum Mollusca, <i>Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus</i>
77.		December	17/12/2023	9:30am 11:30am	Study of museum specimen from Phylum Echinodermata <i>Ophiura, Echinus, Cucumaria, and Antedon</i>
78.		December	17/12/2023	11:30am 1:30pm	Study of museum specimen/slides from phylum Protochordate- <i>Balanoglossus, Herdmania and Amphioxius</i> Study of museum specimen from phylum Agnatha, <i>Petromyzon, Myxine</i>
79.		December	17/12/2023	2:30pm 4:30pm	Study of museum specimen from Superclass Pisces <i>Scoliodon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Hippocampus, Tetradon</i> Study of museum specimen from phylum Amphibia <i>Ichthyophis/Ureotyphlus, Salamandra, Bufo, Hyla</i>
80.		December	17/12/2023	4:30pm 6:30pm	Study of museum specimen from phylum Reptiles- <i>Naja, Draco, Chelone, Hemidactylus, Chamaeleon, Vipera, Gavialis</i>
81.		December	24/12/2023	9:30am 11:30am	Study of museum specimen from phylum Aves-six common birds from different orders
82.		December	17/12/2023	11:30am 1:30pm	Study of museum specimen from phylum Mammals-Bat, <i>Funambulus, Loris, Sorex</i>
83.		December	17/12/2023	2:30pm 4:30pm	Study of the following permanent slides: T.S. and L.S. of <i>Sycon</i> , Study of life history stages of <i>Taenia</i> , T.S. of Male and female <i>Ascaris</i>
84.	December	17/12/2023	4:30pm 6:30pm	Key for Identification of poisonous and non-poisonous snakes, An “animal album” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.	
85.	AEC211: EVS	February	04/02/2024		The Multidisciplinary Nature Of Environmental Studies

86.		February	11/02/2024	9:30am - 10:30am	Theory	Natural Resources
87.		February	18/02/2024			Ecosystems
88.		February	25/02/2024			Biodiversity And Its Conservation
89.		March	03/03/2024			Environmental Pollution
90.		March	10/03/2024			Disaster Management
91.		March	17/03/2024			Social Issues And The Environment
92.		March	31/03/2024			Environmental Ethics
93.		April	07/04/2024			Environment Protection Act
94.		April	28/04/2024			Human Population And The Environment
95.		May	05/05/2024			Nutrition, health and human rights
96.		May	12/05/2024			Field Work
97.	BNY107: Plant Ecology and Taxonomy - Practical	February	04/02/2024	10:30am - 11:30am	Theory	Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter of any wild plant with herbarium label (to be submitted in the record book).
98.		February	11/02/2024			Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
99.		February	18/02/2024			Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats.
100		February	25/02/2024			(a) Study of morphological adaptations of hydrophytes and xerophytes (four each).
101		March	03/03/2024			(b) Study of biotic interactions of the following: Stem parasite ( <i>Cuscuta</i> ), Rootparasite (Orobanchae), Epiphytes, Predation (Insectivorous plants)
102		March	10/03/2024			Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (species to be listed)
103		March	17/03/2024			Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law
104		March	31/03/2024			Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification): Brassicaceae - <i>Brassica</i> , <i>Alyssum</i> / <i>Iberis</i> ;

105		April	07/04/2024			Asteraceae - <i>Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax</i> ; Solanaceae - <i>Solanumnigrum, Withania</i> ; Lamiaceae - <i>Salvia, Oscimum</i> ; Liliaceae - <i>Asphodelus / Lilium / Allium</i> .
106		April	28/04/2024			Mounting of a properly dried and pressed specimen
107	Chemistry (Sem 2)	February	04/02/2024	11:30am - 12:30pm	Theory	Chemical Energetics
108		February	11/02/2024			Chemical Equilibrium
109		February	18/02/2024			Variation of enthalpy of a reaction with temperature – Kirchoff's equation
110		February	25/02/2024			Ionic Equilibria
111		March	03/03/2024			Ionization of weak acids and bases
112		March	10/03/2024			Buffer solutions
113		March	17/03/2024			Aromatic hydrocarbons
114		March	31/03/2024			Alkyl and Aryl Halides
115		April	07/04/2024			Aryl Halides Preparation
116		April	28/04/2024			Alcohols
117		May	05/05/2024			Phenols:
118	May	12/05/2024	Ethers (aliphatic and aromatic)			
119	ZGY106: Plant Diversity Practical	February	04/02/2024	12:30pm -1:30pm	Theory	Integumentary System
120		February	11/02/2024			Skeletal System
121		February	18/02/2024			Digestive System
122		February	25/02/2024			Respiratory System
123		March	03/03/2024			Circulatory System
124		March	10/03/2024			Urinogenital System
125		March	17/03/2024			Nervous System
126		March	31/03/2024			Endocrine system
127		April	07/04/2024			Early Embryonic Development
						Fertilization
						Early development of frog and humans
						Types of morphogenetic movements
						Late Embryonic Development

128		April	28/04/2024			Metamorphic events in frog life cycle and its hormonal regulation
129		May	05/05/2024			Control of Development
130		May	12/05/2024			Fundamental processes in development (brief idea):
131	BNY107: Plant Ecology & Taxonomy	February	04/02/2024	2:30pm - 4:30pm	Practical	Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter of any wild plant with herbarium label (to be submitted in the record book).
132						Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
133		February	11/02/2024			Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats. a) Study of morphological adaptations of hydrophytes and xerophytes (four each). b) Study of biotic interactions of the following: Stem parasite ( <i>Cuscuta</i> ), Root parasite (Orobanchae), Epiphytes, Predation (Insectivorous plants)
134		February	18/02/2024			Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter of any wild plant with herbarium label (to be submitted in the record book).
135		February	25/02/2024			Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (species to be listed) Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law
136		March	03/03/2024			Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification): Brassicaceae -Brassica, Alyssum / Iberis;
137		March	10/03/2024			Asteraceae -Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax; Solanaceae - Solanumnigrum, Withania; Lamiaceae -Salvia, Oscimum; Liliaceae - Asphodelus / Lilium / Allium.
138		March	17/03/2024			Mounting of a properly dried and pressed specimen

139	Chemistry (Sem 2)	May	12/05/2024	4:30pm - 6:30pm	Practical	To verify the Superposition, and Maximum Power Transfer Theorem
140		February	04/02/2024			Determination of heat capacity of calorimeter for different volumes
141		February	11/02/2024			Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide
142		February	18/02/2024			Determination of enthalpy of ionization of acetic acid
143		February	25/02/2024			Determination of integral enthalpy of solution of salts (KNO <sub>3</sub> , NH <sub>4</sub> Cl).
144		March	03/03/2024			Determination of enthalpy of hydration of copper sulphate
145		March	10/03/2024			Study of the solubility of benzoic acid in water and determination of $\Delta H$ .
146		March	17/03/2024			Ionic equilibria - pH measurements
147		March	31/03/2024			Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter
148		April	07/04/2024			Preparation of buffer solutions: (i) Sodium acetate-acetic acid (ii) Ammonium chloride-ammonium hydroxide
149		April	28/04/2024			Purification of organic compounds by crystallization (from water and alcohol) and distillation.
150		May	05/05/2024			Criteria of Purity: Determination of melting and boiling points
151		May	12/05/2024			Preparations: Mechanism of various reactions involved to be discussed.
152	ZGY107: Anatomy & Developmental Biology of Vertebrates	May	18/05/2024	9:30am 11:30am	Practical	Study of Disarticulated skeleton of fowl and rabbit Study of Carapace and plastron of Reptiles
153		May	18/05/2024	11:30am 1:30pm		Study of Mammalian skulls: One herbivorous and one carnivorous animal Study of Integumentary derivatives of Aves and Mammals
154		May	18/05/2024	2:30pm 4:30pm		Study of Scales and Fins in Fishes Comparative study of Brain in Vertebrates
155		May	18/05/2024	4:30pm 6:30pm		Comparative study of Heart in Vertebrates Comparative study of Skin in Vertebrates
156		May	19/05/2024	9:30am 11:30am		Study of developmental stages of Frog
157		May	19/05/2024	11:30am 1:30pm		Study of different types of eggs in Vertebrates
158		May	19/05/2024	2:30pm 4:30pm		Study of different types of Cleavage in Vertebrates



159		May	19/05/2024	4:30pm 6:30pm		Study of the different types of placenta in Mammals
160		May	26/05/2024	9:30am 11:30am		Study of different types of embryos in Amphibia, Reptilia, Aves and Mammalia
161		May	26/05/2024	11:30am 1:30pm		Study of extra embryonic membranes in Mammals
162		May	26/05/2024	2:30pm 4:30pm		Study of Chick embryo (Whole Mounts)
163		May	26/05/2024	4:30pm 6:30pm		Study of Chick embryo (Transverse Section)

## V130: MASTER OF SCIENCE (MATHEMATICS){2021PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	S25031: Complex Analysis	September	03/09/2023	10.30am- 11.30am	Theory	Power Series
2.		September	10/09/2023			Analytic Functions, Harmonic Functions
3.		September	17/09/2023			Mobius Transformations
4.		September	24/09/2023			Power Series Representation of Analytic Functions
5.		October	01/10/2023			Zeros of an Analytic Function, The Index of a Closed Curve
6.		October	08/10/2023			Morera's Theorem and Counting Zeros
7.		October	22/10/2023			Goursat's Theorem
8.		October	29/10/2023			Classification of Singularities, Residues
9.		November	05/11/2023			The Argument Principle
10.		November	19/11/2023			Branches
11.		November	26/11/2023			Hadamard Theorem
12.		December	03/12/2023			Spaces, Analytic Continuation
13.	S25032: Field Theory	September	03/09/2023	11.30am- 12.30pm	Theory	Irreducible Polynomials
14.		September	10/09/2023			Adjunction of Roots
15.		September	17/09/2023			Algebraic Extensions, Algebraically Closed Fields
16.		September	24/09/2023			Splitting Fields
17.		October	01/10/2023			Normal Extensions, Finite Fields
18.		October	08/10/2023			Separable Extensions
19.		October	22/10/2023			Automorphism Groups, Fixed Fields
20.		October	29/10/2023			Fundamental Theorem of Galois Theory
21.		November	05/11/2023			Different Galois Groups
22.		November	19/11/2023			Cyclotomic Polynomials, Cyclic Extensions
23.		November	26/11/2023			Polynomials Solvable by Radicals
24.		December	03/12/2023			Ruler and Compass Constructions
25.		September	03/09/2023			Integral Equation with Separable Kernel
26.		September	10/09/2023			Method of Successive Approximation
27.		September	17/09/2023			Resolvent Kernel

28.	S25033: Integral Equations	September	24/09/2023	12.30pm- 1.30pm	Theory	Application to Ordinary Differential Equations
29.		October	01/10/2023			Dirac Delta function
30.		October	08/10/2023			Green's function
31.		October	22/10/2023			Symmetric kernels
32.		October	29/10/2023			Bilinear Forms, Hilbert-Schmidt theorem
33.		November	05/11/2023			Symmetric Integral Equation
34.		November	19/11/2023			Singular Integral equations
35.		November	26/11/2023			Application of Laplace transform
36.		December	03/12/2023			Application of Fourier transform
37.	S25034 : Discrete Mathematics	September	03/09/2023	2.30pm – 3.30pm	Theory	Permutations, Combinations
38.		September	10/09/2023			Generation of Permutations and Combinations
39.		September	17/09/2023			Discrete Probability
40.		September	24/09/2023			Graphs, Paths and Circuits
41.		October	01/10/2023			Eulerian and Hamiltonian Paths and Circuits
42.		October	08/10/2023			Planar Graphs
43.		October	22/10/2023			Trees, Rooted and Binary Trees
44.		October	29/10/2023			Spanning Trees
45.		November	05/11/2023			Cut-Sets
46.		November	19/11/2023			Boolean Algebras : Lattices and Algebraic System
47.		November	26/11/2023			Basic Properties of Algebraic Systems Defined by Lattices
48.		December	03/12/2023			Boolean Functions and Boolean Expressions
49.	S25035: Operations Research	September	03/09/2023	3.30pm – 4.30pm	Theory	Operations Research and its scope
50.		September	10/09/2023			Linear Programming Problems
51.		September	17/09/2023			Simplex Method, Duality Theory and Dual Simplex Method
52.		September	24/09/2023			Game Models and Related Theory
53.		October	01/10/2023			Two Person Zero Sum Game, Dominance in Games
54.		October	08/10/2023			Mixed Strategies( $2 \times n$ and $m \times 2$ games)
55.		October	22/10/2023			Network Analysis
56.		October	29/10/2023			Fulkerson's Rule
57.		November	05/11/2023			Critical Path Method (CPM), Programme Evaluation and Review Technique (PERT)
58.		November	19/11/2023			MONTE CARLO Method

59.		November	26/11/2023			Generation of Random Numbers			
60.		December	03/12/2023			Simulation Languages			
61.	S25041: Differential Geometry	February	04/02/2024	10.30am- 11.30am	Theory	Curves, Reparameterization			
62.		February	11/02/2024			Curvature of Curves			
63.		February	18/02/2024			Plane Curves			
64.		February	25/02/2024			Isoperimetric Inequality			
65.		March	03/03/2024			Surfaces in $R^3$			
66.		March	10/03/2024			Tangent and Normal			
67.		March	17/03/2024			Types of Surfaces			
68.		March	31/03/2024			First Fundamental Form			
69.		April	07/04/2024			Isometries of Surfaces			
70.		April	28/04/2024			Second Fundamental Form			
71.		May	05/05/2024			Curvature of Surfaces			
72.		May	12/05/2024			Gaussian and Mean Curvature			
73.		S25042: Functional Analysis	February			04/02/2024	11.30am- 12.30pm	Theory	Banach Spaces
74.			February			11/02/2024			Continuous Linear Transformation
75.	February		18/02/2024	The Hahn Banach Theorem					
76.	February		25/02/2024	The Open Mapping Theorem					
77.	March		03/03/2024	The Conjugate of an Operator					
78.	March		10/03/2024	Hilbert Spaces, Orthogonal Complements, Orthonormal Sets					
79.	March		17/03/2024	The Conjugate Space $H^*$					
80.	March		31/03/2024	The Adjoint of an Operator					
81.	April		07/04/2024	Different Types of Operators					
82.	April		28/04/2024	Spectral Resolution of $T$					
83.	May		05/05/2024	The Determinant and Spectrum of an Operator					
84.	May		12/05/2024	The Spectral Theorem					
85.	S25043:		February	04/02/2024	12.30pm- 1.30pm	Theory			Mechanics of System of Particles
86.			February	11/02/2024					D'Alembert's Principle and Lagrange's Equations
87.		February	18/02/2024	Central Force Motion, Kepler's Laws and Virial Theorem					
88.		February	25/02/2024	Calculus of Variation					
89.		March	03/03/2024	Euler's Equation and its Applications					
90.		March	10/03/2024	Hamilton's Principle, Hamilton's Equation of Motion					

91.	Classical Mechanics	March	17/03/2024			Routh Procedure and the Least Action Principle
92.		March	31/03/2024			Canonical Transformations, Invariance under Canonical Transformations
93.		April	07/04/2024			Lagrange and Poission Brackets
94.		April	28/04/2024			Rigid Body Motion-Rotations in Plane and Space
95.		May	05/05/2024			Eulerian Angles, A Moving Coordinate Frame
96.		May	12/05/2024			Rotational Dynamics of a Rigid Body
97.	S25044 : Cryptography	February	04/02/2024	2.30pm – 3.30pm	Theory	Time Estimates for doing Arithmetic
98.		February	11/02/2024			Divisibility and the Euclidean Algorithm
99.		February	18/02/2024			Congruences, Some Applications to Factoring
100.		February	25/02/2024			Finite Fields
101.		March	03/03/2024			Quadratic Residues and Quadratic Reciprocity
102.		March	10/03/2024			Some Simple Cryptosystems, Enciphering Matrices
103.		March	17/03/2024			The Idea of Public Key Cryptography
104.		March	31/03/2024			RSA Cryptosystem
105.		April	07/04/2024			Discrete Log, Pseudo primes, The rho method
106.		April	28/04/2024			Elliptic Curve Cryptosystems
107.		May	05/05/2024			Elliptic Curve Primality Test
108.		May	12/05/2024			Elliptic Curve Factorization
109.		S25045: Topics in Fuzzy Mathematics	February			04/02/2024
110.	February		11/02/2024	Convex Fuzzy Sets		
111.	February		18/02/2024	Extension Principle, Fuzzy Complementation		
112.	February		25/02/2024	Fuzzy Intersections and Unions		
113.	March		03/03/2024	Dual triplets and Aggregation operations		
114.	March		10/03/2024	Fuzzy Arithmetic, Lattice of Fuzzy Numbers and Fuzzy Equations		
115.	March		17/03/2024	Fuzzy Relations		
116.	March		31/03/2024	Fuzzy Equivalence Relations		
117.	April		07/04/2024	Composition of Fuzzy Relations		
118.	April		28/04/2024	More Fuzzy Relations Equations and Approximate Solutions		
119.	May		05/05/2024	Fuzzy Propositions, Fuzzy Quantifiers		
120.	May		12/05/2024	Approximate Reasoning		

## V136: MASTER OF SCIENCE (ENVIRONMENTAL SCIENCE) {2021 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	Sem03: Course 9: Environmental monitoring and Energy studies	September	03/09/2023	10.30am- 11.30am	Theory	Environmental Quality Assessment and Monitoring
2.		September	10/09/2023			Environmental Impact Assessment
3.		September	17/09/2023			Environmental Impact Assessment Techniques
4.		September	24/09/2023			Remote Sensing in Environmental Monitoring
5.		October	01/10/2023			About Energy
6.		October	08/10/2023			Bio catalysis and nonconventional energy
7.		October	22/10/2023			Biofuel production (bio-ethanol and biodiesel)
8.		October	29/10/2023			Production of biodegradable materials
9.		November	05/11/2023			Energy Use
10.		November	19/11/2023			Energy Conservation and Energy Economics
11.		November	26/11/2023			Solid wastes
12.		December	03/12/2023			Disposal in landfills
13.	Sem03: Course 10: Instrumentation and lab techniques	September	03/09/2023	11.30am- 12.30pm	Theory	Study of machinery, electric motors
14.		September	10/09/2023			Drilling equipment, pumping equipment
15.		September	17/09/2023			Calorimetry and Spectrophotometry
16.		September	24/09/2023			Microscopy
17.		October	01/10/2023			Nanotechnology
18.		October	08/10/2023			Nanomaterials
19.		October	22/10/2023			Environmental Nano Remediation Technology
20.		October	29/10/2023			Nano Filtration
21.		November	05/11/2023			Laboratory safety
22.		November	19/11/2023			Personal Protective Equipment [PPE]
23.		November	26/11/2023			Administrative controls
24.		December	03/12/2023			Response to specific incidents/ accidents
25.		September	03/09/2023			Environmental Microbiology
26.		September	10/09/2023			Microbial diversity and Metabolism
27.		September	17/09/2023			Microbial activities
28.		September	24/09/2023			Bio-indicators

