1.1.1 - Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the Programmes offered by the University

The Department of Physics and Astrophysics offers a two-year (4-semester) Masters' (M.Sc.) programme, in addition to the Ph.D. programme. The M.Sc. course structure (which has been revised recently and came into effect in 2019) includes elective and open-elective papers, apart from the core theory and practical papers.

Vision: Excel in generation and imparting of scientific knowledge; inculcate among student the spirit of enquiry, intellectual adventure, and the concern for fellow human beings on the planet.

Mission: To impart to the students the beauty and grandeur of the subject of Physics, the connection of the latter with other disciplines, as well as its vast potential to enrich human lives.

To develop the abilities of generating and communicating knowledge, and build a scientific temper with the sense of social responsibility.

To conduct outstanding research leading to the discovery of new scientific facts and the methodology of applying them in the way of benefiting the larger living world.

Implementation: For the relevant supporting documentation, including the Annual Report, please visit the “About us” page of the departmental website http://physics.du.ac.in/index.php .

2.2.1 - The institution assesses the learning levels of the students and organizes special Programmes for advanced learners and slow learners

No specific policy is formally taken up by department regarding the discrimination made that way. However, the teachers of the concerned M.Sc. and Ph.D. are given the freedom to offer additional guidance/counselling to whomsoever they consider as slow learners.

2.3.1 - Student centric methods, such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences

Various sorts of methodology applied over time to time to enhance learning experiences have been much more strategized in recent times when the department went from the offline to the online/blended mode of teaching in recent times. Such strategies include:

1. Online resources, such as lecture notes (including solved sample problems or hints for solving tutorial problems), links to video lectures or experimental demonstrations, and other study materials being provided to the students before or during the classes, especially the ones being held online either in the Google classrooms platform or in the Microsoft Teams platform.
2. Interactive classroom sessions, with instant quizzes, group discussions, as well as time-bound assignments, with the provision of students’ self assessment being emphasized.
3. Online open book examinations, with question papers containing enhanced selections of off-beat or out-of-the-common questions, inclusive of the multiple choice (checkbox type) ones, being methodically devised.

The Department, under a vibrant Ph.D. program, offers a plethora of cutting-edge research topics as well. The above strategies are therefore being taken up in the relevant Ph.D. course-work.

For more information on the implementation of the above, as well as the revised M.Sc. course structure, visit the respective sub-links of the departmental website:
http://physics.du.ac.in/online_teaching.php and
http://physics.du.ac.in/courses-of-study-msc.php .

2.3.2 - Teachers use ICT enabled tools including online resources for effective teaching and learning processes during the year

Various ICT enabled tools, such as the ones for ppt/pdf presentations, categorized quizzes/assignments/demonstrations are being used by the teachers of the department from time to time. In particular, during the nation-wide lockdown in 2020 and 2021, and the aftermath of that, the online mode of teaching being the only available option, the classrooms have been set up online either in the Google classrooms platform or in the Microsoft Teams platform. The online facilities made accessible by the DUCC are duly utilized in such classrooms. Besides, unofficial google-groups, Whatsapp-groups, Telegram-groups, etc. have been set up by some teachers, involving the students of their respective classes, to share study materials and exchange ideas, as well as for general conversations/notifications. In the Lab-based classes, publicly available virtual labs (for some experiments) have been utilized, apart from resorting to comprehensive demonstrations using the online resources, and continuous evaluation of online presentations of students' works.

For more information visit the departmental web-link:
http://physics.du.ac.in/online_teaching.php .

2.3.3 - Ratio of students to mentor for academic and other related issues during the year

2.3.3.1 - Number of mentors : **35** (and 323 mentees, i.e. about 9 mentees per mentor).

2.6.1 - The institution has stated learning outcomes (generic and programme specific)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents

Please visit the following departmental web-links, for the requisite information:
http://physics.du.ac.in/courses-of-study-msc.php , and the sub-links of the Research page under
http://physics.du.ac.in/index.php .

