

B.Sc. Semester-I
Practical: PH-MDC-2 (P)

S.No.	Experiment
1	I-V Characteristics of solar cell and verification of inverse square law of intensity.
2	Study of Plane diffraction Grating.
3	Determination of focal length of convex and plano-convex lenses by auto collimation method.
4	Calibration of spectrometer.
5	Measurement and identification of spectral lines (Hg and Na source)
6	Intensity distribution curve of ordinary electric bulb using photo cell.
7	Study of solar spectrum
8	Sunspots activity analysis.
9	Measurement of Planck's constant using LED.
10	Measurement of wavelength of given LASER source using diffraction grating.



VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B.Sc. SEMESTER - I
FRAMED ACCORDING TO
NATIONAL EDUCATION POLICY (NEP) 2020 (Effective from June 2023)
Multidisciplinary Courses
BO-MDC-101 : Environmental Science

BO-MDC-101	Multidisciplinary Courses : Environmental Science (2 credits)	30 hours
UNIT 1	ENVIRONMENTAL BIOLOGY	15 Hours
	<ul style="list-style-type: none">➤ Environment and Environmental Biology: Definition, Scope, Basic Concepts and current issues of Environment.➤ ABIOTIC and BIOTIC components of Environment and their effect on plants and humans.➤ Environmental Pollution-Types, sources of Pollution, Classification of pollutants, measure of pollution, Effects of pollutants on the biodiversity.➤ Global Warming, Acid Rain➤ Bio-concentration and Bio/geomagnification.	
UNIT 2	SOCIAL ISSUES AND ITS RELATION TO ENVIRONMENT	15 Hours
	<ul style="list-style-type: none">• ENVIRONMENTAL ISSUES & SOCIETY:<ul style="list-style-type: none">○ Narmada Bachao Andolan○ Chipko Andolan,○ Silent Valley Movement.○ Women and Environmental Protection,○ Family welfare,○ Overpopulation,○ Health issues.○ Role of NGOs in bringing environmental awareness and education in society, Urbanization	

Signature



VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B.Sc. SEMESTER - I
FRAMED ACCORDING TO
NATIONAL EDUCATION POLICY (NEP) 2020 (Effective from June 2023)
Multidisciplinary Courses PRACTICAL
BOP-MDC-1 : Environmental Science

BOP-MDC-1	Multidisciplinary Courses : Environmental Science (2 credits)	60 hours
	<ol style="list-style-type: none">1. To perform soil pH analysis2. To perform soil water holding capacity.3. To perform soil texture analysis.4. To study soil moisture content in the given samples.5. To assess aeromicroflora of a given environment.6. To assess the phyllospheric microflora of a leaf surface.7. To study the Soil thermometer as an Instrument used to measure ecological factors.8. To study the RAIN GAUGE as an Instrument used to measure ecological factors.9. To study the LUX METER as an Instrument used to measure ecological factors.10. To study the HYGROMETER as an Instrument used to measure ecological factors.11. To study the ANEMOMETER as an Instrument used to measure ecological factors.12. To study the SOIL SECCHI DISK as an Instrument used to measure ecological factors.13. To study the WET AND DRY THERMOMETER as an Instrument used to measure ecological factors:14. To perform Total Dissolved Solids (TDS) in the given sample.15. To study pond ecosystem and its components (Plants, Algae, Phytoplanktons and Fauna).16. To analyse living organisms in water samples.17. To study grass/garden ecosystem (as per availability) and its components.	

Handwritten signature

REFERENCES:

1. P.D. Sharma. Ecology and Environmnt. Rastogi publications.
2. Environmental studies. Popular prakashaṅ Surat.
3. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition
4. Shukla, R.S. and Chandel P.S. (2005) A text book of Plant Ecology. S. Chand and Company Ltd., Ram Nagar, New Delhi.
5. Odum, E.P. (2011) Fundamental of Ecology. 5th Edition. Saunders.
6. Odum, E.P. (1983) Basic Ecology Saunders, Philadelphi.

