# SARDAR PATEL UNIVERSITY
## NEP Structure B.Sc. Semester: V
## (Under Choice Based Credit Scheme)
## Syllabus with Effect from: 2025

| Course Type | Course Code | Name of Course | T / P | Credit | Contact Hours Per Week | Exam Duration in hrs | Component of Marks | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Major Course (Any One Subject)** | | | | | | | | | |
| **Chemistry** | US05MACHE01 | Organic Chemistry-I | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MACHE02 | Analytical Chemistry | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MACHE03 | Chemistry Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Physics** | US05MAPHY01 | Classical Mechanics | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAPHY02 | Analog and Digital Circuits | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAPHY03 | Physics Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Zoology** | US05MAZOO01 | Genetics & Biotechnology | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAZOO02 | Ecology and Animal Behaviour | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAZOO03 | Zoology Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Bio Chemistry** | US05MABIC01 | Molecular Biology | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABIC02 | Human Metabolism-I | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABIC03 | Biochemistry Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Botany** | US05MABOT01 | Microbiology and Phycology | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABOT02 | Molecular Biology and Bioinformatics | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABOT03 | Botany Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Biotechnology** | US05MABTE01 | Enzymology & Metabolism | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABTE02 | Fundamentals of Immunology | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MABTE03 | Biotechnology Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Microbiology** | US05MAMIC01 | Bacterial Genetics | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAMIC02 | Microbial Metabolism | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAMIC03 | Microbiology Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Industrial Chemistry** | US05MAICH01 | Advance Organic Chemistry | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAICH02 | Fluid Mechanics & Mechanical Operations | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAICH03 | Industrial Chemistry-Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Industrial Chemistry (Vocational)** | US05MAICV01 | Unit Processes in Organic Synthesis-I | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAICV02 | Introduction to Organic Chemistry | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAICV03 | Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Mathematics** | US05MAMTH01 | Real Analysis-1 | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAMTH02 | Abstract Algebra | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAMTH03 | Mathematical Algorithms with Python-1 | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Electronics and Communication** | US05MAELC01 | Microprocessor Interrupts & Interfacing | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAELC02 | Analog and Linear Integrated Circuit | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAELC03 | Electronics and Communication Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Computer Science** | US05MACSC01 | Object Oriented Programming Using Java | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MACSC02 | Relational Database Management System | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MACSC03 | Practicals | P | 4 | 8 | 3 | 50 | 50 | 100 |
| **Electronics** | US05MAELE01 | 8-Bit Microprocessor Programming & Applications-1 | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAELE02 | Linear Integrated Circuits | T | 4 | 4 | 2:30 | 50 | 50 | 100 |
| | US05MAELE03 | Electronics Practical | P | 4 | 8 | 3 | 50 | 50 | 100 |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Minor Subject (Any One Subject)** | | | | | | | | | |
| **Chemistry** | US05MICHE01 | Inorganic Chemistry | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICHE02 | Inorganic Quantitative Analysis Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MICHE03 | Physical Chemistry | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICHE04 | Chemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MICHE05 | Petrochemicals | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICHE06 | Petrochemicals– Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MICHE07 | Chemical Process Industries | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICHE08 | Chemical Process Industries – Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MICHE09 | Industrial Management & Economics – I | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICHE10 | Industrial Management & Economics – I – Project Work | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Physics** | US05MIPHY01 | Thermodynamics | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIPHY02 | Physics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIPHY03 | Renewable Energy Sources | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIPHY04 | Physics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Zoology** | US05MIZOO01 | Environmental Biology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIZOO02 | Zoology Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIZOO03 | Physiology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIZOO04 | Zoology Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Biochemistry** | US05MIBIC01 | Enzymology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBIC02 | Biochemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIBIC03 | Fundamentals of clinical Biochemistry | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBIC04 | Biochemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Botany** | US05MIBOT01 | Plant Ecology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBOT02 | Botany Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIBOT03 | Biofertilizers | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBOT04 | Botany Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Biotechnology** | US05MIBTE01 | Clinical Diagnosis | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBTE02 | Biotechnology Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIBTE03 | Food and Dairy Biotechnology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIBTE04 | Food and Dairy Biotechnology Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Microbiology** | US05MIMIC01 | Methods in Food and Dairy Microbiology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIMIC02 | Practical for Methods in Food and Dairy Microbiology | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIMIC03 | Introduction to Industrial Microbiology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIMIC04 | Practical for Introduction to Industrial Microbiology | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Industrial Chemistry** | US05MIICH01 | Petroleum and Petroleum Products | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICH02 | Petroleum and Petroleum Products – Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIICH03 | Chemical Process Technology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICH04 | Chemical Process Technology – Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIICH05 | Business Organization & Management – I | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICH06 | Business Organization & Management – I – Project work | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIICH07 | Fundamentals of Physical Chemistry | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICH08 | Fundamentals of Physical Chemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIICH09 | Fundamentals of Inorganic Chemistry | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICH10 | Fundamentals of Inorganic Chemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Industrial Chemistry (Voc.)** | US05MIICV01 | Unit Processes | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIICV02 | Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Mathematics** | US05MIMTH01 | Numerical Analysis-1 | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIMTH02 | Problems and Exercises in Numerical Analysis-1 | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIMTH03 | Ordinary Differential Equations-1 | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIMTH04 | Problems and Exercises in Ordinary Differential Equations-1 | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIMTH05 | Partial Differential Equations-1 | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIMTH06 | Problems and Exercises in Partial Differential Equation-1 | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Statistics** | US05MISTA01 | Elements of Probability Theory | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MISTA02 | Statistics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MISTA03 | Time Series Analysis and Statistical Quality Control | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MISTA04 | Statistics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Electronics & Communication** | US05MIELC01 | Computer Network | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIELC02 | Electronics and Communication Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIELC03 | Optical Fiber Communication | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIELC04 | Electronics and Communication Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Computer Science** | US05MICSC01 | Object Oriented Programming Using C++ | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICSC02 | Practicals | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MICSC03 | Computer Networks | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MICSC04 | Practicals | P | 2 | 4 | 2 | 25 | 25 | 50 |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Internal | External | Total |
| **Electronics** | US05MIELE01 | Digital Electronics – 1 | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIELE02 | Electronics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIELE03 | Transistor Amplifiers | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIELE04 | Electronics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05MIELE05 | 8085 Microprocessor & Programming -1 | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MIELE06 | Electronics Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Statistics** | US05MISTA01 | Index Numbers and Vital Statistics | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05MISTA02 | Problem Solving in Index Numbers and Vital Statistics | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Skill Enhancement Course (Any One Subject)** | | | | | | | | | |
| **Chemistry** | US05SECHE01 | Analytical and Physical Chemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Physics** | US05SEPHY01 | Hands-on Experimental Skills in Physics | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Biochemistry** | US05SEBIC01 | Tools and Techniques in Biochemistry-V | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEBIC02 | Biochemistry Practical | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Botany** | US05SEBOT01 | Applied Botany | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEBOT02 | Basic Plant Anatomy and Tissue Studies (Practical) (Effect from June, 2026) | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Statistics** | US05SESTA01 | Elements of Probability in Biostatistics | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Computer Science** | US05SECSC01 | Software Engineering | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Electronics** | US05SEELE01 | Optical Fibers | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Mathematics** | US05SEMTH01 | Numerical Methods (Practical) | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05SEMTH02 | Basics of Cryptography | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Microbiology** | US05SEMIC01 | Tools and techniques of r-DNA Technology | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEMIC02 | Cultivation of economically important Fungi (Practical) | P | 2 | 4 | 2 | 25 | 25 | 50 |
| | US05SEMIC03 | Microbes in Agriculture Microbial Fertilizers and Microbial Insecticides | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Zoology** | US05SEZOO01 | Animal Rescue, care and Rehabilitation | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEZOO02 | Basic Zoology & Human Health Studies (Practical) (Effect from June, 2026) | P | 2 | 4 | 2 | 25 | 25 | 50 |
| **Industrial Chemistry** | US05SEICH01 | Industrial Safety & Hygiene | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEICH02 | Industrial Hazards & Management | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| | US05SEICH03 | Chemical Engineering Drawing | T | 2 | 2 | 1:30 | 25 | 25 | 50 |
| **Biotechnology** | US05SEBTE01 | Molecular Techniques | T | 2 | 2 | 1:30 | 25 | 25 | 50 |