29.	Sem03: Course 11: Environmental Microbiology and Toxicology	October	01/10/2023	12.30pm- 1.30pm	Theory	Determination of microbiological quality
30.		October	08/10/2023			Biosensor
31.		October	22/10/2023			Toxicology
32.		October	29/10/2023			Environmental Toxicology - 1
33.		November	05/11/2023			Nontoxicity
34.		November	19/11/2023			Environmental Toxicology - 2:
35.		November	26/11/2023			Safety regulations
36.		December	03/12/2023			Pollution of the ecosphere
37.	Sem03: Course 12: Lab Activities on Course 9, Course 10 and Course 11	September	03/09/2023	2.30pm – 4.30pm	Practical	Interpretation of Aerial photographs and preparing weather report based on it.
38.		September	10/09/2023			Determination of relative humidity from the atmosphere
39.		September	17/09/2023			Determination of particulate matter from the industrial area by High Volume Sampler/Settling method
40.		September	24/09/2023			Study of solar cells
41.		October	01/10/2023			Case studies on energy efficiency analysis
42.		October	08/10/2023			Study of various agro wastes as substrates for biofuel production
43.		October	22/10/2023			Separation of a mixture of two amino acids by ascending and horizontal paper chromatography
44.		October	29/10/2023			Verify Lambert-Beer's law and determine the concentration of CuSO <sub>4</sub> /KMnO <sub>4</sub> /K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> in a solution of unknown concentration
45.		November	05/11/2023			Isolation and enumeration of microbes from environmental samples
46.		November	19/11/2023			Evaluation of anti-microbial chemical agents
47.		November	26/11/2023			Estimation of metals in soil, plants and animal tissue
48.		December	03/12/2023			Case studies on environmental effects of pesticides
49.	Sem04: Course 13: Sustainable	February	04/02/2024	10.30am- 11.30am	Theory	Basic concept of Biodiversity, Origin of Species, Value of Biodiversity
50.		February	11/02/2024			Ecosystem Services, Biodiversity in India
51.		February	18/02/2024			Introduction to Wetland Biodiversity
52.		February	25/02/2024			Genetic resources
53.		March	03/03/2024			Agro biodiversity

54.	Management of Biodiversity [MOOC]	March	10/03/2024			Animal Genetic Resources
55.		March	17/03/2024			Drivers of biodiversity loss
56.		March	31/03/2024			Impact of Climate Change on Biodiversity
57.		April	07/04/2024			Invasive Species as a Threat to Biodiversity, Consequences of Biodiversity Loss
58.		April	28/04/2024			Biodiversity conservation and sustainable management
59.		May	05/05/2024			Sustainable Management of Biodiversity
60.		May	12/05/2024			International Instruments to Conserve Biological Diversity
61.	Sem04: Course 14: Statistical Approaches and Modelling in Environmental Sciences	February	04/02/2024	11.30am- 12.30pm	Theory	Basics of Statistics
62.		February	11/02/2024			Statistical methods
63.		February	18/02/2024			Probability
64.		February	25/02/2024			Correlation
65.		March	03/03/2024			Regression
66.		March	10/03/2024			Testing of hypothesis
67.		March	17/03/2024			Introduction-Environmental modelling
68.		March	31/03/2024			Chemical transport models including basic principles and numerical methods
69.		April	07/04/2024			Inverse modelling
70.		April	28/04/2024			Transformation processes
71.		May	05/05/2024			Water quality modelling
72.		May	12/05/2024			Air quality modelling
73.	Sem04: Course 15: Environmental issues and Human Health	February	04/02/2024	12.30pm- 1.30pm	Theory	Environmental pollution
74.		February	11/02/2024			Air sampling and monitoring techniques
75.		February	18/02/2024			Noise Pollution
76.		February	25/02/2024			Aquatic Pollution
77.		March	03/03/2024			Soil Pollution
78.		March	10/03/2024			Radioactive Pollution
79.		March	17/03/2024			Contemporary and emerging environmental issues
80.		March	31/03/2024			Basic principle of environmental health
81.		April	07/04/2024			Industrial Toxicology
82.		April	28/04/2024			Health maintenance
83.		May	05/05/2024			Treatment of variation



84.		May	12/05/2024			Environmental and occupational risk assessment
85.	Sem04: Course 16: Project Work	February	04/02/2024	2.30pm – 4.30pm	Practical	Project work
86.		February	11/02/2024			Project work
87.		February	18/02/2024			Project work
88.		February	25/02/2024			Project work
89.		March	03/03/2024			Project work
90.		March	10/03/2024			Project work
91.		March	17/03/2024			Project work
92.		March	31/03/2024			Project work
93.		April	07/04/2024			Project work
94.		April	28/04/2024			Project work
95.		May	05/05/2024			Project work
96.		May	12/05/2024			Project work

## V141: MASTER IN SCIENCE (PHYSICS){2022 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	PHY131: Statistical Mechanics	September	03/09/2023	10.30am- 11.30am	Theory	Introduction to Thermodynamics
2.		September	10/09/2023			Thermodynamic Processes and Systems
3.		September	17/09/2023			Maxwell's relations
4.		September	24/09/2023			Thermodynamic Potentials, Conditions of Equilibrium
5.		October	01/10/2023			crocanonical Ensemble , Examples of Microcanonical Ensemble
6.		October	08/10/2023			Canonical Ensemble, Grand Canonical Ensemble
7.		October	22/10/2023			Quantum Statistical Mechanics Density Matrix
8.		October	29/10/2023			Single Particle Quantum Partition Function
9.		November	05/11/2023			Harmonic Oscillator, Wigner Transformation
10.		November	19/11/2023			Grand Canonical Formulation of Ideal Gas
11.		November	26/11/2023			Bose-Einstein Statistics
12.		December	03/12/2023			General Treatment of a Bose gas, Bose Gas
13.	PHY132: Condensed Matter Physics	September	03/09/2023	11.30am- 12.30pm	Theory	Solid State Physics
14.		September	10/09/2023			Laue equations
15.		September	17/09/2023			Brillouin zone
16.		September	24/09/2023			Covalent crystals
17.		October	01/10/2023			Bonds Structure
18.		October	08/10/2023			Sommerfeld theory
19.		October	22/10/2023			Fermi-Dirac distribution, Thermal conductivity
20.		October	29/10/2023			Reflection and transmission amplitudes and coefficients
21.		November	05/11/2023			Nearly Free Electrons Model
22.		November	19/11/2023			Fermi energy and carrier concentration, Phonons
23.		November	26/11/2023			Diamagnetism, Paramagnetism
24.		December	03/12/2023			Superconductivity, Josephson Effect
25.		September	03/09/2023			Determination of orientation of a crystal by back reflection Laue method.
26.		September	10/09/2023			To measure the superconductivity transition temperature and transition width of high-temperature

	PHY133: Physics III – Practical			12.30pm- 1.30pm	Practical	superconductors.
27.		September	17/09/2023			Determination of wavelength of He-Ne Laser by transmission grating and reflection grating.
28.		September	24/09/2023			Beam divergence of a Diode Laser
29.		October	01/10/2023			Determination of the diameter of a thin wire using a laser
30.		October	08/10/2023			To determine the dipole moment of a given liquid
31.		October	22/10/2023			To determine magnetic susceptibility of FeCl <sub>3</sub>
32.		October	29/10/2023			To determine the specific heat of graphite
33.		November	05/11/2023			Determination of the yield point and the breaking point of an elastic material
34.		November	19/11/2023			Measurement of resistance by two probe method with variation in temperature.
35.		November	26/11/2023			Development of microstructures by photolithography.
36.		December	03/12/2023			Study of photoluminescence of nanoparticles.
37.		PHY134: Fundamentals Of Materials Science	September			03/09/2023
38.	September		10/09/2023	Miller indices		
39.	September		17/09/2023	Solids		
40.	September		24/09/2023	Close-Packed Spheres		
41.	October		01/10/2023	Structure of Solids, Defects		
42.	October		08/10/2023	Dislocations, Defects in Crystalline Solids		
43.	October		22/10/2023	Phase Diagrams, Diffusion		
44.	October		29/10/2023	Time-temperature-transformation (TTT) diagram		
45.	November		05/11/2023	Phase Transformations		
46.	November		19/11/2023	Mechanical Behaviour of Materials		
47.	November		26/11/2023	Dislocation interaction leading to strain hardening		
48.	December		03/12/2023	Fracture		
49.	PHY135: Energy Studies	September	03/09/2023	3.30pm – 4.30pm	Theory (Elective)	Indian Energy Scenario
50.		September	10/09/2023			Various types of energy sources
51.		September	17/09/2023			Various types of energy sources
52.		September	24/09/2023			Energy Security
53.		October	01/10/2023			Non Renewable Energy sources & Renewable Energy sources
54.		October	08/10/2023			Solar Radiation and Its Measurements

55.		October	22/10/2023			Basics of Heat transfer
56.		October	29/10/2023			Solar Radiation and Its Measurements, Selective coatings
57.		November	05/11/2023			Solar Photovoltaics (SPV), Application of SPV
58.		November	19/11/2023			Solar Thermal Devices and Systems, Solar Devices
59.		November	26/11/2023			Bio Energy, Hydrogen Energy
60.		December	03/12/2023			Wind Energy, Energy Storage
61.	PHY136: Energy Studies- Practical	February	04/02/2024	10.30am- 11.30am	Practical (Elective)	Determination of Calorific value of Wood/Cow dung.
62.		February	11/02/2024			Study of Optical Properties of selective coatings.
63.		February	18/02/2024			Study of Photovoltaic a Characteristics of Solar Cell ( Variation of Intensity, Distance between Source and Solar Cell, and load)
64.		February	25/02/2024			Study of power versus load characteristics of Solar Power Photovoltaic Systems and Study of Series and Parallel Combination of Solar Photovoltaic panels.
65.		March	03/03/2024			Study of Solar Collector (Efficiency versus $\Delta T/I$ )
66.		March	10/03/2024			Determination of overall heat Loss Coefficient in Evacuated Tube Collector
67.		March	17/03/2024			Determination of overall heat Loss Coefficient in Flat Plate Collector
68.		March	31/03/2024			Performance Evaluation of Box Type solar cooker
69.		April	07/04/2024			Study of Parabolic Type Solar Cooker
70.		April	21/04/2024			Evaluate the performance of Fresnel lens solar concentrator
71.		April	28/04/2024			Study of Solar Dryer, Study of Solar Still
72.		May	05/05/2024			Visit to solar energy farm (Solar PV plant/Wind energy/Thermal energy/ Hydroelectric/Co generation plant).
73.	PHY137: Electronic Instrumentation	February	04/02/2024	11.30am- 12.30pm	Theory (Elective)	General Configuration
74.		February	11/02/2024			Input- Output Configuration
75.		February	18/02/2024			Static Performance Characteristics, Dynamic characteristics
76.		February	25/02/2024			Resistive Type Displacement Sensors
77.		March	03/03/2024			Capacitive Type Displacement Sensors

78.		March	10/03/2024			Inductive Type Displacement Sensors, Hall Effect Sensors
79.		March	17/03/2024			Flow measurements
80.		March	31/03/2024			Other Flow Metering (measuring) Techniques
81.		April	07/04/2024			Temperature measurements, Thermocouples
82.		April	21/04/2024			Signal Conditioning Processing
83.		April	28/04/2024			Data Acquisition Systems
84.		May	05/05/2024			Digital Display Systems, Printers
85.	PHY138: Electronic Instrumentation- Practical	February	04/02/2024	12.30pm- 1.30pm	Practical (Elective)	To design, build and test absolute value circuits.
86.		February	11/02/2024			To design, build and test thermocouple amplifier having cold junction temperature compensation.
87.		February	18/02/2024			To design, build and test Instrumentation amplifier for load cell.
88.		February	25/02/2024			Study of IC 7107 as DPM. To design build and test 3 & 1/2 DPM for load cell.
89.		March	03/03/2024			To design, build and test displacement sensor using potentiometer, variable capacitor.
90.		March	10/03/2024			Study of accelerometer module.
91.		March	17/03/2024			To design build and test sample & hold amplifier.
92.		March	31/03/2024			To design, build and test bipolar DAC using binary weighted ladder and Op-amps.
93.		April	07/04/2024			To design, build and test Log amplifier using Op-amps and diodes
94.		April	21/04/2024			To Design, build and test phase sensitive detector, Temperature characteristics of thermistors or strain gauge and applications
95.		April	28/04/2024			Characteristics and applications of photo electric devices.(photo diode led)
96.		May	05/05/2024			Study of data acquisition system, Study of LVDT sensor
97.		February	04/02/2024			Constitutional Values and Human Rights
98.		February	11/02/2024			Fundamental Rights-Right to Equality
99.		February	18/02/2024			Fundamental Rights-Right to Freedom
100.		February	25/02/2024			Fundamental Rights-Religious, Culture and Other Rights

101.	HRC002: HUMAN RIGHTS AND THE INDIAN CONSTITUTION	March	03/03/2024	2.30pm – 3.30pm	Theory	Directive Principles of State Policy, Fundamental Duties and Human Rights
102.		March	10/03/2024			Judiciary as Custodian of Human Rights
103.		March	17/03/2024			Impediments of Human Rights
104.		March	31/03/2024			Appendix I - The Constitution of India Part III
105.		April	07/04/2024			Appendix II - The Constitution of India Part IV
106.		April	21/04/2024			Appendix III - The Constitution of India Part IV-A
107.		April	28/04/2024			Appendix IV
108.		May	05/05/2024			Appendix V
109.	PHY141 Nuclear and Particle Physics	February	04/02/2024	3.30pm – 4.30pm	Theory	Nuclear Interactions
110.		February	11/02/2024			Nuclear Reactions
111.		February	18/02/2024			Characteristics of Nucleolus
112.		February	25/02/2024			Nuclear Forces
113.		March	03/03/2024			Direct and compound nuclear reaction mechanisms
114.		March	10/03/2024			Nuclear Models, Shell model
115.		March	17/03/2024			Nuclear Energy Level, Collective model of Bohr and Mottelson
116.		March	31/03/2024			Nuclear Decay, Angular momentum
117.		April	07/04/2024			Parity selection rules, Gamma decay
118.		April	21/04/2024			Elementary Particle Physics, Hadrons and leptons
119.		April	28/04/2024			Elementary' ideas of CP and CPT invariance
120.		May	05/05/2024			Quark model
121.	PHY142 Research Methodology	February	04/02/2024	10.30am- 11.30am	Theory	Research, Methods in research
122.		February	11/02/2024			Experimental design
123.		February	18/02/2024			Sampling method
124.		February	25/02/2024			Data collections, Representation of data
125.		March	03/03/2024			Graphical representation
126.		March	10/03/2024			Analysis of data
127.		March	17/03/2024			Use of inferential statistical tools in research
128.		March	31/03/2024			Biostatistical Test, Use of ANOVA
129.		April	07/04/2024			Application of correlation of data
130.		April	21/04/2024			Literature collection, Intellectual Property Rights

131.		April	28/04/2024			Research Databases
132.		May	05/05/2024			Research Metrics
133.	PHY143 Physics of Thin Film	February	04/02/2024	11.30am- 12.30pm	Theory	Introduction & Comparison of thin and thick films
134.		February	11/02/2024			Theory of growth of thin films, Thin Film Growth
135.		February	18/02/2024			Deposition Techniques and Measurement of thickness
136.		February	25/02/2024			Thin Film preparation techniques
137.		March	03/03/2024			Thin film Preparation by Optical method
138.		March	10/03/2024			Techniques for Measurement of film thickness
139.		March	17/03/2024			Properties of thin films
140.		March	31/03/2024			Mechanical properties
141.		April	07/04/2024			Optical properties
142.		April	21/04/2024			Luminescence
143.		April	28/04/2024			Applications of Thin Films , Junction devices
144.		May	05/05/2024			Solar cells, As storage devices
145.	PHY144 Physics of Nano Materials	February	04/02/2024	12.30pm- 1.30pm	Theory	Quantum Size Effects
146.		February	11/02/2024			Electron Confinement
147.		February	18/02/2024			Properties of Nano Materials
148.		February	25/02/2024			Structural Properties of Nano Materials
149.		March	03/03/2024			Physical & Chemical Methods for the Synthesis of Nanomaterials
150.		March	10/03/2024			Techniques For Synthesis Of Nanomaterials
151.		March	17/03/2024			Synthesis of nanoparticles
152.		March	31/03/2024			Method for nanoparticles Synthesis
153.		April	07/04/2024			Carbon Nanomaterials, Porous Material
154.		April	21/04/2024			Aerogels, Functional Nanomaterials
155.		April	28/04/2024			Mechanical Properties, Thermal & Electrical Properties
156.		May	05/05/2024			Optical & Magnetic Properties, Applications of Nanomaterials
157.	PHY145 Physics of LASERs	February	04/02/2024	2.30pm – 3.30pm	Theory	General Introduction, Emission
158.		February	11/02/2024			Line Broadening Mechanisms
159.		February	18/02/2024			Laser Rate Equations
160.		February	25/02/2024			Laser Amplifiers
161.		March	03/03/2024			Resonance Frequency, Resonators

162.		March	10/03/2024			Spherical Mirror Resonators
163.		March	17/03/2024			Mirror Resonator
164.		March	31/03/2024			The Threshold Condition
165.		April	07/04/2024			Characteristics, LASER Properties
166.		April	21/04/2024			LASER Characteristics, Types of LASER
167.		April	28/04/2024			LASER Amplifiers
168.		May	05/05/2024			LASER Safety
169.	PHY146 Project	February	04/02/2024		Term Work	
170.		February	11/02/2024			
171.		February	18/02/2024			
172.		February	25/02/2024			
173.		March	03/03/2024			
174.		March	10/03/2024			
175.		March	17/03/2024			
176.		March	31/03/2024			
177.		April	07/04/2024			
178.		April	21/04/2024			
179.		April	28/04/2024			
180.		May	05/05/2024			