[Handwritten signature]

B. Sc. Chemistry
VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
Syllabus effective from June, 2023 For
B. Sc. Semester- I
Multidisciplinary Subject
Total credit: 02 (Theory)
Total Hrs: Theory: 30

Course Code		Title of the Course	Green and Environmental Chemistry
Total Credits of the Course	2	Hours per Week	2 hr.

Course Outcome: By the end of the course, students will be able to understand	
1.	Basic principles of green chemistry, about the principle and concept of ecosystem and their functioning
2.	Awareness and sense of responsibilities towards environment and apply knowledge to solve the issues related to Environmental pollution

Unit – 1: Green Chemistry

15 hours

Basic introduction of green chemistry, Definition of green chemistry, Importance and goals of green chemistry, Green solvents.

The twelve principles of Green Chemistry:

Detailed discussion of all the 12 principles of green chemistry, their examples and their application in industries and our daily life.

Unit – 2: Environmental Pollution

15 hours

Definition, classification, causes and effects of: Air Pollution, Water pollution, Soil pollution, Noise pollution, Radiation Pollution.

Climate Change and Global warming: Cause and Effects, Acid Rain, Ozone-Layer depletion;

Water quality parameters and standards; pH, suspended solids, Hardness of water, measurement of TDS

Effect of pollution on living systems.

Recommended Books/References:

- *V. K. Ahluwalia, M. R. Kidwai, New Trends in Green Chemistry, Anamalaya Publishers (2005).*
- *R. Sanghi and M.M. Srivastava, Green Chemistry-Environment Friendly Alternatives, Narosa Publishing House, New Delhi 2009.*
- *K. R. Desai; Green Chemistry, Himalaya Publishing House , New Delhi*
- *P. T. Anastas, and J. K. Warner, Green Chemistry- Theory and Practical, Oxford University Press (1998).*
- *S. Matlack, Introduction to Green Chemistry, Marcel Dekker (2001).*
- *Environmental Chemistry by B.K. Sharma & H. Kaur, Goel Publishing House.*
- *Environmental Chemistry by A. K De, New Age International Publishers.*
- *A Test Book of Environmental Chemistry & Pollution Control by S. S. Dara, S. Chand and Co.*
- *Environmental Chemistry by Samir K. Banerjee, Prentice Hall of India Pvt. Ltd. New Delhi.*

B. Sc. Chemistry
VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
Syllabus effective from June, 2023 For

B. Sc. Semester- I
Multidisciplinary Subject
Total credit: 02 (Practical)
Total Hrs:60

Course Code		Title of the Course	Green and Environmental Chemistry Practical
Total Credits of the Course	2	Hours per Week	4 hr.

Course Outcome: By the end of the course, students will be able to	
1.	Perform practicals based on the use of green chemistry principle and processes in laboratory reactions
2.	Perform the Instrumental analytical techniques or water analysis

(Minimum 6 practicals, to be performed)

1. Acetylation of primary amines by using vinegar.
2. Preparation of nanoparticles by green synthesis methods (using leaves, barks etc.).
3. Base catalyzed Aldol condensation
4. Diels-Alder reaction in aqueous medium.
5. Preparation of biodiesel from vegetable/ waste cooking oil.
6. Determination hardness of water in different samples (tap water, rain water, bore-well water, sea water etc.).
7. Determination temporary hardness, permanent hardness and total hardness of water in tap-water.
8. Measurement of TDS in water samples.
9. Measurement of pH in soil samples.
10. Determination of % of heavy metals in industry water.

Reference book:

- *Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. Green Chemistry Experiment: A monograph International Publishing House Pvt Ltd. New Delhi. Bangalore CISBN 978-93-81141-55-7 (2013).*
- *Vogels Textbook of Quantitative Chemical Analysis, 6th Eds, (2006).*

✓

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
SYLLABUS FOR B.Sc. (MATHEMATICS) Multidisciplinary

Semester I

Elementary Calculus (MH-MLD-102)

Effective from June-2023

(Theory: 4 Hours/Week - Credit: 4)

Unit-I

Ordered pairs, Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the reals with itself (upto $R \times R \times R$). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special kind of relation from one set to another. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, trigonometry. Sum, difference, product and quotients of functions.

