# MULTI DISCIPLINARY COURSES (MDC) SYLLABUS

## Gauhati University: NEP-2020: FYUGP:

### Multi-Disciplinary Courses:

Semester-1: MDC-1

Semester-2: MDC-2

Semester-3: MDC-3

### Disciplines:

1. Natural and Physical Sciences
2. Mathematical Sciences
3. Library, Information and Media Sciences
4. Commerce and Management
5. Humanities and Social Sciences
6. Information and Communication Technologies
7. Life Sciences
8. Earth Sciences

- Generic in nature-Content
- Three papers in the pipeline
- Credit: 3 each
- No practical Components

### Discipline wise Paper Names ::

**1. Natural and Physical Sciences**

MDC-1: Introduction to Natural and Physical Sciences

MDC-2: Natural and Physical Sciences in Everyday Life

MDC-3: Applications and Prospects of Natural and Physical Sciences

1**. Natural and Physical Sciences**

**MDC-1: Introduction to Natural and Physical Sciences**

**Unit 1:** Structure and Constituents of the Material World—atoms, molecules, and ions;

Essential Elements; Structure and Bonding; Acids and Bases; Chemical Formula and Equations; Night Sky.

**Unit 2**: Laws of Nature— Gas laws; Kinds of Forces; Equilibrium, Kinetics, Osmosis; Heat and Thermodynamics; Electrical and Magnetic Behaviour of Nature, Friction, Waves & Oscillations.

**Unit 3**: Properties of Matter— States and Strength of Materials, Optical Properties-Emissions and Absorptions, Interference, Diffraction, and Polarization; Nanomaterials; Smart Materials; Sounds and Musical Instruments.

**MDC-2: Natural and Physical Sciences in Everyday Life**

**Unit 1**: Carbohydrates, Proteins, and Amino Acids, Vitamins & Minerals, Foods and Beverages; Germicides, Pesticides; Human Health; Patterns and Variations in Nature.

**Unit 2**: Solutions and Colloids, Plastics, Cements, Glass, Soaps and Detergents; Pollutants and Contaminants; Heavy Metal Poisoning; Poisonous Gases; Green House Effect; Acid Rain, Corrosion.

**Unit 3**: Waste Water Treatment; Nuclear Energy; Conventional and Renewable Energy Sources; Battery Basics; Future Fuels.

**MDC-3**: **Applications and Prospects of Natural and Physical Sciences**

**Unit 1**: Solar Light and Radiations; Introduction to Microscopic and Spectroscopic Techniques; MRI and CT Scan; Fluorescence.

**Unit 2**: Sensors & Detectors; Telescopes; Images and Information; Communications; Space and Atmosphere.

**Unit 3**: Measurements and Errors; Observation, Representation, and Interpretation—Testing and Analysis; Evaluation and Conclusion.