## V142: MASTER IN CHEMISTRY (CHEMISTRY) {2022 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	CHE131: ORGANIC REACTION MECHANISM	September	03/09/2023	10.30am- 11.30am	Theory	Kinetic Methods & Types of reactions
2.		September	10/09/2023			Energy of Activation
3.		September	17/09/2023			Non-Kinetic Methods
4.		September	24/09/2023			Oxidation Methods & Oxidation Reagent
5.		October	01/10/2023			Reduction Methods
6.		October	08/10/2023			Reductions of conjugated systems
7.		October	22/10/2023			Study of reactive intermediates & Study of reactions
8.		October	29/10/2023			Molecular recognition
9.		November	05/11/2023			Supramolecular reactivity and catalysis
10.		November	19/11/2023			Free radical reactions
11.		November	26/11/2023			Neighbouring group assistance & Allylic hydrogenation (NBS)
12.		December	03/12/2023			Reaction of Aromatic Compounds
13.	CHE132: ADVANCED ORGANIC SPECTROSCOPY	September	03/09/2023	11.30am- 12.30pm	Theory	Ultraviolet and Visible Spectroscopy
14.		September	10/09/2023			Molecular structure
15.		September	17/09/2023			Woodward -Fisher rules & Calculation of $\lambda_{max}$
16.		September	24/09/2023			Infrared Spectroscopy & Instrumentation of IR Spectroscopy
17.		October	01/10/2023			Vibrational frequencies of carbonyl compounds
18.		October	08/10/2023			FT-IR Materials
19.		October	22/10/2023			NMR Spectroscopy
20.		October	29/10/2023			General introduction and definition
21.		November	05/11/2023			Stereochemistry & $^{13}C$ NMR spectroscopy
22.		November	19/11/2023			Mass spectrometry & Determination of molecular formulae
23.		November	26/11/2023			Ortho effect fragmentation
24.		December	03/12/2023			Mossbauer spectroscopy
25.		September	03/09/2023			

26.	CHE133: ORGANIC REACTION MECHANISM AND ADVANCED ORGANIC SPECTROSCOPY- PRACTICAL	September	10/09/2023	12.30pm- 1.30pm	Practical	Qualitative Analysis
27.		September	17/09/2023			Quantitative analysis: Two step Preparations - Preparation of m-Nitroaniline & Preparation of Benzanilide from benzophenone
28.		September	24/09/2023			Quantitative analysis: Two step Preparations - Preparation of Phthalimide & Preparation of N-Bromosuccinimide
29.		October	01/10/2023			Quantitative analysis: Two step Preparations - Preparation of 4-methyl -7-acetoxy coumarin, Preparation of 1, 2, 3, 4- Tetrahydro carbazole & Preparation of p-ethoxy acetanilide
30.		October	08/10/2023			Estimation:- acetylation method & Zeisel's method
31.		October	22/10/2023			Estimation:- Acetyl Ester & sodium sulphite method
32.		October	29/10/2023			Preparations: Single Stage
33.		November	05/11/2023			Preparations: Single Stage
34.		November	19/11/2023			Preparations: Single Stage
35.		November	26/11/2023			Preparations: Single Stage
36.		December	03/12/2023			Interpretation of UV, FT-IR and <sup>1</sup> H-NMR & Mass spectrum of above synthesized compounds. (Any 8 Compounds)
37.		CHE134: ADVANCED SYNTHETIC METHODS	September			03/09/2023
38.	September		10/09/2023	Retro-synthesis		
39.	September		17/09/2023	Retro- synthesis of aromatic heterocycles		
40.	September		24/09/2023	Reagents and reaction in synthesis 1		
41.	October		01/10/2023	Reagents and reaction in synthesis 2		
42.	October		08/10/2023	Name Reaction 1 & Name Reaction 2		
43.	October		22/10/2023	Applications of following metal in organic synthesis		
44.	October		29/10/2023	Synthesis and applications of following ligands in organic synthesis		
45.	November		05/11/2023	Organic synthesis & Protection and deprotection of hydroxyl		
46.	November		19/11/2023	Application of the following in synthesis		
47.	November		26/11/2023	Solvent free synthesis & Organic synthesis		
48.	December		03/12/2023	Use of the following reagents		

49.	CHE135: GREEN CHEMISTRY	September	03/09/2023	3.30pm – 4.30pm	Theory (Elective)	Introduction to Green Chemistry
50.		September	10/09/2023			Need for Green Chemistry & Goals of Green Chemistry
51.		September	17/09/2023			Principles of Green Chemistry
52.		September	24/09/2023			Designing a Green synthesis
53.		October	01/10/2023			Atom economy
54.		October	08/10/2023			Green solvents 1 & Green solvents 2
55.		October	22/10/2023			Energy requirements for reactions
56.		October	29/10/2023			Microwave reactions in water & Microwave reactions in organic solvents
57.		November	05/11/2023			Ultrasound assisted reactions
58.		November	19/11/2023			Green synthesis/reaction & Real world cases
59.		November	26/11/2023			Chemical industry
60.		December	03/12/2023			Combinatorial green chemistry
61.		CHE136: ADVANCED SYNTHETIC METHODS&GREEN CHEMISTRY-PRACTICAL	February			04/02/2024
62.	February		11/02/2024	Single Stage Preparation Monitored by TLC		
63.	February		18/02/2024	Single Stage Preparation Monitored by TLC		
64.	February		25/02/2024	Two or three stage preparations starting with 5g or less and TLC.		
65.	March		03/03/2024	Two or three stage preparations starting with 5g or less and TLC.		
66.	March		10/03/2024	Two or three stage preparations starting with 5g or less and TLC.		
67.	March		17/03/2024	Two or three stage preparations starting with 5g or less and TLC.		
68.	March		31/03/2024	Extraction from Natural Products		
69.	April		07/04/2024	Extraction from Natural Products		
70.	April		21/04/2024	Green Chemistry Preparations		
71.	April		28/04/2024	Green Chemistry Preparations		
72.	May		05/05/2024	Green Chemistry Preparations		
73.		February	04/02/2024			Terminology and basic concepts of Polymers & Types
74.		February	11/02/2024			Techniques of polymerization
75.		February	18/02/2024			Kinetics of Polymerization
76.		February	25/02/2024			Crystalline Nature & Degree of crystallinity

77.	CHE137:POLYMER CHEMISTRY	March	03/03/2024	11.30am- 12.30pm	Theory (Elective)	Co-polymerization			
78.		March	10/03/2024			Individual monomers			
79.		March	17/03/2024			Polymer degradation & Polymer reactions			
80.		March	31/03/2024			Experimental methods			
81.		April	07/04/2024			Elastomeric materials			
82.		April	21/04/2024			Stereochemistry of polymers			
83.		April	28/04/2024			Determination of molecular weight			
84.		May	05/05/2024			Thermal Characterization & Commercial polymers			
85.	CHE138: ADVANCED SYNTHETIC METHODS& POLYMER CHEMISTRY- PRACTICAL	February	04/02/2024	12.30pm- 1.30pm	Practical (Elective)	Single Stage Preparation Monitored by TLC			
86.		February	11/02/2024			Single Stage Preparation Monitored by TLC			
87.		February	18/02/2024			Single Stage Preparation Monitored by TLC			
88.		February	25/02/2024			Two or three stage preparations starting with 5g or less and TLC.			
89.		March	03/03/2024			Two or three stage preparations starting with 5g or less and TLC.			
90.		March	10/03/2024			Two or three stage preparations starting with 5g or less and TLC.			
91.		March	17/03/2024			Two or three stage preparations starting with 5g or less and TLC.			
92.		March	31/03/2024			Extraction from Natural Products			
93.		April	07/04/2024			Extraction from Natural Products			
94.		April	21/04/2024			Polymer Chemistry Preparations			
95.		April	28/04/2024			Polymer Chemistry Preparations			
96.		May	05/05/2024			Polymer Chemistry Preparations			
97.		HRC002: HUMAN RIGHTS AND THE INDIAN CONSTITUTION	February			04/02/2024	2.30pm – 3.30pm	Theory	Constitutional Values and Human Rights
98.			February			11/02/2024			Fundamental Rights-Right to Equality
99.			February			18/02/2024			Fundamental Rights-Right to Freedom
100.			February			25/02/2024			Fundamental Rights-Religious, Culture and Other Rights
101.	March		03/03/2024	Directive Principles of State Policy, Fundamental Duties and Human Rights					
102.	March		10/03/2024	Judiciary as Custodian of Human Rights					
103.	March		17/03/2024	Impediments of Human Rights					
104.	March		31/03/2024	Appendix I - The Constitution of India Part III					

105.		April	07/04/2024			Appendix II - The Constitution of India Part IV
106.		April	21/04/2024			Appendix III - The Constitution of India Part IV-A
107.		April	28/04/2024			Appendix IV
108.		May	05/05/2024			Appendix V
109.	CHE141: STEREOCHEMISTRY	February	04/02/2024	3.30pm – 4.30pm	Theory	Conformational analysis of acyclic compounds
110.		February	11/02/2024			Conformational analysis of alicyclic compounds
111.		February	18/02/2024			Conformation on Reactivity & Kinetic Mechanism
112.		February	25/02/2024			Conformational Analysis & Conformational Effects
113.		March	03/03/2024			Fused Ring Systems
114.		March	10/03/2024			Bridged Ring Systems
115.		March	17/03/2024			Stereo selective Synthesis
116.		March	31/03/2024			Asymmetric Oxidations
117.		April	07/04/2024			Diels-Alder Reactions & Reduction Reactions
118.		April	21/04/2024			Stereochemistry of Compounds & Configuration of Diastereomers
119.		April	28/04/2024			O.R.D. and C.D.
120.		May	05/05/2024			Conformation and Configuration
121.	CHE142 RESEARCH METHODOLOGY	February	04/02/2024	10.30am- 11.30am	Theory	Research, Methods in research
122.		February	11/02/2024			Experimental design
123.		February	18/02/2024			Sampling method
124.		February	25/02/2024			Data collections, Representation of data
125.		March	03/03/2024			Graphical representation
126.		March	10/03/2024			Analysis of data
127.		March	17/03/2024			Use of inferential statistical tools in research
128.		March	31/03/2024			Biostatistical Test, Use of ANOVA
129.		April	07/04/2024			Application of correlation of data
130.		April	21/04/2024			Literature collection, Intellectual Property Rights
131.		April	28/04/2024			Research Databases
132.		May	05/05/2024			Research Metrics
133.	CHE143: DRUG AND HETEROCYCLES	February	04/02/2024			Drug design & Theories of drug activity
134.		February	11/02/2024			Study of Antibiotics
135.		February	18/02/2024			Study of the Following types of drugs: a) Antimalerials, b) Analgesic & Antipyretics &

				11.30am- 12.30pm	Theory	c) Anti- inflammatory
136.		February	25/02/2024			Antitubercular & antileprotic & Anesthetics
137.		March	03/03/2024			Antihistamines, Anti-infective drugs & Cardiovascular
138.		March	10/03/2024			Anti-neoplastic drugs
139.		March	17/03/2024			Heterocycles & Small ring Heterocycles
140.		March	31/03/2024			Five membered Heterocycles
141.		April	07/04/2024			Six membered Heterocycles 1
142.		April	21/04/2024			Six membered Heterocycles 2
143.		April	28/04/2024			Synthesis and reactions
144.		May	05/05/2024			Benzimidazole & Benzthiazole and benzoxazole
145.	CHE144:INDUSTRIAL ORGANIC CHEMISTRY	February	04/02/2024	12.30pm- 1.30pm	Theory	Pesticides & Herbicides
146.		February	11/02/2024			Juvenile hormone
147.		February	18/02/2024			Perfumery
148.		February	25/02/2024			Chemo selectivity
149.		March	03/03/2024			$\alpha,\beta$ - unsaturated
150.		March	10/03/2024			Protection of hydroxyl & Umpolung reagents
151.		March	17/03/2024			Petroleum Technology & ' Downstream
152.		March	31/03/2024			Petroleum product profile
153.		April	07/04/2024			Environmental management
154.		April	21/04/2024			Organic Reagents
155.		April	28/04/2024			Corey's reagent
156.	May	05/05/2024	Name reactions in organic synthesis 1 & 2			
157.	CHE145: NATURAL PRODUCTS	February	04/02/2024	2.30pm – 3.30pm	Theory	Terpenoids & Rule-Gem-dialkyl
158.		February	11/02/2024			Structure of terpenoids
159.		February	18/02/2024			Abiotic acid:
160.		February	25/02/2024			Introduction
161.		March	03/03/2024			Vitamin D
162.		March	10/03/2024			Oestrone & Bile acids
163.		March	17/03/2024			Alkaloids & Structural elucidation
164.		March	31/03/2024			Morphine and Quinine
165.		April	07/04/2024			Quinoline alkaloids
166.		April	21/04/2024			General nature of proteins
167.	April	28/04/2024	The spatial arrangements of protein molecules			

168.		May	05/05/2024			Enzymes & Nucleic acids
169.	CHE146 PROJECT	February	04/02/2024			
170.		February	11/02/2024			
171.		February	18/02/2024			
172.		February	25/02/2024			
173.		March	03/03/2024			
174.		March	10/03/2024			
175.		March	17/03/2024			
176.		March	31/03/2024			
177.		April	07/04/2024			
178.		April	21/04/2024			
179.		April	28/04/2024			
180.		May	05/05/2024			

### V143: MASTER IN SCIENCE (ZOOLOGY) {2022 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	ZGY131: Immunology	September	03/09/2023	10.00am- 11.00am	Theory	Introduction to Immune System The Lymphoid System
2.		September	10/09/2023			Cells Involve in Immune Response Structure and Function of Immunoglobulin
3.		September	17/09/2023			Major Histo compactibility Complex in Mouse and Humans The Humeral Immunity
4.		September	24/09/2023			Cell Mediated Immunity The Complement System
5.		October	01/10/2023			Hypersensitivity
6.		October	08/10/2023			Autoimmunity and Immune Diseases
7.		October	22/10/2023			Immunity to Infectious diseases
8.		October	29/10/2023			Immunity to Parasitic Diseases
9.		November	05/11/2023			Vaccine
10.		November	19/11/2023			Transplantation and Organ Rejection
11.		November	26/11/2023			Tumor Immunology
12.		December	03/12/2023			Immunodiagnostic and Applications
13.	ZGY132: Endocrinology	September	03/09/2023	11.00am- 12.00pm	Theory	Scope Of Endocrinology Endocrine System
14.		September	10/09/2023			Hormone Mechanism Homeostasis
15.		September	17/09/2023			Invertebrate endocrinology-I Invertebrate endocrinology-II
16.		September	24/09/2023			Vertebrate endocrine-I Vertebrate endocrine-II
17.		October	01/10/2023			Hormones
18.		October	08/10/2023			Steroid hormone Transport
19.		October	22/10/2023			Hormone Transport-I
20.		October	29/10/2023			Hormone Transport- II
21.		November	05/11/2023			Obesity



22.		November	19/11/2023			IVF Techniques And Hormone mechanism
23.		November	26/11/2023			Pheromone
24.		December	03/12/2023			Hormone in Insects
25.	ZGY133: Immunology & Endocrinology - Practical	September	03/09/2023	12.00pm- 1.00pm	Practical	To study and determination of Agglutination test. To study and describe the precipitation reaction.
26.		September	10/09/2023			To study and Demonstration of Immunoectrophoresis To study of Neutralization and complement fixation
27.		September	17/09/2023			To study of Separation of lymphocytes
28.		September	24/09/2023			Immunization schedules and rising of antibodies
29.		October	01/10/2023			Identification of histological slides of lymphoid tissue - Spleen, thymus, lymphnode and
30.		October	08/10/2023			To study and Demonstration of lymphocyte transformation test with nitrogen and an antigen
31.						To study Histology slides of Endocrine glands - Pituitary, Thyroid, Parathyroid, Thymus, Adrenal, Pancreas, Ovary & Testis, and Uterus.
32.						To study of effect of Eye Stalk ablation on Blood Glucose levels in Crabs.
33.						Identification of Gonadotrophin in Human urine samples.
34.						To Study the effect of parathormone on serum calcium levels in Rat.
35.						To study the effect of insulin and adrenalin on blood glucose levels in Rat.
36.						To study the effect of thyroxin and thiourea (antithyroid agent) on oxygen consumption in fish.
37.		ZGY134: Animal Physiology	September			03/09/2023
38.	September		10/09/2023	Physiology of Stimulation and Contraction Innervation of muscles		
39.	September		17/09/2023	Physiology of Respiration Mechanism of respiration		
40.	September		24/09/2023	Physiology of Nervous system Synaptic Transmission and Neurotransmitters		
41.	October		01/10/2023	Physiology of Circulation and Cardiovascular System		

42.		October	08/10/2023			Blood vessels and circulation
43.		October	22/10/2023			Physiology of Excretion
44.		October	29/10/2023			Structure of a Neuron
45.		November	05/11/2023			Physiology of Reproduction
46.		November	19/11/2023			Physiology of Endocrine Glands
47.		November	26/11/2023			Physiology of Defense
48.		December	03/12/2023			Complement system
49.		ZGY135: Ichthyology	September			03/09/2023
50.	September		10/09/2023	External Morphology of Fish Endoskeleton		
51.	September		17/09/2023	Digestive system, Respiration		
52.	September		24/09/2023	Buoyancy mechanisms, Excretion and Osmoregulation		
53.	October		01/10/2023	Catadromous and anadromous fish		
54.	October		08/10/2023	Reproduction		
55.	October		22/10/2023	Nervous system and Sense organs		
56.	October		29/10/2023	Endocrine organs		
57.	November		05/11/2023	Ecosystem		
58.	November		19/11/2023	Physico-chemical Characteristics Water		
59.	November		26/11/2023	Freshwater, marine and coastal aquaculture		
60.	December		03/12/2023	Aquatic pollution		
61.	ZGY136: Animal Physiology & Ichthyology - Practical		September	03/09/2023	05.00pm – 06.00pm	Practical
62.		September	10/09/2023	Estimation of haemoglobin percentage with the help of haemometer, Effect of exercise on breathing rate, pulse rate and blood lactate of man		
63.		September	17/09/2023	Qualitative detection of nitrogenous waste products (Ammonia, urea, E uric acid) in given sample		
64.		September	24/09/2023	Determination of protein, glucose in Urine		
65.		October	01/10/2023	Estimation of Respiratory Quotient by Warburg's Respirometer.		
66.		October	08/10/2023	Determination of Body Mass Index (BMI)		
67.		October	22/10/2023	Study of Fish Identification and classification-catla, Rohu and Mrigala and Pomfret, Study of external characters & digestive system of locally available fish (E)		
68.		October	29/10/2023	Study the types of scales (Placoid scale, Cycloid scale,		

						Ctenoid scale & Ganoid, Study of tail fins in fishes (Homocercal, Heterocercal & Diphyrcercal) (D)
69.		November	05/11/2023			Study the measurement of physiological parameters like oxygen consumption or metabolic rates
70.		November	19/11/2023			Identifying and documenting fish parasites using microscopy
71.		November	26/11/2023			Aquarium design and maintenance
72.		December	03/12/2023			Visit to freshwater/ marine fish farm- Visiting aquaculture facilities to understand fish farming techniques
73.	ZGY137: Reproductive Physiology	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Male Reproductive System I
74.		September	10/09/2023			Male Reproductive System II
75.		September	17/09/2023			Male accessory ducts and accessory reproductive organs I
76.		September	24/09/2023			Male accessory ducts and accessory reproductive organs II
77.		October	01/10/2023			Female reproductive System, Histological structure and functions
78.		October	08/10/2023			Gametogenesis, Spermatogenesis
79.		October	22/10/2023			Oogenesis
80.		October	29/10/2023			Reproductive cycles I
81.		November	05/11/2023			Reproductive cycles II
82.		November	19/11/2023			Reproductive cycles III
83.		November	26/11/2023			Hormonal regulation -I
84.		December	03/12/2023			Hormonal regulation –II
85.	ZGY138: Animal Physiology & Reproductive Physiology - Practical	February	04/02/2024	10.00am – 11.00am	Theory	Estimation of Carbohydrates in mammalian gut
86.		February	11/02/2024			Total Count of RBC's, and Differential count of WBC's
87.		February	18/02/2024			Estimation of haemoglobin percentage with the help of haemometer, Effect of exercise on breathing rate, pulse rate and blood lactate of man
88.		February	25/02/2024			Qualitative detection of nitrogenous waste products (Ammonia, urea, E uric acid) in given sample
89.		March	03/03/2024			Determination of protein, glucose in Urine
						Estimation of Respiratory Quotient by Warburg's Respirometer.