Unit-II

Basic concept of a limit of a function, Rules of limits, Infinite limits and limits at infinity, Continuity and types of discontinuities, Differentiability of a function, differentiable functions.

Unit-III

Derivative of composite functions, Chain rule, Derivatives of trigonometric functions, Derivative of implicit function, Concepts of exponential, Logarithmic functions, Derivatives of $\log_e x$ and e^x .

Unit-IV

Integration as an inverse process of differentiation, Finite integral, integration of some functions by substitution, integration by partial fractions, integration by parts, Definite integrals.

The course is covered by the following reference books:

1. B. S. Grewal: Elementary Engineering Mathematics, S. Chand & Co.
2. Tom M. Apostol: Calculus, Volume I and II, Second edition, John Wiley & Sons Inc., New York.
3. Serge Lang: Basic Mathematics, Addison -Wesley Publishing Company, 1971.
4. Jain and Iyengar, Advanced Engineering Mathematics, Narosa Publishing House.

B.Sc. Semester-I
Course code: PH-MDC-2
Total Credits: 04 (Theory: 2, Practical; 2)
Total Hrs: Theory: 30, Practical: 60
Course Title: Space Science-1

PH-MDC-2 (Theory)

Unit 1	Universe, Comets, Meteors, Asteroids
	Planets - interior planets - exterior planets - crust, mantle and core of the earth - different – region of earth's atmosphere-rotation of the earth - magnetosphere- Van Allen belts -Aurora. Composition and structure of comets –periodic comets–salient features of asteroids, meteors and its use
Unit 2	The Sun
	Structure of photosphere, chromospheres, corona , sunspots , solar flares ,solar prominences – solar piages-satellites of planets -structure, phase and their features of moon.

Reference Books:

1. K.D.Abyankar,Astrophysics ofthesolar system,Universitypress,India (1999)
2. BaidyanathBasu,SudhindraNath BiswasAndTanukaChattopadhyay, AnIntroductionToAstrophysics,PrenticeHall OfIndia, New Delhi(2010)
3. Prof.P.Devadas,ThefascinatingAstronomy,DevadasTelescopes,Chennai
4. R.P.Singhal,ElementsofSpacePhysics,PHI,(2009)

B.Sc. Semester-I
Practical: PH-MDC-2 (P)

S.No.	Experiment
1	I-V Characteristics of solar cell and verification of inverse square law of intensity.
2	Study of Plane diffraction Grating.
3	Determination of focal length of convex and plano-convex lenses by auto collimation method.
4	Calibration of spectrometer.
5	Measurement and identification of spectral lines (Hg and Na source)
6	Intensity distribution curve of ordinary electric bulb using photo cell.
7	Study of solar spectrum
8	Sunspots activity analysis.
9	Measurement of Planck's constant using LED.
10	Measurement of wavelength of given LASER source using diffraction grating.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

F.Y.B.Sc. SEMESTER- I

ZOOLOGY: ZO - MDC – 101 (MDC – Multidisciplinary)

(Effective from JUNE-2023)

(Clinical Biology) (02 credits = 02 Hours)

(30 Hours)

Unit:I

• **Types of Microscope:**

- Simple microscope
- Compound microscope
- Fluorescence Microscope

Unit:II

• **Liquid Connective Tissue:**

- Blood and its components
- ABO blood group system and its detection methods
- Rh blood group system and its detection methods
- Genetic blood disorders: Sickle cell Anemia, Thalassemia

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

F.Y.B.Sc. SEMESTER- I

ZOOLOGY: ZOP - MDC – 1 (Based on Paper- ZO – MDC – 101)

(Effective from JUNE-2023) (02 credits = 04 Hours)

(60 Hours)

- Principle, parts, uses, Limitation of Simple microscope, Compound microscope, Fluorescence Microscope
 - To study Blood groups and Rh factor in human blood
 - To study Blood clotting time
 - To study of Haemin crystals in human blood
 - Sickle cell Anemia: Symptoms, Treatment, Drugs
 - Thalassemia: Types, Symptoms, Treatment, Drug
-