

**List of Courses having focus on Local, National, Regional and Global Developmental Needs offered by the B.Sc. Physics**

| B.Sc.                    |                                     |           |              |              |                        |                                                                                                                                                                             |
|--------------------------|-------------------------------------|-----------|--------------|--------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Programme: B.Sc. Physics |                                     |           |              |              | Year: 2020 -2023 Batch |                                                                                                                                                                             |
| Course Code              | Course Title                        | Need      |              |              |                        | Rationale                                                                                                                                                                   |
|                          |                                     | Lo<br>cal | Natio<br>nal | Regi<br>onal | Glo<br>bal             |                                                                                                                                                                             |
| 20UPS101                 | Properties of Matter and Accoustics | ✓         | ✓            |              |                        | Technical assistant in Research institute and Entreprenship in scientific instruments for college laboratories.                                                             |
| 20UPS202                 | Heat & Thermodyna<br>mics           |           | ✓            |              |                        | To impart the knowledge about concepts of heat & principle of thermodynamics and apply the principles in the production of engines like heat engines and refrigerators etc. |
| 20UPS203                 | Physics Lab I                       | ✓         | ✓            | ✓            | ✓                      | Develop the skill of performing experiments accurately                                                                                                                      |
| 19UPS305                 | Electricity & Magnetism             |           | ✓            |              |                        | Acquire the knowledge in electric circuits & implement in device manufacture                                                                                                |
| 19UPS3N1                 | Principles of Physics – I           |           | ✓            |              |                        | Acquire basic knowledge of Physics                                                                                                                                          |
| 19UPS3N2                 | Renewable Energy Sources            |           |              |              | ✓                      | Awareness on available sources of energy and to fetch opportunities in energy sectors                                                                                       |
| 19UPS406                 | Optics & Spectroscopy               |           |              |              | ✓                      | Teaching, Research, Higher Education & Employment                                                                                                                           |
| 19UPS407                 | Physics Lab II                      |           |              |              | ✓                      | Necessary skills developed for employment in technical institutes                                                                                                           |
| 19UPS4N3                 | Principles of Physics –II           |           | ✓            |              |                        | To understand the knowledge and application uses in Physics                                                                                                                 |
| 19UPS4N4                 | Energy Sources Paper – II           |           |              |              | ✓                      | Awareness on available sources of energy and to fetch opportunities in energy sectors                                                                                       |
| 18UPS508                 | Classical Dynamics                  |           |              |              | ✓                      | Teaching, Higher Education & Research                                                                                                                                       |

|          |                                                  |  |   |   |   |                                                                                                                                                                    |
|----------|--------------------------------------------------|--|---|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18UPS509 | Relativity & Quantum Mechanics                   |  |   |   | ✓ | To impart knowledge in the concepts and consequences of relativity and quantum mechanics                                                                           |
| 18UPS510 | Basic Electronics & Circuit System               |  |   | ✓ |   | Analyze, design and trouble shoot electronic circuits for employment and entrepreneur                                                                              |
| 18UPS511 | Digital Principles and its applications          |  |   | ✓ |   | To impart problem solving ability and circuit designing attitude                                                                                                   |
| 18UPS5S1 | Mechanical Measurements                          |  | ✓ |   |   | Knowledge on mechanical devices and measurements for employment in leading institutes                                                                              |
| 18UPS5S2 | Fundamentals of Biophysics                       |  |   |   | ✓ | Employment in medical and related fields                                                                                                                           |
| 18UPS612 | Mathematical Physics                             |  |   |   | ✓ | Necessary skills developed to compete in various competitive exams like CSIR, NET, SET, GATE etc.                                                                  |
| 18UPS613 | Atomic & Nuclear Physics                         |  | ✓ |   | ✓ | Employability in Nuclear reactors                                                                                                                                  |
| 18UPS614 | Condensed Matter Physics & Statistical Mechanics |  |   |   |   |                                                                                                                                                                    |
| 18UPS615 | C Programming & Information Security             |  |   |   | ✓ | Impart basic skills for employability in IT sector                                                                                                                 |
| 18UPS616 | Electronics Lab                                  |  |   |   | ✓ | Analyze, design and trouble shoot electronic circuits for employment and entrepreneur                                                                              |
| 18UPS617 | Digital & Microprocessor Lab                     |  |   |   | ✓ | Analyze, design and trouble shoot electronic circuits for employment in IT sector                                                                                  |
| 18UPS618 | Computer Lab in C                                |  |   |   | ✓ | IT sector                                                                                                                                                          |
| 18UPS6S3 | Environmental Instrumentation                    |  |   |   |   | Awareness on instruments used to monitor and detect pressure, radiation and avail opportunities in meteorological department and institutes like IGCAR, BARC, TIFR |

|          |                                     |  |  |  |   |                                           |
|----------|-------------------------------------|--|--|--|---|-------------------------------------------|
|          | on                                  |  |  |  |   |                                           |
| 18UPS6S4 | Fundamental<br>s of<br>Astrophysics |  |  |  | ✓ | Placements in IUCAA and astronomy centers |



BoS Chairman