90.		March	10/03/2024			Determination of Body Mass Index (BMI)
91.		March	17/03/2024			Demonstration of rat/mice endocrine glands with the help of figure/chart/model.
92.		March	31/03/2024			Histological structure of male and female reproductive organs in rat/mice/human
93.		April	07/04/2024			Study of different stages of estrous cycle.
94.		April	21/04/2024			Microscopic observations of spermatozoa / ova from suitable mammal
95.		April	28/04/2024			Histological structure of male accessory reproductive organs
96.		May	05/05/2024			Histological structure of female accessory reproductive organs Cellular structure of anterior pituitary gland
97.	HRC002: Human Rights & The Indian Constitution	February	04/02/2024	11.00am- 12.00pm	Theory	Constitutional Values and Human Rights
98.		February	11/02/2024			Fundamental Rights-Right to Equality
99.		February	18/02/2024			Fundamental Rights-Right to Freedom
100.		February	25/02/2024			Fundamental Rights-Religious, Culture and Other Rights
101.		March	03/03/2024			Directive Principles of State Policy, Fundamental Duties and Human Rights
102.		March	10/03/2024			Judiciary as Custodian of Human Rights
103.		March	17/03/2024			Impediments of Human Rights
104.		March	31/03/2024			Appendix I - The Constitution of India Part III
105.		April	07/04/2024			Appendix II - The Constitution of India Part IV
106.		April	21/04/2024			Appendix III - The Constitution of India Part IV-A
107.		April	28/04/2024			Appendix IV
108.		May	05/05/2024			Appendix V
109.	Sem-II	February	04/02/2024	12.00pm- 1.00pm	Theory	Introduction to biotechnology
110.	ZGY141: Animal Biotechnology	February	11/02/2024			Mammalian reproductive system And IVF
111.		February	18/02/2024			Cryopreservation, Advancement of Biotechnology
112.		February	25/02/2024			Cell culture, Mammalian cell lines & their characteristics
113.		March	03/03/2024			Tissue culture system, Cloning
114.		March	10/03/2024			Transgenic animal-I
115.		March	17/03/2024			Transgenic animal-II
116.		March	31/03/2024			Genetic Engineered Animal Cell Culture

117.		April	07/04/2024			Medical biotechnology
118.		April	21/04/2024			Environmental Biotechnology
119.		April	28/04/2024			Insecticide development:
120.		May	05/05/2024			Biotechnology of aquaculture
121.	ZGY142: Research Methodology	February	04/02/2024	02.00pm- 04.00pm	Practical	Research, Methods in research
122.		February	11/02/2024			Experimental design
123.		February	18/02/2024			Sampling method
124.		February	25/02/2024			Data collections, Representation of data
125.		March	03/03/2024			Graphical representation
126.		March	10/03/2024			Analysis of data
127.		March	17/03/2024			Use of inferential statistical tools in research
128.		March	31/03/2024			Biostatistical Test, Use of ANOVA
129.		April	07/04/2024			Application of correlation of data
130.		April	21/04/2024			Literature collection, Intellectual Property Rights
131.		April	28/04/2024			Research Databases
132.		May	05/05/2024			Research Metrics
133.	ZGY143: Toxicology	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Importance of toxicology, Dose effect and dose response relationship
134.		February	11/02/2024			Factors affecting toxicity, Absorption and distribution of toxicants
135.		February	18/02/2024			Mechanism and reactions of toxicants, Lipid peroxidation
136.		February	25/02/2024			Oxidative Stress, Antioxidant defense mechanism
137.		March	03/03/2024			Basics of organ toxicity
138.		March	10/03/2024			Hepatotoxicity
139.		March	17/03/2024			Pulmonary toxicity
140.		March	31/03/2024			Renal toxicity and Neuro toxicity
141.		April	07/04/2024			Eco-toxicology of heavy metals
142.		April	21/04/2024			Environmental problems
143.		April	28/04/2024			Occupational hazards
144.		May	05/05/2024			Carcinogenesis
145.	ZGY144: Comparative Animal Physiology	February	04/02/2024			Comparative Study Of Physiology, Food Digestive Mechanism
146.		February	11/02/2024			Coordination of digestive activities

				04.00pm- 05.00pm	Theory (Elective)	Comparative aspects of carbohydrate pathways
147.		February	18/02/2024			Oxygen Transport Adaptation in Respiration
148.		February	25/02/2024			Comparative aspects of transport Respiratory pigments
149.		March	03/03/2024			Osmoregulation
150.		March	10/03/2024			Excretory Physiology
151.		March	17/03/2024			Adaptation
152.		March	31/03/2024			Thermoregulation
153.		April	07/04/2024			Chronic obstructive pulmonary disease
154.		April	21/04/2024			Liver
155.		April	28/04/2024			Electrolyte imbalance
156.		May	05/05/2024			Heat stroke
157.	ZGY145: Animal behaviour	February	04/02/2024	12.00pm – 1.00pm	Theory	Behavior Behavioral Ecology I
158.		February	11/02/2024			Behavioral Ecology II Behavioral Ecology III
159.		February	18/02/2024			Behavioral Ecology IV Aggression I
160.		February	25/02/2024			Aggression II Territoriality I
161.		March	03/03/2024			Territoriality II
162.		March	10/03/2024			Conflict behavior I
163.		March	17/03/2024			Conflict behavior II
164.		March	31/03/2024			Biological Communication I
165.		April	07/04/2024			Biological Communication II
166.		April	21/04/2024			Biological Communication III
167.		April	28/04/2024			Orientation and Navigation I
168.	May	05/05/2024	Orientation and Navigation II			
169.	ZGY146: Project	February	04/02/2024	12.00pm – 1.00pm	Term	
170.		February	11/02/2024			
171.		February	18/02/2024			
172.		February	25/02/2024			

173.		March	03/03/2024		Work	
174.		March	10/03/2024			
175.		March	17/03/2024			
176.		March	31/03/2024			
177.		April	07/04/2024			
178.		April	21/04/2024			
179.		April	28/04/2024			
180.		May	05/05/2024			

## V144: MASTER IN SCIENCE (BOTANY) {2022 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	BNY131: Cytogenetics and Plant Breeding	September	03/09/2023	10.00am- 11.00am	Theory	Chromosome structure, Types of chromatin
2.		September	10/09/2023			Specialized types of chromosomes
3.		September	17/09/2023			Structural and numerical alterations in chromosomes
4.		September	24/09/2023			Genetics of prokaryotes and eukaryotic organisms
5.		October	01/10/2023			Gene structure and expression, Regulation of gene expression
6.		October	08/10/2023			Genetic recombination and gene mapping
7.		October	22/10/2023			Mutation
8.		October	29/10/2023			Cytogenetics of aneuploids and structural heterozygotes
9.		November	05/11/2023			Molecular Cytogenetics, Multigene families, in situ hybridization
10.		November	19/11/2023			Principles and Methods of Plant breeding, Genetic basis of breeding self-pollinated crops
11.		November	26/11/2023			Mutations and polyploidy breeding,
12.		December	03/12/2023			Pre-breeding and genetic enhancement
13.	BNY132: Advanced Plant Physiology	September	03/09/2023	11.00am- 12.00pm	Theory	Nitrogen Metabolism, Mechanism Of Nitrogen Fixation
14.		September	10/09/2023			Lipid Metabolism
15.		September	17/09/2023			Glyoxylate Pathway
16.		September	24/09/2023			Flowering, Floral Induction And Development
17.		October	01/10/2023			Seed Structure And Biology
18.		October	08/10/2023			Types Of Seeds
19.		October	22/10/2023			Principles Of Seed Processing, Plant Secondary Metabolites And It's Defense
20.		October	29/10/2023			Importance Of Secondary Metabolites
21.		November	05/11/2023			Signal Transduction In Plants
22.		November	19/11/2023			Protein Degradation
23.		November	26/11/2023			Stress Physiology
24.		December	03/12/2023			Genetic Engineering
25.	BNY135:	September	03/09/2023			Classification Of Herbal Drugs, Extraction Of Herbal Drugs



26.	Pharmacognosy	September	10/09/2023	12.00pm- 1.00pm	Theory	Extraction methods
27.		September	17/09/2023			Guidelines for harvesting medicinal plants (GMP- Good Manufacturing Practices).
28.		September	24/09/2023			Preparation Of Medicines, Herbal preparations
29.		October	01/10/2023			ACTIVE PRINCIPLES
30.		October	08/10/2023			Phytochemistry
31.		October	22/10/2023			Aromatic Plants: Aromatherapy
32.		October	29/10/2023			Safety And Efficacy Of Plant Drugs, Pharmaco vigilance
33.		November	05/11/2023			GMP guidelines for raw drugs.
34.		November	19/11/2023			EvaluationOfNaturalProductsAndSignificance
35.		November	26/11/2023			Biological evaluation, Microscopic and powder characters of crude drugs
36.		December	03/12/2023			Protocol for preparation of pharmaceuticals
37.		BNY133: Cytogenetics and Plant Breeding and Advanced Plant Physiology–Practical	September			03/09/2023
38.	September		10/09/2023	Extraction and estimation of lipids – Folch Method		
39.	September		17/09/2023	Estimation of lipase activity		
40.	September		24/09/2023	Saponification value of oils and iodine number		
41.	October		01/10/2023	Quantitative estimation of flavanoids		
42.	October		08/10/2023	Effect of salt stress on accumulation of proline and estimation		
43.	October		22/10/2023	Determination of secondary metabolites.		
44.	October		29/10/2023	Study of Two plants / class (Two families per practical)		
45.	November		05/11/2023	Construct the phylogenetic tree based on gene sequences of the given species from NCBI database		
46.	November		19/11/2023	Identification of organized and unorganized plant drugs		
47.	November		26/11/2023	Quantitative estimation of an alkaloid – Solanine.		
48.	December		03/12/2023	Separation of anthocyan in from flower petals using TLC		
49.	RES505: Research Methodology	September	03/09/2023	04.00pm – 05.00pm	Theory	Research, Methods in research
50.		September	10/09/2023			Experimental design
51.		September	17/09/2023			Sampling method
52.		September	24/09/2023			Data collections, Representation of data
53.		October	01/10/2023			Graphical representation
54.		October	08/10/2023			Analysis of data

55.		October	22/10/2023			Use of inferential statistical tools in research
56.		October	29/10/2023			Biostatistical Test, Use of ANOVA
57.		November	05/11/2023			Application of correlation of data
58.		November	19/11/2023			Literature collection, Intellectual Property Rights
59.		November	26/11/2023			Research Databases
60.		December	03/12/2023			Research Metrics
61.	BNY134: Taxonomy of Angiosperms	September	03/09/2023	01.00pm – 02.00pm	Theory	Introduction And General Account To Taxonomy, Phylogenetic classification.
62.		September	10/09/2023			Plant Nomenclature
63.		September	17/09/2023			Citation
64.		September	24/09/2023			Taxonomic Literature
65.		October	01/10/2023			Maintenance And Significance Of Herbarium
66.		October	08/10/2023			Families I, Families II
67.		October	22/10/2023			Families III
68.		October	29/10/2023			Families IV, Families V
69.		November	05/11/2023			Families VI
70.		November	19/11/2023			Modern Taxonomy
71.		November	26/11/2023			Computer application in taxonomy,
72.		December	03/12/2023			Serological Characters And Molecular Approach
73.	BNY136: Taxonomy of Angiosperms and Pharmacognosy - Practical	September	03/09/2023	02.00pm – 04.00pm	Practical	Use of Flora; Study of two plants / class (Two families per practical)
74.		September	10/09/2023			Study of Two plants / class (Two families per practical)(Polypetalae – Myrtaceae, Meliaceae, Sapindaceae, Combretaceae and Umbelliferae)
75.		September	17/09/2023			Study of Two plants / class (One family per practical)(Gamopetalae – Solanaceae, Acanthaceae, Rubiaceae, Scrophulariaceae and Asteraceae.)
76.		September	24/09/2023			Preparation of dichotomous keys
77.		October	01/10/2023			Construct the phylogenetic tree based on gene sequences of the given species from NCBI database
78.		October	08/10/2023			Study of Two plants / class (One family per practical)(Monocots – Cannaceae, Poaceae,

						Orchidaceae, Musaceae and Areaceae (Palmae)
79.		October	22/10/2023			Extraction and estimation of lycopene.
80.		October	29/10/2023			Evaluation of natural products – estimation of the ash value and determination of water soluble and acid soluble ash (Muffle furnace); Determination of moisture content of sample using moisture balance method; Determination of microscopic characters
81.		November	05/11/2023			Estimation of Rutin
82.		November	19/11/2023			Extraction and estimation of lycopene.
83.		November	26/11/2023			Identification of organized and unorganized plant drugs.
84.		December	03/12/2023			Determination of pH of fresh and dry material of the following plants (Ocimum, Adhatoda leaves, Terminalia arjuna fruit.)
85.	BNY137: Seed Technology	September	03/09/2023	5.00am – 6.00am	Theory	Introduction, Seed Classification and Morphology
86.		September	10/09/2023			Seed Dormancy and Seed Germination
87.		September	17/09/2023			Genetic Purity
88.		September	24/09/2023			Quality testing , Seed Production
89.		October	01/10/2023			Procedure of seed production
90.		October	08/10/2023			Seed Testing
91.		October	22/10/2023			Field Inspection, Seed Pathology
92.		October	29/10/2023			Seed entomology
93.		November	05/11/2023			Seed Processing
94.		November	19/11/2023			Seed treatment, Packaging and handling of seeds
95.		November	26/11/2023			Seed Deterioration and Seed Storage
96.		December	03/12/2023			Seed legislation
97.	BNY138: Taxonomy of Angiosperms and Seed Technology - Practical	September	03/09/2023	2.00am- 4.00pm	Practical	Use of Flora; Study of two plants / class (Two families per practical)
98.		September	10/09/2023			Study of Two plants / class (Two families per practical)(Polypetalae – Myrtaceae, Meliaceae, Sapindaceae, Combretaceae and Umbelliferae)
99.		September	17/09/2023			Study of Two plants / class (One family per practical)(Gamopetalae – Solanaceae, Acanthaceae, Rubiaceae, Scrophulariaceae and Asteraceae.)
100.		September	24/09/2023			Preparation of dichotomous keys

101.		October	01/10/2023			Construct the phylogenetic tree based on gene sequences of the given species from NCBI database
102.		October	08/10/2023			Study of Two plants / class (One family per practical)(Monocots – Cannaceae, Poaceae, Orchidaceae, Musaceae and Arecaceae (Palmae)
103.		October	22/10/2023			Study of chemical composition and seed structure.
104.		October	29/10/2023			Study of methods of breaking seed dormancy.
105.		November	05/11/2023			Study of seed germination (epigeal, hypogeal and viviparous types).
106.		November	19/11/2023			Study of seed germination testing methods (Paper, soil and sand).
107.		November	26/11/2023			Study of physical purity test.
108.		December	03/12/2023			Moisture Testing by moisture meter and oven method. Study of Sampling, dividing and mixing equipments. Visit to a seed industry and research institute/apiculture
109.	HRC002: Human Rights and the Indian Constitution	September	03/09/2023	12.00pm- 1.00pm	Theory	Constitutional Values and Human Rights
110.		September	10/09/2023			Fundamental Rights-Right to Equality
111.		September	17/09/2023			Fundamental Rights-Right to Freedom
112.		September	24/09/2023			Fundamental Rights-Religious, Culture and Other Rights
113.		October	01/10/2023			Directive Principles of State Policy, Fundamental Duties and Human Rights
114.		October	08/10/2023			Judiciary as Custodian of Human Rights
115.		October	22/10/2023			Impediments of Human Rights
116.		October	29/10/2023			Appendix I - The Constitution of India Part III
117.		November	05/11/2023			Appendix II - The Constitution of India Part IV
118.		November	19/11/2023			Appendix III - The Constitution of India Part IV-A
119.		November	26/11/2023			Appendix IV
120.		December	03/12/2023			Appendix V
121.		February	04/02/2024			Morphogenesis,Morphogenetic factors Plant Tissue Culture
122.		February	11/02/2024			Organogenesis
123.		February	18/02/2024			In Vitro Propagation.Application of tissue culture
124.		February	25/02/2024			Technique Of Transformation
125.		March	03/03/2024			Application of transgenic plants