2.6.2 - Attainment of Programme outcomes, Programme specific outcomes and course outcomes are evaluated by the institution during the year

Please visit the following departmental web-links, for the requisite information:
http://physics.du.ac.in/courses-of-study-msc.php , and the sub-links of the Research page under
http://physics.du.ac.in/index.php .

3.1.5 - Institution has the following facilities to support research

- Central Instrumentation Centre
- Museum
- Research/Statistical Databases

None established in the department in 2021-22.

3.4.8 - Bibliometrics of the publications during the year based on average Citation Index in Scopus/ Web of Science/PubMed

Scopus **Web of Science**

The complete list of (Scopus indexed) research papers from the department, published during 2021-22, are given in the enclosed excel file 3.4.5--Filled.xlsx, whereas the complete list of Books/Chapters of Books/Conference Proceedings are given in the excel file 3.4.6--Filled.xlsx. Both the lists would be updated soon in the department's website http://physics.du.ac.in/ .

3.4.9 - Bibliometrics of the publications during the year based on Scopus/ Web of Science – h-Index of the University

Scopus **Web of Science**

The complete list of (Scopus indexed) research papers from the department, published during 2021-22, are given in the enclosed excel file 3.4.5--Filled.xlsx, whereas the complete list of Books/Chapters of Books/Conference Proceedings are given in the excel file 3.4.6--Filled.xlsx. Both the lists would be updated soon in the department's website http://physics.du.ac.in/ .

3.6.1 - Extension activities in the neighbourhood community in terms of impact and sensitizing students to social issues and holistic development during the year

None from the department in 2021-22.

4.3.3 - Student - Computer ratio during the year

Number of students ~ 800 (including M.Sc.(Prev.), M.Sc.(Final) and Ph.D. students).

Number of Computers available to students for academic purposes ~ 60-70 (in working condition).

4.4.2 - There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.

General policy of the University of Delhi is followed. No separate policy has been taken up by the Department.

7.1.1 - Measures initiated by the Institution for the promotion of gender equity during the year

A spacious Ladies' Common Room, with adequate privacy arrangements, has already been set up in the department in 2019. There is a specific departmental committee to look into the issues related to sexual harassment as well, following the UGC regulations.

For more information visit the departmental web-link:
http://physics.du.ac.in/committee_sexual-harassment-cell.php .

7.1.2 - The Institution has facilities for alternate sources of energy and energy conservation

1. **Solar energy**
2. **Biogas plant**
3. **Wheeling to the Grid**
4. **Sensor-based energy conservation**
5. **Use of LED bulbs/power-efficient equipment** ✓

7.1.6 - Quality audits on environment and energy are regularly undertaken by the institution

7.1.6.1 - The institution's initiatives to preserve and improve the environment and harness energy are confirmed through the following:

1. Green audit
2. Energy audit
3. Environment audit
4. Clean and green campus recognitions/awards
5. Beyond the campus environmental promotional activities

General institutional efforts/initiatives prevail. Nothing has been taken up separately by the Department.

7.1.7 - The Institution has a disabled-friendly and barrier-free environment

1. **Ramps/lifts for easy access to classrooms and centres.** ✓

2. **Disabled-friendly washrooms.**
3. **Signage including tactile path lights, display boards and signposts.**
4. **Assistive technology and facilities for persons with disabilities: accessible website, screen-reading software,mechanized equipment, etc.**
5. **Provision for enquiry and information: Human assistance, reader, scribe, soft copies of reading materials, screen reading, etc.**

7.1.8 - Describe the Institutional efforts/initiatives in providing an inclusive environment i.e. tolerance and harmony towards cultural, regional, linguistic, communal, socio-economic and other diversities (within a maximum of 200 words)

General institutional efforts/initiatives prevail. Nothing has been taken up separately by the Department.