126.	BNY141: Biotechnology and Molecular Biology	March	10/03/2024	10am- 11.00am	Theory	Applications and hazards of biotechnology
127.		March	17/03/2024			Industrial Biotechnology
128.		March	31/03/2024			Enzyme biotechnology
129.		April	07/04/2024			DNA
130.		April	21/04/2024			DNA Repair Mechanism,Bioinformatics
131.		April	28/04/2024			Information sources
132.		May	05/05/2024			Use of Bioinformatic
133.	BNY142: Ecology and Phytogeography	February	04/02/2024	11.00am- 12.00pm	Theory	Ecology And Ecosystem, Ecological niche And Concept
134.		February	11/02/2024			Productivity In Ecosystem
135.		February	18/02/2024			Nonconventional sources of energy
136.		February	25/02/2024			Ecological Succession
137.		March	03/03/2024			Ecological Factors Biotic
138.		March	10/03/2024			Pollution
139.		March	17/03/2024			Climate Change Climatic Variations Remote Sensing And GIS
140.		March	31/03/2024			Phytogeography
141.		April	07/04/2024			Plant Distribution
142.		April	21/04/2024			Plant migration and barriers on plant migration
143.		April	28/04/2024			Botanical provinces of India
144.		May	05/05/2024			Theories Of Present And Past
145.		BNY143: Tools and Techniques in Plant Science	February			04/02/2024
146.	February		11/02/2024	Confocal Raman microscopy		
147.	February		18/02/2024	Microscopic Techniques		
148.	February		25/02/2024	Microtechnique		
149.	March		03/03/2024	Preparation of media for microorganism's growth (both bacteria and fungi)		
150.	March		10/03/2024	Anti-microbial activity, Separation Technique I		
151.	March		17/03/2024	Chromatography, Separation Technique II		
152.	March		31/03/2024	gel electrophoresis		
153.	April		07/04/2024	Spectroscopic Techniques		
154.	April		21/04/2024	Analysis of polymer structures		
155.	April		28/04/2024	Radiochemical Techniques, Molecular Tools		
156.	May		05/05/2024	Statistical tools in marker analysis		

157.	BNY145: Biostatistics	February	04/02/2024	1.00pm – 2.00pm	Theory	Presentation of Data
158.		February	11/02/2024			Measures of Locations and Dispersion, Deviation
159.		February	18/02/2024			Probability and Distributions
160.		February	25/02/2024			Correlation and Regression
161.		March	03/03/2024			Linear regression and equations of line of regression
162.		March	10/03/2024			Sampling, Probability and non-probability sampling
163.		March	17/03/2024			Types of sampling, Tests of significance
164.		March	31/03/2024			Chi- square Distribution
165.		April	07/04/2024			Experimental Designs
166.		April	21/04/2024			Latin square designs
167.		April	28/04/2024			ANOVA, Two way ANOVA
168.		May	05/05/2024			Uses of ANOVA
169.	BNY146: Project	February	04/02/2024	02.00pm-05.00pm	Term Work	
170.		February	11/02/2024			
171.		February	18/02/2024			
172.		February	25/02/2024			
173.		March	03/03/2024			
174.		March	10/03/2024			
175.		March	17/03/2024			
176.		March	31/03/2024			
177.		April	07/04/2024			
178.		April	21/04/2024			
179.		April	28/04/2024			
180.		May	05/05/2024			

## V151: MASTER IN SCIENCE (MATHEMATICS) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	MAT501: Real Analysis	September	03/09/2023	10.00am- 11.00am	Theory	Metric Spaces
2.		September	10/09/2023			Open and Closed Sets
3.		September	17/09/2023			Sequences in Metric Spaces, Continuity
4.		September	24/09/2023			Connected Metric Spaces
5.		October	01/10/2023			Totally Bounded Subsets of Metric Spaces
6.		October	08/10/2023			Compact Metric Spaces
7.		October	22/10/2023			Riemann Integral
8.		October	29/10/2023			Necessary and Sufficient Conditions for Riemann Inegrability
9.		November	05/11/2023			Mean Value Theorems and Fundamental Theorems of Calculus
10.		November	19/11/2023			Convergence and Uniform Convergence of Sequence of Functions
11.		November	26/11/2023			Properties of functions preserved under uniform convergence
12.		December	03/12/2023			Power series
13.	MAT502: Abstract Algebra	September	03/09/2023	11.00am- 12.00pm	Theory	Direct product of groups
14.		September	10/09/2023			Finitely generated abelian groups
15.		September	17/09/2023			Normal Subgroups
16.		September	24/09/2023			Series of Groups
17.		October	01/10/2023			Solvable groups
18.		October	08/10/2023			Group action on a set
19.		October	22/10/2023			Maximal and Prime ideals
20.		October	29/10/2023			Ring of Polynomials
21.		November	05/11/2023			Factorization of a polynomials over a field
22.		November	19/11/2023			Unique factorization Domains
23.		November	26/11/2023			Principal ideal domains, Euclidean Domains
24.		December	03/12/2023			Ring of Gaussian Integers
25.	MAT503: Ordinary Differential	September	03/09/2023			Linear Equations with constant coefficients
26.		September	10/09/2023			Dependence and independence of solutions

27.	Equations	September	17/09/2023	12.00pm- 1.00pm	Theory	Applications of Second Order Linear Equations
28.		September	24/09/2023			The non-homogeneous equation of higher order
29.		October	01/10/2023			Linear Equations with variable Coefficients
30.		October	08/10/2023			Homogeneous equations with analytic coefficients
31.	MAT504: Programming in C and Scilab	September	03/09/2023	02.00pm- 04.00pm	Practical	Getting Started with C & The First C Program
32.		September	10/09/2023			Preparing, running a complete C Program and Control Statements
33.		September	17/09/2023			Functions and Arrays
34.		September	24/09/2023			Simple C Programs & C Programs on Numbers
35.		October	01/10/2023			C Programming on Math Functions & C Programming on Progression Series
36.		October	08/10/2023			Sorting of (1) Numerical data (2) Character type data- ascending, descending. & C Programs on Matrix operations
37.		October	22/10/2023			Introduction to Scilab & Basic Elements of the Language
38.		October	29/10/2023			Matrices & Common Functions for Linear Algebra
39.		November	05/11/2023			Looping and branching & Creation of Script Files & Functions files
40.		November	19/11/2023			Plotting graphs of Functions & Solution of System of Linear Equations
41.		November	26/11/2023			Numerical Methods
42.		December	03/12/2023			Numerical Methods
43.		RES505: Research Methodology	September			03/09/2023
44.	September		10/09/2023	Experimental design		
45.	September		17/09/2023	Sampling method		
46.	September		24/09/2023	Data collections, Representation of data		
47.	October		01/10/2023	Graphical representation		
48.	October		08/10/2023	Analysis of data		
49.	October		22/10/2023	Use of inferential statistical tools in research		
50.	October		29/10/2023	Biostatistical Test, Use of ANOVA		
51.	November		05/11/2023	Application of correlation of data		
52.	November		19/11/2023	Literature collection, Intellectual Property Rights		
53.	November		26/11/2023	Research Databases		
54.	December		03/12/2023	Research Metrics		



55.	MAT506: Operations Research	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Operations Research and its scope			
56.		September	10/09/2023			Linear Programming Problems			
57.		September	17/09/2023			Simplex Method, Duality Theory and Dual Simplex Method			
58.		September	24/09/2023			Game Models and Related Theory			
59.		October	01/10/2023			Two Person Zero Sum Game, Dominance in Games			
60.		October	08/10/2023			Mixed Strategies (2×n and m×2 games)			
61.		October	22/10/2023			Network Analysis			
62.		October	29/10/2023			Fulkerson's Rule			
63.		November	05/11/2023			Critical Path Method (CPM), Programme Evaluation and Review Technique (PERT)			
64.		November	19/11/2023			MONTE CARLO Method			
65.		November	26/11/2023			Generation of Random Numbers			
66.		December	03/12/2023			Simulation Languages			
67.		MAT507: Numerical Analysis	September			03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Errors in Numerical Calculations
68.			September			10/09/2023			Solutions of algebraic and transcendental equations
69.	September		17/09/2023	Newton Raphson method, Interpolation					
70.	September		24/09/2023	Matrix Theory					
71.	October		01/10/2023	Systems of Linear Algebraic equations					
72.	October		08/10/2023	Direct methods, Iteration methods					
73.	October		22/10/2023	Numerical solutions of ordinary differential equations					
74.	October		29/10/2023	Successive approximation					
75.	November		05/11/2023	Euler's method, Runge - Kutta method					
76.	November		19/11/2023	Numerical Differentiation and integration					
77.	November		26/11/2023	Methods based on Finite Differences					
78.	December		03/12/2023	Interpolation and approximation					
79.	MAT509: Topology	February	04/02/2024	10.00am – 11.00am	Theory	Topological spaces			
80.		February	11/02/2024			Basis and Subbasis for a topology			
81.		February	18/02/2024			Limit points			
82.		February	25/02/2024			Continuous functions			
83.		March	03/03/2024			Quotient spaces			
84.		March	10/03/2024			Locally connected spaces			
85.		March	17/03/2024			Compact spaces			
86.		March	31/03/2024			Forms of compact spaces			

87.		April	07/04/2024			Countability axioms
88.		April	21/04/2024			Separation axioms
89.		April	28/04/2024			Regular and normal spaces
90.		May	05/05/2024			Compactification
91.	MAT510: Linear Algebra	February	04/02/2024	11.00am- 12.00pm	Theory	Vector Spaces, Dual spaces
92.		February	11/02/2024			Inner product spaces
93.		February	18/02/2024			Modules
94.		February	25/02/2024			Linear transformations
95.		March	03/03/2024			Matrices
96.		March	10/03/2024			Triangular forms
97.		March	17/03/2024			Nilpotent forms, Jordan form
98.		March	31/03/2024			Rational Canonical form
99.		April	07/04/2024			Trace and transpose of a matrix
100.		April	21/04/2024			Determinants, Operators
101.		April	28/04/2024			Normal operator
102.		May	05/05/2024			Real Quadratic forms
103.		MAT511: Partial Differential Equation	February			04/02/2024
104.	February		11/02/2024	Orthogonal Trajectories		
105.	February		18/02/2024	Partial Differential Equations of the First Order		
106.	February		25/02/2024	Nonlinear Partial Differential Equations of the First Order		
107.	March		03/03/2024	Jacobi's Method		
108.	March	10/03/2024	Partial differential equations of the second order			
109.	MAT512: LaTeX and Programming in SageMath	February	04/02/2024	02.00pm- 04.00pm	Practical	Introduction to LaTeX & Syntax and Keyboard Characters, Fonts in LaTeX
110.		February	11/02/2024			Sections, Labelling and Text Alignment, New Lines, Paragraphs, Blank Space and Dashes in LaTeX & Listing Texts –I, Listing Texts –II, Tabbing Texts in LaTeX
111.		February	18/02/2024			Table Through the tabular Environment, tabular Environment in LaTeX & Positioning and Texts in Tables, Customizing Tables in LaTeX
112.		February	25/02/2024			Commands and Environment for Inserting Figures in LaTeX
113.		March	10/03/2024			Simple Equations, Array of Equations, Alignment and numbering a Set of Equations in LaTeX
114.		March	17/03/2024			Texts, Blank Space and Conditional Expression in Math

						mode in LaTeX
115.		March	31/03/2024			Introduction & Installation of SageMath
116.		April	07/04/2024			Analysis and Algebra in SageMath
117.		April	21/04/2024			Basic Linear Algebra in SageMath
118.		April	28/04/2024			Programming and Data Structures in SageMath
119.		May	05/05/2024			Graphics & Polynomials in SageMath
120.		May	12/05/2024			Differential Equations and Recurrences & Numerical Linear Algebra in SageMath
121.	MAT515: Number Theory	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	The Fundamental Theorem of Arithmetic
122.		February	11/02/2024			The Euclidean Algorithm
123.		February	18/02/2024			Arithmetic Functions and Dirichlet Product
124.		February	25/02/2024			Formal power series
125.		March	03/03/2024			Congruences
126.		March	10/03/2024			Polynomial Congruences
127.		March	17/03/2024			The Chinese Remainder Theorem
128.		March	31/03/2024			Diophantine Equations
129.		April	07/04/2024			Quadratic Residues, Quadratic Reciprocity law
130.		April	21/04/2024			Jacobi Symbol
131.		April	28/04/2024			Primitive roots
132.		May	05/05/2024			Indices
133.	MAT516: Field Theory	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Irreducible Polynomials
134.		February	11/02/2024			Adjunction of Roots
135.		February	18/02/2024			Algebraic Extensions, Algebraically Closed Fields
136.		February	25/02/2024			Splitting Fields
137.		March	03/03/2024			Normal Extensions, Finite Fields
138.		March	10/03/2024			Separable Extensions
139.		March	17/03/2024			Automorphism Groups, Fixed Fields
140.		March	31/03/2024			Fundamental Theorem of Galois Theory
141.		April	07/04/2024			Different Galois Groups
142.		April	21/04/2024			Cyclotomic Polynomials, Cyclic Extensions
143.		April	28/04/2024			Polynomials Solvable by Radicals
144.		May	05/05/2024			Ruler and Compass Constructions
145.	MAT513: OJT	February	04/02/2024			

146.	OR MAT514: FP	February	11/02/2024	12.00pm – 1.00pm	Term Wok	
147.		February	18/02/2024			
148.		February	25/02/2024			
149.		March	03/03/2024			
150.		March	10/03/2024			
151.		March	17/03/2024			
152.		March	31/03/2024			
153.		April	07/04/2024			
154.		April	21/04/2024			
155.		April	28/04/2024			
156.		May	05/05/2024			

## V152: MASTER IN SCIENCE (ENVIRONMENTAL SCIENCE) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	Sem01: EVS501: Environmental Science and Biology	September	03/09/2023	10.00am- 11.00am	Theory	Background and scope of environmental science:
2.		September	10/09/2023			Use of technology, media and people in environmental science, decision making and applications of Environmental science
3.		September	17/09/2023			Human impact on environment and its consequences
4.		September	24/09/2023			Definition of Ecology and sub divisions
5.		October	01/10/2023			Community Ecology
6.		October	08/10/2023			Biomes
7.		October	22/10/2023			Principal and Scope of Biology
8.		October	29/10/2023			Classification of ecosystem
9.		November	05/11/2023			Succession
10.		November	19/11/2023			Forest ecology
11.		November	26/11/2023			Effect of fire on forest ecosystem
12.		December	03/12/2023			Marine environment
13.	Sem01: EVS502: Natural Resources and Their Conservation	September	03/09/2023	11.00am- 12.00pm	Theory	Definition of resources, biotic and abiotic resources
14.		September	10/09/2023			Biodiversity: Conservation, Global and National Concerns
15.		September	17/09/2023			Biodiversity National Concerns
16.		September	24/09/2023			Wildlife management and conservation
17.		October	01/10/2023			Concept of sustainable use of wildlife
18.		October	08/10/2023			Indian ethos of wildlife conservation
19.		October	22/10/2023			Conservation of Wetlands, Watersheds, Ground water, Surface water
20.		October	29/10/2023			Land use, land cover and soil conservation
21.		November	05/11/2023			Methods of soil conservation and practices
22.		November	19/11/2023			Forest resources, plantations, social forestry
23.		November	26/11/2023			Human population growth and increasing demand for resources
24.		December	03/12/2023			Natural resource -conservation and Natural resource

						Accounting
25.	Sem01: EVS503: : Biodiversity & Conservation	September	03/09/2023	12.00pm- 1.00pm	Theory	Special Conservation Projects In India
26.		September	10/09/2023			Climate And Climate Change & Environmental Stress
27.		September	17/09/2023			Conservation Planning Of Biodiversity And Climate Change
28.		September	24/09/2023			Global Biological Impacts Of Climate Change
29.		October	01/10/2023			Threats To Biodiversity & Conservation Challenges In The Twenty First
30.		October	08/10/2023			Field Techniques In Wildlife Studies
31.	Sem01: EVS504: Lab Activities on EVS501, EVS502 & EVS503	September	03/09/2023	02.00pm- 04.00pm	Practical	Study of ecological pyramids (at least four)
32.		September	10/09/2023			Study of food chain – Any one example of fresh water, marine water and terrestrial food chain.
33.		September	17/09/2023			Estimation of Biomass of a given area
34.		September	24/09/2023			Study of pond ecosystem
35.		October	01/10/2023			Estimation of Dissolve oxygen(DO) of water sample
36.		October	08/10/2023			Estimation of CO <sub>2</sub> of given water sample
37.		October	22/10/2023			Estimation of hardness of water
38.		October	29/10/2023			Preparation of bio-fertilizer and study of its applications
39.		November	05/11/2023			Determination of SAR (sodium absorption ratio) of soil
40.		November	19/11/2023			Study of land degradation
41.		November	26/11/2023			Estimation of Ni & Co elements from soil sample
42.		December	03/12/2023			Measurement of intensity of solar radiations by Lux meter
43.	RES505: Research Methodology	September	03/09/2023	04.00pm – 05.00pm	Theory	Research, Methods in research
44.		September	10/09/2023			Experimental design
45.		September	17/09/2023			Sampling method
46.		September	24/09/2023			Data collections, Representation of data
47.		October	01/10/2023			Graphical representation
48.		October	08/10/2023			Analysis of data
49.		October	22/10/2023			Use of inferential statistical tools in research
50.		October	29/10/2023			Biostatistical Test, Use of ANOVA
51.		November	05/11/2023			Application of correlation of data
52.		November	19/11/2023			Literature collection, Intellectual Property Rights

53.		November	26/11/2023			Research Databases
54.		December	03/12/2023			Research Metrics
55.	Sem01: EVS506: Environmental Education, Polices and Legislation	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Environmental Education
56.		September	10/09/2023			Environmental Policy
57.		September	17/09/2023			State of India 's Environment( with respect to)
58.		September	24/09/2023			Emerging environmental concerns in India
59.		October	01/10/2023			Awareness of Society with respect to global terminology
60.		October	08/10/2023			Environmental Awareness
61.		October	22/10/2023			Global Environment Conservation Strategy -1
62.		October	29/10/2023			Global Environment Conservation Strategy - 2
63.		November	05/11/2023			Environmental Conventions and Agreements
64.		November	19/11/2023			Environmental Acts-1
65.		November	26/11/2023			Environmental Acts-2
66.		December	03/12/2023			The National Green Tribunal Act, 2010
67.		Sem01: EVS507: Management of Water Resources	September			03/09/2023
68.	September		10/09/2023	Physical, Chemical and Biological Characteristics of Water		
69.	September		17/09/2023	Water Pollution-I (Surface and Groundwater Pollution)		
70.	September		24/09/2023	Water Pollution-II (Marine Pollution)		
71.	October		01/10/2023	Water Pollution-III (Thermal Pollution)		
72.	October		08/10/2023	Drinking Water Standards, Water Related Hazards		
73.	October		22/10/2023	Water Conservation and Management Strategies		
74.	October		29/10/2023	Rain water harvesting, Wetlands Conservation		
75.	November		05/11/2023	Integrated water resources management-I		
76.	November		19/11/2023	Integrated Water Resources Management-II (Implementation and Capacity Development)		
77.	November		26/11/2023	Socio-economic aspects of Water, Water Governance		
78.	December	03/12/2023	Challenges in Water Management			
79.		February	04/02/2024			Fundamentals of Environmental Chemistry
80.		February	11/02/2024			Soil Chemistry
81.		February	18/02/2024			Properties of water, water pollutants

82.	Sem02: EVS509: Environmental Chemistry	February	25/02/2024	10.00am – 11.00am	Theory	Chemical composition of Air and Water
83.		March	03/03/2024			Radioactivity, it's Types, Sources and Hazards
84.		March	10/03/2024			Biological effects of radiation exposure
85.		March	17/03/2024			Water treatment and environmental chemistry1
86.		March	31/03/2024			Water treatment and environmental chemistry 2
87.		April	07/04/2024			Tertiary treatment and Advanced waste water treatments
88.		April	21/04/2024			Classical Methods
89.		April	28/04/2024			Toxic chemicals
90.		May	05/05/2024			Biochemical aspects
91.		Sem02: EVS510: Environmental geosciences and Computer Applications	February			04/02/2024
92.	February		11/02/2024	Interior of the Earth, earth's materials		
93.	February		18/02/2024	The earth systems and biosphere		
94.	February		25/02/2024	Elements		
95.	March		03/03/2024	Biochemical factors		
96.	March		10/03/2024	The Ocean Environment		
97.	March		17/03/2024	Climate		
98.	March		31/03/2024	Remote Sensing in Environmental Monitoring		
99.	April		07/04/2024	Geographical Information System (GIS)		
100.	April		21/04/2024	Information and communication technology in Environmental Science		
101.	April		28/04/2024	Introduction to web browsing		
102.	May	05/05/2024	Computer applications in environmental modelling			
103.	Sem02: EVS511: Herbal Wealth	February	04/02/2024	12.00pm- 1.00pm	Theory	Conservation, Conservation organizations
104.		February	11/02/2024			Cultivation
105.		February	18/02/2024			Adaptive planning and management for sustainable harvesting
106.		February	25/02/2024			Food flavors and natural colours
107.		March	03/03/2024			Natural colours, Production Technology
108.		March	10/03/2024			Plant sweeteners (natural sweeteners)
109.	Sem02: EVS512: Lab Activities on EVS509, EVS510, EVS511	February	04/02/2024			Analysis of Soil and Water: Physical properties, chemical properties, nutrients, bacterial parameters
110.		February	11/02/2024			Analysis of Total hardness of water
111.		February	18/02/2024			Estimation of halides in water samples



112.		February	25/02/2024	02.00pm- 04.00pm	Practical	Estimation of sulphate in water samples
113.		March	03/03/2024			Estimation of carbon di-oxide in water samples
114.		March	10/03/2024			Estimation of non-respirable dust in air using dust samples
115.		March	17/03/2024			Studies of models of various rock types
116.		March	31/03/2024			Study of various ground water sources and its quality
117.		April	07/04/2024			Study of various meteorological parameters and climate
118.		April	21/04/2024			Student Tests
119.		April	28/04/2024			Sample manuscript writing
120.		May	05/05/2024			Study and use of various computer, applications/ models for environmental use
121.	EVS513: OJT OR EVS514: FP	February	04/02/2024			04.00pm- 06.00pm
122.		February	11/02/2024			
123.		February	18/02/2024			
124.		February	25/02/2024			
125.		March	03/03/2024			
126.		March	10/03/2024			
127.		March	17/03/2024			
128.		March	31/03/2024			
129.		April	07/04/2024			
130.		April	21/04/2024			
131.		April	28/04/2024			
132.		May	05/05/2024			
133.	Sem02: EVS515: Environmental Sustainability	February	04/02/2024	05.00pm – 06.00pm	Theory (Elective)	Introduction to environment and society
134.		February	11/02/2024			Introduction to Terms of Significance
135.		February	18/02/2024			Trade & Environment- Concepts, issues and recent developments
136.		February	25/02/2024			The Case of Western Ghats- The Gadgil Report
137.		March	03/03/2024			The Forest Conservation Act, 1980
138.		March	10/03/2024			Managing our environment for sustainability- Solar Energy
139.		March	17/03/2024			Live Examples of Environment Friendly Technologies
140.		March	31/03/2024			Sensitivity towards environment and environmental issues

141.		April	07/04/2024			Awareness through knowledge
142.		April	21/04/2024			Local strategies and innovations in Environmental Protection
143.		April	28/04/2024			Active Participation in the resolution of Environmental Challenges
144.		May	05/05/2024			Motivational Sustainability Environmental Sustainability – the conclusion
145.	Sem02: EVS516: Solid & Hazardous Waste management	February	04/02/2024	05.00pm – 06.00pm	Theory (Elective)	Waste Types, Source & Generation rates, Effect of waste generation and disposal
146.		February	11/02/2024			Waste collection
147.		February	18/02/2024			Transfer Station & Waste Characterization
148.		February	25/02/2024			Waste Processing, Recycling
149.		March	03/03/2024			Waste minimization, waste hierarchy, waste audit
150.		March	10/03/2024			Hazardous waste
151.		March	17/03/2024			Sustainable Municipal Solid Waste Management
152.		March	31/03/2024			Incineration and Combustion, Composting & Vermicomposting
153.		April	07/04/2024			Solid waste disposal, open dumping and landfills
154.		April	21/04/2024			Municipal waste (management and handling) rules
155.		April	28/04/2024			Hazardous waste (management and handling) rules
156.		May	05/05/2024			Biomedical Waste (management and handling) Rules, Plastic waste management rules (2016)

## V153: MASTER IN SCIENCE (PHYSICS) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	PHY501: CLASSICAL MECHANICS	September	03/09/2023	10.00am- 11.00am	Theory	Mechanics of a System of Particles, D'Alembert's Principle and Lagrange's Equations
2.		September	10/09/2023			Central Force Motion
3.		September	17/09/2023			Kepler's Laws and Virial Theorem
4.		September	24/09/2023			Calculus of Variation, Euler's Equation and its Applications
5.		October	01/10/2023			Hamilton's Principle, Hamilton's Equation of Motion
6.		October	08/10/2023			Routh Procedure and the Least Action Principle Canonical Transformations
7.		October	22/10/2023			Invariance under Canonical Transformations
8.		October	29/10/2023			Lagrange and Poission Brackets
9.		November	05/11/2023			Rigid Body Motion-Rotations in Plane and Space
10.		November	19/11/2023			The Euler Angles
11.		November	26/11/2023			A Moving Coordinate Frame
12.		December	03/12/2023			Rotational Dynamics of a Rigid Body
13.	PHY502: ELECTRONIC DEVICES	September	03/09/2023	11.00am- 12.00pm	Theory	Study of Timer IC 555
14.		September	10/09/2023			Study of VCO IC 566
15.		September	17/09/2023			Study of PLL IC 565
16.		September	24/09/2023			Function generator using two OPAMPs with variable controls
17.		October	01/10/2023			Voltage Regulator, Three pin regulators
18.		October	08/10/2023			IC 723, DC - DC converter
19.		October	22/10/2023			Boolean Algebra and Logic Families, Digital Logic circuits: Sequential Logic
20.		October	29/10/2023			Counter
21.		November	05/11/2023			Shift registers using IC 7495
22.		November	19/11/2023			Digital to analog converters, Study of IC 0808
23.		November	26/11/2023			Analog to digital converters, Study of ICL 7106
24.		December	03/12/2023			
25.	PHY503: MATHEMATICS	September	03/09/2023		Theory	Linear Equations with Constant Coefficients

26.	METHODS IN PHYSICS	September	10/09/2023	12.00pm- 1.00pm		Dependence and independence of solutions
27.		September	17/09/2023			Applications of Second Order Linear Equations
28.		September	24/09/2023			The homogeneous equation of higher order
29.		October	01/10/2023			Fourier Integrals
30.		October	08/10/2023			Fourier Integrals
31.		October	22/10/2023			Fourier Transforms
32.		October	29/10/2023			Fourier Transforms
33.		November	05/11/2023			Inverse Fourier Transforms
34.		November	19/11/2023			Inverse Fourier Transforms
35.		November	26/11/2023			Applications of Fourier Transforms
36.		December	03/12/2023			Applications of Fourier Transforms
37.		PHY504: PHYSICS I- PRACTICAL	September			03/09/2023
38.	September		10/09/2023	To Design, build & test square, triangular and sine wave generator using IC 741/IC 555, To Study of Linear voltage control oscillator using IC 566.		
39.	September		17/09/2023	To design a Frequency Modulator Circuit based on IC 566, To Design of a Voltage-to-Frequency Converter using VCO IC 566		
40.	September		24/09/2023	To Design of a Phase Modulator and Demodulator using PLL IC 565, To design and setup a Frequency Multiplier circuit using PLL IC565 to multiply the input frequency		
41.	October		01/10/2023	To Build and test SMPS power supply. To simplify the given SOP expression and to realize it using Basic gates and Universal gates		
42.	October		08/10/2023	To Design, built and test oscillator – Wien Bridge oscillator / phase shift oscillator using OP-AMP. To Design, build and test Voltage to Frequency / Frequency to voltage converter using OP-AMP		
43.	October		22/10/2023	To Build and test Function generator using IC 8038 To Design, build and test the DC to DC converter		

						circuit
44.		October	29/10/2023			To design and Implementation of Current Limiting Protection Circuitry using IC 78XX/IC 79XX. To Design and Implementation of Low Dropout (LDO) Voltage Regulators using IC 78XX/IC 79XX.
45.		November	05/11/2023			To Design and Implementation of a Voltage Measurement Circuit using ICL 7106
46.		November	19/11/2023			To Design and Construction of a Temperature Measurement Circuit using ICL 7106
47.		November	26/11/2023			To Design and Implementation of a Simple Decade Counter Circuit using IC 7490.
48.		December	03/12/2023			To Design and Analysis of Binary to BCD Conversion Circuit using IC 7490.
49.	RES505: Research Methodology	September	03/09/2023	04.00pm – 05.00pm	Theory	Research, Methods in research
50.		September	10/09/2023			Experimental design
51.		September	17/09/2023			Sampling method
52.		September	24/09/2023			Data collections, Representation of data
53.		October	01/10/2023			Graphical representation
54.		October	08/10/2023			Analysis of data
55.		October	22/10/2023			Use of inferential statistical tools in research
56.		October	29/10/2023			Biostatistical Test, Use of ANOVA
57.		November	05/11/2023			Application of correlation of data
58.		November	19/11/2023			Literature collection, Intellectual Property Rights
59.		November	26/11/2023			Research Databases
60.		December	03/12/2023			Research Metrics
61.	PHY506: EXPERIMENTAL TECHNIQUES IN PHYSICS	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Vacuum Physics
62.		September	10/09/2023			Gas transport properties
63.		September	17/09/2023			Vacuum Technology and Surface Physics Vacuum System
64.		September	24/09/2023			Pumps for High Vacuum (HV) and Ultra High Vacuum (UHV)
65.		October	01/10/2023			Vacuum Gauges
66.		October	08/10/2023			Low temperatures techniques, low temperature production techniques

67.		October	22/10/2023			Structural Characterization and Thermal Analysis Techniques used for XRD
68.		October	29/10/2023			Characterization Techniques
69.		November	05/11/2023			Morphological and Magnetic Characterization
70.		November	19/11/2023			Electron Microscopy- Principle, Instrumentation and Working
71.		November	26/11/2023			Probe Microscopy- Principle, Instrumentation and Working
72.		December	03/12/2023			Magnetic Characterization- Principle, Instrumentation and Working
73.	PHY507: PHYSICS OF LASERS	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	General Introduction, Emission
74.		September	10/09/2023			Line Broadening Mechanisms
75.		September	17/09/2023			Laser Rate Equations
76.		September	24/09/2023			Laser Amplifiers
77.		October	01/10/2023			Resonance Frequency, Resonators
78.		October	08/10/2023			Spherical Mirror Resonators
79.		October	22/10/2023			Mirror Resonator
80.		October	29/10/2023			The Threshold Condition
81.		November	05/11/2023			Characteristics, LASER Properties
82.		November	19/11/2023			LASER Characteristics, Types of LASER
83.		November	26/11/2023			LASER Amplifiers
84.		December	03/12/2023			LASER Safety
85.	PHY509: ATOMIC AND MOLECULAR PHYSICS	February	04/02/2024	10.00am – 11.00am	Theory	Atomic structure and atomic spectra
86.		February	11/02/2024			Exclusion principle
87.		February	18/02/2024			Electron spectra
88.		February	25/02/2024			Zeeman effect
89.		March	03/03/2024			Molecular Spectra , Electronics spectra
90.		March	10/03/2024			Frank – Condon principle
91.		March	17/03/2024			Rotational Spectra
92.		March	31/03/2024			ESR, Hamiltonian
93.		April	07/04/2024			NMR, Applications of NMR
94.		April	21/04/2024			Laue theory of X-ray diffraction, Brillouin zone
95.	April	28/04/2024	Modes of Vibration			

96.		May	05/05/2024			Lattice heat capacity
97.	PHY510: ELECTRODYNAMICS	February	04/02/2024	11.00am- 12.00pm	Theory	Multi-pole expansions
98.		February	11/02/2024			linear quadra-pole potential and field
99.		February	18/02/2024			Faraday's law
100.		February	25/02/2024			Maxwell's equations
101.		March	03/03/2024			Energy relations in quasi-stationary current systems, Poynting's theorem
102.		March	10/03/2024			Electromagnetic wave equations, Electromagnetic waves
103.		March	17/03/2024			Inhomogeneous wave equations
104.		March	31/03/2024			Gauge transformations
105.		April	07/04/2024			Wave equations, Hertz potential
106.		April	21/04/2024			Special theory of relativity, Lorentz transformations
107.		April	28/04/2024			Minkowski's space-time diagram
108.		May	05/05/2024			Four vector potential
109.	PHY511: QUANTUM MECHANICS- I	February	04/02/2024	12.00pm- 1.00pm	Theory	Introduction to Quantum Mechanics
110.		February	11/02/2024			Bound States
111.		February	18/02/2024			Bound States
112.		February	25/02/2024			Linear Vector Space (LVS)
113.		March	03/03/2024			Linear Vector Space (LVS)
114.		March	10/03/2024			Function Spaces
115.		March	17/03/2024			Function Spaces
116.		March	31/03/2024			Classical vs Quantum Mechanics
117.		April	07/04/2024			Schrodinger and Heisenberg Pictures
118.		April	21/04/2024			Hydrogen Atom & Wave Functions
119.		April	28/04/2024			Hydrogen Atom & Wave Functions
120.		May	05/05/2024			Harmonic Oscillator
121.	PHY512: PHYSICS II –	February	04/02/2024	02.00pm- 04.00pm	Practical	Sum of digits of an integer, To find factorial of a number
122.		February	11/02/2024			Checking and printing of prime numbers To find $\sin(x)$ , $\cos(x)$ using series method
123.		February	18/02/2024			Sorting of (1) Numerical data (2) Character type data-ascending, descending, Use of pointers – sorting (any one method of sorting)

124.	PRACTICAL	February	25/02/2024			Matrix operations – addition, subtraction, multiplication Root of equation-Bisection method, Newton Raphson method
125.		March	03/03/2024			Numerical integration- Trapezoidal, Simpson's 1/3rd rule, Roots of an algebraic equation (Bisection)
126.		March	10/03/2024			Roots of polynomial (Newton Raphson) Legendre polynomials using the standard recurrence relation. Confirm that the method works well for Legendre functions by comparing with standard tables for special functions. (Use forward recursion.)
127.		March	17/03/2024			Bessel functions of the first kind using the standard recurrence relation.
128.		April	07/04/2024			Rotation of matrix: Rotate the elements of a $n \times n$ matrix in clockwise/ anticlockwise direction and display the matrices ( $n \geq 5$ ).
129.		April	21/04/2024			Inverse of a matrix: Find the inverse of $n \times n$ matrix and display both matrices.
130.		April	28/04/2024			Trapezoidal/ Simpson rule: Evaluate a given function $f(x)$ using Trapezoidal/ Simpson rule correct up to given accuracy by successively halving the step size.
131.		May	05/05/2024			Graphics: Write a program and display the Miller planes in the cubic lattice. Display the FCC, Bcc, and simple cubic lattice on the computer screen.
132.		May	12/05/2024			Graphics: Write a program and display the Miller planes in the cubic lattice. Display the FCC, Bcc, and simple cubic lattice on the computer screen.
133.		PHY515: FUNDAMENTALS OF MATERIALS SCIENCE	February			04/02/2024
134.	February		11/02/2024	Miller indices		
135.	February		18/02/2024	Solids		
136.	February		25/02/2024	Close-Packed Spheres		
137.	March		03/03/2024	Structure of Solids, Defects		
138.	March		10/03/2024	Dislocations, Defects in Crystalline Solids		
139.	March		17/03/2024	Phase Diagrams, Diffusion		
140.	March		31/03/2024	Time-temperature-transformation (TTT) diagram		



141.		April	07/04/2024			Phase Transformations
142.		April	21/04/2024			Mechanical Behaviour of Materials
143.		April	28/04/2024			Dislocation interaction leading to strain hardening
144.		May	05/05/2024			Fracture
145.	PHY516: MEDICAL PHYSICS	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Biomechanics
146.		February	11/02/2024			Bioelectricity and Biomagnetism
147.		February	18/02/2024			Physics of Hearing , Physics of Vision
148.		February	25/02/2024			Radiation physics, Radiotherapy and Brachytherapy
149.		March	03/03/2024			X-ray and Digital Radiography, Nuclear Medicine
150.		March	10/03/2024			Biomaterials, New trends in Medical Physics
151.		March	17/03/2024			Fundamentals to Biomedical Instrumentation, Patient Safety, Electrodes and Transducer
152.		March	31/03/2024			Recording Systems, Cardiovascular System and Measurements
153.		April	07/04/2024			Heart and Cardiovascular system
154.		April	21/04/2024			The Computer in Biomedical Instrumentation and Biomedical Recorders
155.		April	28/04/2024			nervous system and neural signals
156.		May	05/05/2024			Respiratory system, special care instruments and ultrasonic imaging system
157.	PHY513: Ojt Or PHY514: Fp	February	04/02/2024	12.00pm – 1.00pm	Term Work	
158.		February	11/02/2024			
159.		February	18/02/2024			
160.		February	25/02/2024			
161.		March	03/03/2024			
162.		March	10/03/2024			
163.		March	17/03/2024			
164.		March	31/03/2024			
165.		April	07/04/2024			
166.		April	21/04/2024			
167.		April	28/04/2024			
168.		May	05/05/2024			

## V154: MASTER IN SCIENCE (CHEMISTRY) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	CHE501: Inorganic Chemistry-I	September	03/09/2023	10.00am- 11.00am	Theory	Inorganic Clusters
2.		September	10/09/2023			Boranes and Boron Hydrides
3.		September	17/09/2023			Isopoly and Heteropoly Acids
4.		September	24/09/2023			Bioinorganic Chemistry
5.		October	01/10/2023			Metallic State & Basic Organometallic Chemistry
6.		October	08/10/2023			Basic Principles of ligand-field Theory
7.		October	22/10/2023			Metal–Ligand Equilibria in Solution
8.		October	29/10/2023			Homogeneous catalytic reactions & Acid-base behavior reaction
9.		November	05/11/2023			Alkenes–isomerisation of alkenes
10.		November	19/11/2023			Chemistry in Non- aqueous solvents
11.		November	26/11/2023			Nuclear Chemistry and Nuclear Reactions & N/P ratios in stable and meta stable nuclei
12.		December	03/12/2023			Nuclear Reactions & Fertile isotopes
13.	CHE502: Physical Chemistry-I	September	03/09/2023	11.00am- 12.00pm	Theory	The Dawn of Quantum Theory & Formalism in Quantum Mechanics
14.		September	10/09/2023			Particle in a box
15.		September	17/09/2023			Harmonic oscillator & Rigid Rotator Model
16.		September	24/09/2023			Schrodinger equation for hydrogen and hydrogen like atoms
17.		October	01/10/2023			Orbital shapes, Probability density and Radial distribution function of H-atom
18.		October	08/10/2023			Variation Method & Perturbation Theory
19.		October	22/10/2023			Theories of Reaction Rates & The Arrhenius Parameters
20.		October	29/10/2023			Elementary reaction in solution
21.		November	05/11/2023			Kinetics of Complex Reactions
22.		November	19/11/2023			Surface Chemistry
23.		November	26/11/2023			Role of surface in catalysis & Enzyme catalysis
24.		December	03/12/2023			Heterogeneous catalysis

25.	CHE503: Organic Chemistry-I	September	03/09/2023	12.00pm- 1.00pm	Theory	Reaction Mechanism
26.		September	10/09/2023			Aromaticity & Bonding properties of systems
27.		September	17/09/2023			Benzene, Annulenes, Spectroscopy & Mobius Aromaticity
28.		September	24/09/2023			Addition reactions.
29.		October	01/10/2023			Addition reactions to carbonyl compounds.
30.		October	08/10/2023			Concepts in organic synthesis & Reagents in organic synthesis.
31.	CHE504: Lab Activities on CHE501, CHE502 & CHE503	September	03/09/2023	02.00pm- 04.00pm	Practical	Analysis of ore
32.		September	10/09/2023			Analysis of binary mixtures by gravimetric and volumetric method
33.		September	17/09/2023			Preparation of the following complexes and determination of its purity
34.		September	24/09/2023			Drug Analysis
35.		October	01/10/2023			Qualitative analysis
36.		October	08/10/2023			Column chromatography
37.		October	22/10/2023			Preparation of Derivatives
38.		October	29/10/2023			Thin layer chromatography (TLC)
39.		November	05/11/2023			Conductometry
40.		November	19/11/2023			Potentiometry
41.		November	26/11/2023			pH -metry
42.		December	03/12/2023			Colorimetry/ Spectrophotometry/Polarimetry
43.	RES505: Research Methodology	September	03/09/2023	04.00pm – 05.00pm	Theory	Research & Methods in research
44.		September	10/09/2023			Experimental design
45.		September	17/09/2023			Sampling method
46.		September	24/09/2023			Data collections & Representation of data
47.		October	01/10/2023			Graphical representation
48.		October	08/10/2023			Analysis of data
49.		October	22/10/2023			Use of inferential statistical tools in research
50.		October	29/10/2023			Biostatistical Test & Use of ANOVA
51.		November	05/11/2023			Application of correlation of data
52.		November	19/11/2023			Literature collection
53.		November	26/11/2023			Intellectual Property Rights
54.		December	03/12/2023			Research Databases & Research Metrics

55.	CHE506: Physical Methods in Chemistry	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	UV-Visible Spectroscopy & IR Spectroscopy
56.		September	10/09/2023			Instrumentation and application
57.		September	17/09/2023			Principles and Applications
58.		September	24/09/2023			Thermal analysis & Thermo mechanical analysis
59.		October	01/10/2023			Description of ESCA spectrometer
60.		October	08/10/2023			Auger electron spectroscopy
61.		October	22/10/2023			Diffraction Methods
62.		October	29/10/2023			Identification of free radicals
63.		November	05/11/2023			Raman spectroscopy & ESR Spectroscopy Theory
64.		November	19/11/2023			Atomic absorption spectroscopy (AAS)
65.		November	26/11/2023			Plasma sources & applications of flame emission spectrometry
66.	December	03/12/2023	Instrumentation & Interference applications of (AAS) Inductively coupled Plasma Spectroscopy			
67.	CHE507: Polymer Chemistry	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Terminology and basic concepts of Polymers
68.		September	10/09/2023			Types of Polymers & Techniques of polymerization
69.		September	17/09/2023			Kinetics of Polymerization
70.		September	24/09/2023			Crystalline Nature & Degree of Crystallinity
71.		October	01/10/2023			Co-polymerization
72.		October	08/10/2023			Individual monomers
73.		October	22/10/2023			Polymer degradation & Polymer reactions
74.		October	29/10/2023			Experimental methods
75.		November	05/11/2023			Elastomeric materials
76.		November	19/11/2023			Stereochemistry of polymers
77.		November	26/11/2023			Determination of molecular weight
78.	December	03/12/2023	Thermal Characterization & Commercial polymers			
79.	CHE509: Inorganic Chemistry-II	February	04/02/2024	10.00am – 11.00am	Theory	Coordination Chemistry and bonding
80.		February	11/02/2024			Bonding & Molecular orbital theory
81.		February	18/02/2024			Td & square planar symmetries
82.		February	25/02/2024			Electronic spectra of complexes
83.		March	03/03/2024			Orgel diagram and Tanabe & Metal carbonyls
84.		March	10/03/2024			Nitrosyl complexes, dinitrogen complexes
85.		March	17/03/2024			Carbocyclic pi complexes and Reaction of coordination

						compounds
86.		March	31/03/2024			Arene complexes-complexes of biochemical importance
87.		April	07/04/2024			Reactions of coordination compounds & Theories of Electron transfer reactions
88.		April	21/04/2024			Symmetry elements and symmetry operations
89.		April	28/04/2024			Principal axis and subsidiary axes & Symmetry operations and order of a group
90.		May	05/05/2024			Matrix representations of symmetry operations
91.	CHE510: Physical Chemistry-II	February	04/02/2024	11.00am- 12.00pm	Theory	Thermodynamics
92.		February	11/02/2024			Maxwell relations and its applications
93.		February	18/02/2024			Duhem-Margules equation and its applications & Henry's law
94.		February	25/02/2024			Statistical Thermodynamics & Partition function and its significance
95.		March	03/03/2024			Thermodynamic probability and entropy
96.		March	10/03/2024			Application to monoatomic gases
97.		March	17/03/2024			Spectroscopy & Rotational (microwave) spectroscopy
98.		March	31/03/2024			Fundamental vibrational frequencies
99.		April	07/04/2024			Raman Spectroscopy
100.		April	21/04/2024			Macromolecules & Degree of polymerization and molecular weight
101.		April	28/04/2024			Chemistry of polymerization
102.		May	05/05/2024			Electronically conducting polymers, thermodynamics of polymer solutions
103.	CHE511: Organic Chemistry-II	February	04/02/2024	12.00pm- 1.00pm	Theory	Aromatic Electrophilic Substitution-I & Aromatic Electrophilic Substitution-II
104.		February	11/02/2024			Aliphatic Electrophilic Substitution
105.		February	18/02/2024			Typical Electrophilic Substitution
106.		February	25/02/2024			Aliphatic Nucleophilic Substitution-I & Aliphatic Nucleophilic Substitution-II
107.		March	03/03/2024			Aromatic Nucleophilic Substitution
108.		March	10/03/2024			Elimination Reactions
109.		February	04/02/2024			Thermo chemistry
110.		February	11/02/2024			Instrumental method of Analysis

111.	CHE512: Lab Activities on CHE509, CHE510 & CHE511	February	18/02/2024	02.00pm- 04.00pm	Practical	Chromatography
112.		February	25/02/2024			Colorimetric analysis
113.		March	03/03/2024			Single Stage Preparation Monitored by TLC
114.		March	10/03/2024			Steam distillation techniques.
115.		March	17/03/2024			Organic Estimations
116.		March	31/03/2024			Two Stage Preparation Monitored by TLC
117.		April	07/04/2024			Chemical kinetics
118.		April	21/04/2024			Surface Chemistry
119.		April	28/04/2024			Non- Instrumental
120.		May	05/05/2024			Analysis
121.	CHE515: Analytical Chemistry	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Basics of Analytical Chemistry
122.		February	11/02/2024			Classification of analytical techniques
123.		February	18/02/2024			Types and sources of error & Sampling
124.		February	25/02/2024			Quantitative Analysis
125.		March	03/03/2024			Complexometric titrations-stability of complexes
126.		March	10/03/2024			Redox Equibria & Gravimetric Analysis
127.		March	17/03/2024			Chromatography
128.		March	31/03/2024			Column chromatography
129.		April	07/04/2024			Gas Chromatography & HPLC
130.		April	21/04/2024			Electro Analytical Techniques - Polarography
131.		April	28/04/2024			Electro Analytical Techniques - Amperometry
132.		May	05/05/2024			Electro Analytical Techniques - Voltametry & Voltametry - quantitative and qualitative aspects
133.	CHE516: Chemical mathematics & Biostatistics	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Functions, Differential and Integral calculus
134.		February	11/02/2024			Applications in Chemistry
135.		February	18/02/2024			Partial differentiation & Rules of Integration
136.		February	25/02/2024			Differential Equations & Probability and Theory of Errors
137.		March	03/03/2024			Vectors, Matrices and Determinants
138.		March	10/03/2024			Introduction to Matrix Algebra
139.		March	17/03/2024			Statistics & Probability
140.		March	31/03/2024			Sampling

141.		April	07/04/2024			Estimation and hypothesis testing
142.		April	21/04/2024			Experimental design and analysis of variance
143.		April	28/04/2024			Correlation and regression & Non-parametric tests
144.		May	05/05/2024			Statistical techniques in Pharmaceutics
145.	CHE513: OJT OR CHE514: FP	February	04/02/2024	12.00pm – 1.00pm	Term Work	
146.		February	11/02/2024			
147.		February	18/02/2024			
148.		February	25/02/2024			
149.		March	03/03/2024			
150.		March	10/03/2024			
151.		March	17/03/2024			
152.		March	31/03/2024			
153.		April	07/04/2024			
154.		April	21/04/2024			
155.		April	28/04/2024			
156.		May	05/05/2024			

## V155: MASTER IN SCIENCE (ZOOLOGY) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	ZOO501: Biochemistry	September	03/09/2023	10.00am- 11.00am	Theory	Biomolecules, Amino acids
2.		September	10/09/2023			Proteins, Protein Classification, Structural levels of protein
3.		September	17/09/2023			Analytical and separation techniques
4.		September	24/09/2023			Sequencing
5.		October	01/10/2023			Vitamins
6.		October	08/10/2023			Enzyme
						Enzyme classification
7.		October	22/10/2023			Enzyme kinetics-I
8.		October	29/10/2023			Enzyme kinetics- II
9.		November	05/11/2023			Introduction of metabolism and overview
10.		November	19/11/2023			Glycolysis and Gluconeogenesis
11.		November	26/11/2023			Lipid metabolism
12.	December	03/12/2023	Protein Metabolism			
13.	ZOO502: Cell Biology	September	03/09/2023	11.00am- 12.00pm	Theory	History and Basic information of cell, Cell organization
14.		September	10/09/2023			Bio membranes, Membrane Transport
15.		September	17/09/2023			Nucleus, Mitochondria
16.		September	24/09/2023			Endoplasmic reticulum, Golgi Complex
17.		October	01/10/2023			Cell Surface receptors
18.		October	08/10/2023			Cell junctions
19.		October	22/10/2023			Cell adhesion molecules
20.		October	29/10/2023			Cytoskeleton
21.		November	05/11/2023			Cell cycle
22.		November	19/11/2023			Cell division
23.		November	26/11/2023			Apoptosis
24.		December	03/12/2023			Cancer
25.	ZOO503: Applied Zoology Part -I	September	03/09/2023			Aquaculture, Maintenance of Physicochemical parameter for fish culture
26.		September	10/09/2023			Fish breeding



				12.00pm- 1.00pm	Theory	Construction and management of fish culture pond			
27.		September	17/09/2023			Pearl Culture			
28.		September	24/09/2023			Apiculture			
29.		October	01/10/2023			Life history of honey bees			
30.		October	08/10/2023			Lac culture			
31.	ZOO504: Lab on Biochemistry, Cell Biology & Applied Zoology Part-I	September	03/09/2023	02.00pm- 04.00pm	Practical	Study and Determination of proteins by Biuret method/ Folin Phenol method, Study and Determination of glucose by Somogi / Anthrone method			
32.		September	10/09/2023			Determination of lipids by Vanillin method Estimation of Amino acid			
33.		September	17/09/2023			Estimation of sugar (glucose) To Determination of enzyme activities of SDH and LDH			
34.		September	24/09/2023			To Effect of substrate concentration and pH on SDH activity			
35.		October	01/10/2023			Study of Sub-cellular fractionation: nuclei, mitochondria Cytosol & assaying functional identification of mitochondria Study and describe the Mitosis: Effect of colchicine on mitosis			
36.		October	08/10/2023			Study and Preparation of blood smears: Cell type identification and differential counts Study of Phagocytosis			
37.		October	22/10/2023			Study of Pinocytosis, Study of EM – interpretation of cellular ultra structure			
38.		October	29/10/2023			Study of morphology, general characters and life cycle of Anopheles, Culex, Aedes and Housefly			
39.		November	05/11/2023			Study and Identification of Silkworms - Mulberry, Tasar, Eri and Muga			
40.		November	19/11/2023			To Demonstrate the Practices of sericulture			
41.		November	26/11/2023			Identification and classification of Honey Bee species			
42.		December	03/12/2023			Study of morphology and identification of fishes			
43.		RES505: Research	September			03/09/2023			Research, Methods in research
44.			September			10/09/2023			Experimental design
45.	September		17/09/2023			Sampling method			
46.	September		24/09/2023			Data collections, Representation of data			
47.	October		01/10/2023			Graphical representation			

48.	Methodology	October	08/10/2023	04.00pm – 05.00pm	Theory	Analysis of data			
49.		October	22/10/2023			Use of inferential statistical tools in research			
50.		October	29/10/2023			Biostatistical Test, Use of ANOVA			
51.		November	05/11/2023			Application of correlation of data			
52.		November	19/11/2023			Literature collection, Intellectual Property Rights			
53.		November	26/11/2023			Research Databases			
54.		December	03/12/2023			Research Metrics			
55.		ZOO506: Developmental Biology	September			03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Scope and importance of developmental biology Fertilization
56.	September		10/09/2023	Cleavage Role of cytoplasm					
57.	September		17/09/2023	Cell–cell interaction and cell signaling Special Early Embryonic Development-I Early Embryonic Development-II					
58.	September		24/09/2023	Early Mammalian Development Cell–cell interaction and cell signaling Special Early Embryonic Development-I					
59.	October		01/10/2023	Late Embryonic Development					
60.	October		08/10/2023	Sex Determination					
61.	October		22/10/2023	Differentiation					
62.	October		29/10/2023	The Development of Blood Cells					
63.	November		05/11/2023	Gastrulation					
64.	November		19/11/2023	Concept of organizers and induction					
65.	November		26/11/2023	Metamorphosis					
66.	December		03/12/2023	Teratogenesis					
67.	ZOO507: Entomology		September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)			External Morphology Study of Generalized insects Insect taxonomy I
68.			September	10/09/2023					Insect taxonomy II, Insect Behavior
69.		September	17/09/2023	Pest of field crops and storage grains, Horticultural crop pests					
70.		September	24/09/2023	Integrated pest management I , Integrated pest management II					
71.		October	01/10/2023	Internal Morphology I					
72.		October	08/10/2023	Internal Morphology II					

73.		October	22/10/2023			Internal Morphology III
74.		October	29/10/2023			Livestock entomology
75.		November	05/11/2023			Urban Entomology
76.		November	19/11/2023			Medical Entomology
77.		November	26/11/2023			Forensic Entomology
78.		December	03/12/2023			Aquatic Entomology
79.	Sem-II ZOO509: Molecular Biology	February	04/02/2024	10.00am – 11.00am	Theory	Nucleic Acids DNA structure and Topology
80.		February	11/02/2024			DNA as genetic material Genome organization
81.		February	18/02/2024			Replication Transcription and Regulation
82.		February	25/02/2024			Post transcriptional modifications Gene Regulation
83.		March	03/03/2024			Translation
84.		March	10/03/2024			Synthesis
85.		March	17/03/2024			Post translational modifications
86.		March	31/03/2024			DNA repair mechanism
87.		April	07/04/2024			Molecular techniques
88.		April	21/04/2024			Blotting techniques
89.		April	28/04/2024			Protein sequencing method
90.		May	05/05/2024			Molecular Techniques
91.	ZOO510: Genetics	February	04/02/2024	11.00am- 12.00pm	Theory	Introduction to genetics, Gene Inheritance
92.		February	11/02/2024			Multiple alleles, Genome organization
93.		February	18/02/2024			Mutation, Types of point mutation
94.		February	25/02/2024			Mutagenic agents, Sex-determination
95.		March	03/03/2024			Population Genetics
96.		March	10/03/2024			Hardy-Weinberg principles
97.		March	17/03/2024			Linkage and mapping in eukaryotes
98.		March	31/03/2024			Genetic disorders
99.		April	07/04/2024			Sex linked inheritance
100.		April	21/04/2024			Microbial Genetics
101.		April	28/04/2024			Application genetics

102.		May	05/05/2024			Breeding technology
103.	ZOO511: Applied Zoology Part-II	February	04/02/2024	12.00pm- 1.00pm	Theory	Sericulture, life cycle of <i>Bombyx mori</i>
104.		February	11/02/2024			Cultivation, Cocoons
105.		February	18/02/2024			Vermi-culture and Vermi Compost
106.		February	25/02/2024			Domestic animals
107.		March	03/03/2024			Dairy Farming
108.		March	10/03/2024			Poultry Farming
109.	ZOO512: Lab on Molecular Biology, Genetics & Applied Zoology Part-II	February	04/02/2024	02.00pm- 04.00pm	Practical	To study of Quantitation DNA and Agarose gel electrophoresis
110.		February	11/02/2024			Study and Demonstration of plasmid DNA in <i>E. coli</i>
111.		February	18/02/2024			To study of Quantitation RNA and agarose gel electrophoresis
112.		February	25/02/2024			Protein gel electrophoresis a) SDS-Polyacrylamide gel electrophoresis
113.		March	03/03/2024			a) SDS-Polyacrylamide gel electrophoresis
114.		March	10/03/2024			Native Polyacrylamide gel electrophoresis
115.		March	17/03/2024			To study of Restriction Endonuclease digestion and mapping
116.		March	31/03/2024			Study of problems based on multiple alleles – Blood groups
117.		April	07/04/2024			Study of the problems based on Mendel's Laws – monohybrid and dihybrid ratios
118.		April	21/04/2024			Study of problems based on gene frequency – Hardy Weinberg Law
119.		April	28/04/2024			Study and estimation of gene frequencies in human population and analysis of heterozygote frequencies
120.	May	05/05/2024	Study and characterization of normal and abnormal karyotypes from human subjects			
121.	ZOO515:Animal Biotechnology	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Introduction to biotechnology, Mammalian reproductive system And IVF
122.		February	11/02/2024			Cryopreservation, Advancement of Biotechnology
123.		February	18/02/2024			Cell culture, Mammalian cell lines & their characteristics
124.		February	25/02/2024			Tissue culture system, Cloning
125.		March	03/03/2024			Transgenic animal-I
126.		March	10/03/2024			Transgenic animal-II
127.		March	17/03/2024			Genetic Engineered Animal Cell Culture

128.		March	31/03/2024			Recombinant Microorganisms
129.		April	07/04/2024			Medical biotechnology
130.		April	21/04/2024			Medical biotechnology
131.		April	28/04/2024			Insecticide development
132.		May	05/05/2024			Biotechnology of aquaculture
133.	ZOO516: Toxicology	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Importance Of Toxicology Dose Effect And Dose Response Relationship
134.		February	11/02/2024			Factors Affecting Toxicity Absorption And Distribution Of Toxicants
135.		February	18/02/2024			Mechanism And Reactions Of Toxicants Lipid Peroxidation
136.		February	25/02/2024			Oxidative Stress Antioxidant Defense Mechanism
137.		March	03/03/2024			Basics Of Organ Toxicity
138.		March	10/03/2024			Hepatotoxicity
139.		March	17/03/2024			Pulmonary Toxicity
140.		March	31/03/2024			Renal Toxicity And Neurotoxicity
141.		April	07/04/2024			Eco-Toxicology Of Heavy Metals
142.		April	21/04/2024			Environmental Problems
143.		April	28/04/2024			Occupational Hazards
144.		May	05/05/2024			Carcinogenesis
145.		ZOO513: OJT OR ZOO514: FP	February			04/02/2024
146.	February		11/02/2024			
147.	February		18/02/2024			
148.	February		25/02/2024			
149.	March		03/03/2024			
150.	March		10/03/2024			
151.	March		17/03/2024			
152.	March		31/03/2024			
153.	April		07/04/2024			
154.	April		21/04/2024			
155.	April		28/04/2024			
156.	May		05/05/2024			

## V156: MASTER IN SCIENCE (BOTANY) {2023 PATTERN}

C.S. No.	Course Code And Name	Month	Date	Time	Theory/ Practical course	Topic
1.	BOT501: Diversity of Non – Vascular Plants -I	September	03/09/2023	10.00am- 11.00am	Theory	Introduction and classification: General characters of the five kingdoms of living organisms
2.		September	10/09/2023			Study of viruses: General account, classification, structure, types of viruses
3.		September	17/09/2023			Techniques for study of viruses: Cell cultivation (plant and animal cell types), purification
4.		September	24/09/2023			A brief account of Viroids, Prions and Interferons: Definition, structure, diseases caused, transmission etc.
5.		October	01/10/2023			A brief account of Viroids, Prions and Interferons: ..
6.		October	08/10/2023			Study of bacteria: General characteristics of Archaeobacteria (Mycoplasmas,
7.		October	22/10/2023			Structure of bacteria: Ultra - structure of bacterial cell - cell wall (biosynthesis of peptidoglycan)
8.		October	29/10/2023			Bacterial genomics: Bacterial nutrition; Genetic recombination; Drug resistance; Uses of bacteria:
9.		November	05/11/2023			Study of fungi: Classification of Fungi (Alexopoulos and Mims; Ainsworth);
10.		November	19/11/2023			Sexuality in fungi: Heterothallism in fungi – sexuality in fungi;
11.		November	26/11/2023			Study of examples of fungi: General characters, structure and life cycle of Myxomycotina
12.		December	03/12/2023			Study of examples of fungi
13.		September	03/09/2023			Fungal association and its application, Fungal diseases, Plant pathology, Plant disease management
14.		September	10/09/2023			Study of cyanobacteria
15.		September	17/09/2023			Phycology
16.		September	24/09/2023			Examples of algae, Economic importance of algae
						Bryophytes, Examples of bryophytes

17.	BOT502: Diversity of Non- Vascular Plants –II	October	01/10/2023	11.00am- 12.00pm	Theory	Economic and ecological importance of bryophytes
18.		October	08/10/2023			Phylogeny of bryophytes
19.		October	22/10/2023			Bio fertilizers ,Applications of biofertilizers
20.		October	29/10/2023			Biopesticides
21.		November	05/11/2023			Applications of biopesticides
22.		November	19/11/2023			Bioagents
23.		November	26/11/2023			Strategies of marking and Registration with CIB of bioagents
24.		December	03/12/2023			Quality parameters, Important bioagents
25.	BOT503: Diversity of Vascular Plants and Paleobotany-I	September	03/09/2023	12.00pm- 1.00pm	Theory	Pteridophytes I
26.		September	10/09/2023			Evolution in Pteridophytes
27.		September	17/09/2023			Pteridophytes II, Fossil pteridophytes
28.		September	24/09/2023			Gymnosperms I
29.		October	01/10/2023			Gymnosperms II
30.		October	08/10/2023			Fossil gymnosperms, Reproduction in gymnosperms
31.	BOT504: Lab Activities on BOT501,BOT502 &BOT503	September	03/09/2023	02.00pm- 04.00pm	Practical	To prepare herbarium of-Viruses and Cyanobacteria - TMV – Tobacco and Papaya (Herbarium). To study microbes (Bacteria and fungi) in Soil, water and air – solid- serial dilution
32.		September	10/09/2023			To study Fungi – Plasmodiophora, Saprolegnia, Rhizopus; To study Lichens – types and reproductive body; Cultivation of mushrooms – Pleurotus
33.		September	17/09/2023			To study Pathology – late blight of Potato, Ergot of Bhajra, Smut of Sorghum, Rice blast and white rust of Crucifer. To study Peziza – External, L.S. of Apothecia (Slide); Erysiphae
34.		September	24/09/2023			To study Cyanobacteria – Spirulina, Microcystis and Oscillatoria. To study Algae – Volvox, Hydrodictyon, Chara.
35.		October	01/10/2023			To study Diatoms, Vaucheria, To study Dictyota, Sargassum.
36.		October	08/10/2023			To study Gracilaria (Mounting/sectioning of algal material), To studyBryophytes – Porella, Riccia
37.		October	22/10/2023			Study of Pteridophytes – Diversity of forms upto order level - Psilotum, Lycopodium,– Thallus, T.S. rhizome, cones - L.S. and T.S. Study of Equisetum, Ophioglossum
38.		October	29/10/2023			Study of Marsilea (Thallus T.S., Cones – T.S. and L.S) and

						other forms, Study of Gymnosperms – Diversity of forms upto order level – Cycas. Study of Cupressus.
39.		November	05/11/2023			Collection, isolation and culture of algae (fresh water and industrial waste) and Study of algae
40.		November	19/11/2023			Majorment of growth (algal biomass), Estimation of chlorophyll in different algae
41.		November	26/11/2023			Estimation of Carotenoid and phycobilin protein in different algae
42.		December	03/12/2023			Estimation of total soluble proteins and total lipids, Analysis of water quality – phosphate estimation
43.	RES505: Research Methodology	September	03/09/2023	04.00pm – 05.00pm	Theory	Research, Methods in research
44.		September	10/09/2023			Experimental design
45.		September	17/09/2023			Sampling method
46.		September	24/09/2023			Data collections, Representation of data
47.		October	01/10/2023			Graphical representation
48.		October	08/10/2023			Analysis of data
49.		October	22/10/2023			Use of inferential statistical tools in research
50.		October	29/10/2023			Biostatistical Test, Use of ANOVA
51.		November	05/11/2023			Application of correlation of data
52.		November	19/11/2023			Literature collection, Intellectual Property Rights
53.		November	26/11/2023			Research Databases
54.		December	03/12/2023			Research Metrics
55.	BoT506: Applied Phycology	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Algal distribution
56.		September	10/09/2023			Algae as bio-fertilizer and green manure, Application of algae
57.		September	17/09/2023			Algae as nutrient supplement and in pharmacy
58.		September	24/09/2023			Value added products from microalgae and processes
59.		October	01/10/2023			Algae and heavy metals toxicity
60.		October	08/10/2023			Algae and its role in assessment of water quality, Tests for algae
61.		October	22/10/2023			Growth control of algae, Cultivation of algae
62.		October	29/10/2023			Cultivation of agarophytes
63.		November	05/11/2023			Algal biotechnology and tissue culture of seaweeds Toxins and biochemicals from algae



64.		November	19/11/2023			Problems and prospects
65.		November	26/11/2023			Biochemicals from algae
66.		December	03/12/2023			Regulators from algae
67.	BOT507: Tools and Techniques in Plant Science	September	03/09/2023	05.00pm – 06.00pm	Theory (Elective)	Microscopy I
68.		September	10/09/2023			Microscopy II
69.		September	17/09/2023			Confocal Raman microscopy , Microscopic Techniques
70.		September	24/09/2023			Microtechnique
71.		October	01/10/2023			Preparation of media for microorganism's growth (both bacteria and fungi) Anti-microbial activity
72.		October	08/10/2023			Separation Technique I
73.		October	22/10/2023			Chromatography , Separation Technique II
74.		October	29/10/2023			gel electrophoresis
75.		November	05/11/2023			Spectroscopic Techniques
76.		November	19/11/2023			Analysis of polymer structures
77.		November	26/11/2023			Radiochemical Techniques , Molecular Tools
78.		December	03/12/2023			Statistical tools in marker analysis
79.	BOT509: Plant Physiology	February	04/02/2024	10.00am – 11.00am	Theory	Carbohydrates, Saccharides
80.		February	11/02/2024			Structure of maltose, sucrose, starch and pectin.
81.		February	18/02/2024			Carbohydrate Polymer Technologies and Application
82.		February	25/02/2024			Proteins and enzymes, Enzymes
83.		March	03/03/2024			Enzyme regulation
84.		March	10/03/2024			Applications of recombinant proteins
85.		March	17/03/2024			Water relations, Loss of water
86.		March	31/03/2024			Mineral nutrition
87.		April	07/04/2024			Phloem transport
88.		April	21/04/2024			Photosynthesis, Respiration
89.		April	28/04/2024			Plant growth regulators and movements
90.		May	05/05/2024			Plant Movements
91.	BOT510:	February	04/02/2024	11.00am- 12.00pm	Theory	Conservation, Conservation organizations
92.		February	11/02/2024			Cultivation
93.		February	18/02/2024			Adaptive planning and management for sustainable harvesting
94.		February	25/02/2024			Intellectual property rights (IPR) ,Food flavors and natural

	Herbal Wealth					colours
95.		March	03/03/2024			Natural colours
96.		March	10/03/2024			Production technology
97.		March	17/03/2024			Plant sweeteners (natural sweeteners) ,Raw drug repository
98.		March	31/03/2024			Substitutes and Adulterants
99.		April	07/04/2024			Basic concepts of Intellectual Property Rights (IPRs)
100.		April	21/04/2024			Ethno botany, Ethno botany in India
101.		April	28/04/2024			Methods of research in Ethnobotany
102.	May	05/05/2024			Indigenous systems of medicines in India	
103.	BOT511: Diversity of Vascular Plants and Paleobotany-II	February	04/02/2024	12.00pm- 1.00pm	Theory	Paleobotany
104.		February	11/02/2024			Time scale,Fossilization
105.		February	18/02/2024			Method of fossilization
106.		February	25/02/2024			Brief account on techniques to study fossils
107.		March	03/03/2024			Taxonomy of paleobotany
108.		March	10/03/2024			Palynology, Flora and application of paleobotany
109.	BOT512: Lab Activities on BOT509, BOT510 &BOT511	February	04/02/2024	02.00pm- 04.00pm	Practical	Study of highly used medicinal plant
110.		February	11/02/2024			Study of Plant sweetners, Herbal preparation
111.		February	18/02/2024			Study of Trikatu, Triphala, Ashtachurna and Sitopaladichurna
112.		February	25/02/2024			Determination of Ash value and moisture content of crude drugs. Determination of the alcohol content of Asava and Arista
113.		March	03/03/2024			Preparation of any one herbal cosmetics, Study of AshwagandhaShatavarikalpam
114.		March	10/03/2024			Study ofSwarasa – kumari, vasa and ginger, Study ofBringamlakibrahmitaila; Sikthataila
115.		March	17/03/2024			Study ofVarna lepa; Adrakakanda; amlamru, Study ofRasayana – ghrita kumara rasayana; Kashaya for common fever
116.		March	31/03/2024			Histochemical studies of drugs, Extraction of essential oils from suitable medicinal plant
117.		April	07/04/2024			To determine chlorophyll a and chlorophyll b ratio in C3 & C4 plants, Quantitative estimation of proteins by Biuret method

118.		April	21/04/2024			Estimation of total free amino acids
119.		April	28/04/2024			Estimate enzyme activity at different temperature
120.		May	05/05/2024			Detection of amino acids/ sugar from the phloem sap by paper chromatography.
121.		May	12/05/2024			Separation of photosynthetic pigments using separating funnel and Majorment of absorbance of the pigments.
122.	BOT515: Biotechnology and Molecular Biology	February	04/02/2024	04.00pm- 05.00pm	Theory (Elective)	Morphogenesis,Morphogenetic factors Plant Tissue Culture
123.		February	11/02/2024			Organogenesis
124.		February	18/02/2024			In Vitro Propagation.Application of tissue culture
125.		February	25/02/2024			Technique Of Transformation
126.		March	03/03/2024			Application of transgenic plants
127.		March	10/03/2024			Applications and hazards of biotechnology
128.		March	17/03/2024			Industrial Biotechnology
129.		March	31/03/2024			Enzyme biotechnology
130.		April	07/04/2024			DNA
131.		April	21/04/2024			DNA Repair Mechanism,Bioinformatics
132.		April	28/04/2024			Information sources
133.		May	05/05/2024			Use of Bioinformatic
134.		BOT516: Ecology and Phytogeography	February			04/02/2024
135.	February		11/02/2024	Productivity In Ecosystem		
136.	February		18/02/2024	Nonconventional sources of energy		
137.	February		25/02/2024	Ecological Succession		
138.	March		03/03/2024	Ecological Factors Biotic		
139.	March		10/03/2024	Pollution		
140.	March		17/03/2024	Climate Change Climatic Variations Remote Sensing And GIS		
141.	March		31/03/2024	Phytogeogrphy		
142.	April		07/04/2024	Plant Distribution		
143.	April		21/04/2024	Plant migration and barriers on plant migration		
144.	April		28/04/2024	Botanical provinces of India		
145.	May		05/05/2024	Theories Of Present And Past		
146.	BOT513: OJT		February	04/02/2024		
147.	OR	February	11/02/2024			

148.	BOT514: FP	February	18/02/2024	12.00pm – 1.00pm	Term Work	
149.		February	25/02/2024			
150.		March	03/03/2024			
151.		March	10/03/2024			
152.		March	17/03/2024			
153.		March	31/03/2024			
154.		April	07/04/2024			
155.		April	21/04/2024			
156.		April	28/04/2024			