



Program Name: M.Sc. (Physics)

Program Code: **PHY4201**

Offered by Department of Physics, School of Basic and Applied Sciences, Adamas University

Duration: 2 Years

Academic Year: 2024-25

Distribution of Courses Semester-wise:

1st Year

| Semester – I | | | | | |
|------------------------------|-------------------------------------|------------|--------------|--------|-------|
| Type of Course | Paper Name | Paper Code | No of Papers | Credit | L-T-P |
| Core (Theory) | MATHEMATICAL METHODS | PHY21401 | 1 | 4 | 4-0-0 |
| Core (Theory) | CLASSICAL MECHANICS | PHY21402 | 1 | 4 | 4-0-0 |
| Core (Theory) | QUANTUM MECHANICS I | PHY21403 | 1 | 4 | 4-0-0 |
| Core (Theory) | ELECTRONICS | PHY21404 | 1 | 4 | 4-0-0 |
| Skill Enhancement Foundation | MACHINE LEARNING AND DATA ANALYTICS | PHY21460 | 1 | 2 | 2-0-0 |
| Core (Lab) | PHYSICS LAB I | PHY22405 | 1 | 3 | 0-0-3 |
| Core (Lab) | PHYSICS LAB II | PHY22406 | 1 | 3 | 0-0-3 |
| Total Credit | | | 7 | 24 | |

| Semester – II | | | | | |
|------------------------------|---|------------|--------------|--------|-------|
| Type of Course | Paper Name | Paper Code | No of Papers | Credit | L-T-P |
| Core (Theory) | CLASSICAL ELECTRODYNAMICS | PHY21407 | 1 | 4 | 4-0-0 |
| Core (Theory) | QUANTUM MECHANICS II | PHY21408 | 1 | 4 | 4-0-0 |
| Core (Theory) | STATISTICAL MECHANICS | PHY21409 | 1 | 4 | 4-0-0 |
| Core (Theory) | ATOMIC AND MOLECULAR SPECTROSCOPY | PHY21410 | 1 | 4 | 4-0-0 |
| Skill Enhancement Foundation | MACHINE LEARNING AND DATA ANALYTICS LAB | PHY22461 | 1 | 2 | 0-0-4 |
| Core (Lab) | PHYSICS LAB III | PHY22411 | 1 | 3 | 0-0-3 |
| Core (Lab) | NUMERICAL MODELING FOR PHYSICISTS AND ENGINEERS | PHY22413 | 1 | 3 | 0-0-3 |
| Total Credit | | | 7 | 24 | |

2nd Year

| Semester III | | | | | |
|--|---|---|--------------|--------|-------|
| Type of Course | Paper Name | Paper Code | No of Papers | Credit | L-T-P |
| Core (Theory) | SOLID STATE PHYSICS | PHY21414 | 1 | 4 | 4-0-0 |
| Core (Theory) | NUCLEAR AND PARTICLE PHYSICS | PHY21415 | 1 | 4 | 4-0-0 |
| Discipline Specific Advanced Elective (Theory) | (ADVANCED ELECTIVE I) MANY BODY THEORY/ ANATOMY AND PHYSIOLOGY/ QUANTUM FIELD THEORY I/ MOLECULAR BIOPHYSICS/ | PHY21416/PHY21417/ PHY21418/PHY21419/ PHY21420/PHY21449 | 1 | 4 | 4-0-0 |

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|---|--|--|---------------------------|-----------|-------|
| | NANOSCIENCE AND ITS APPLICATIONS/ STATISTICAL AND QUANTUM OPTICS (ADVANCED ELECTIVE II) | | | | |
| <i>Discipline Specific Advanced Elective (Theory)</i> | MATERIAL SCIENCE/ BIO INSTRUMENTATION AND MEDICAL PHYSICS/ PARTICLE PHYSICS I/ CELLULAR BIOPHYSICS/ INTRODUCTION TO NANOMATERIALS AND FABRICATION TECHNOLOGIES/ OPTICAL THIN FILMS TECHNOLOGY | PHY21421/ PHY21422/ PHY21423/ PHY21424/ PHY21425/ PHY21450 | 1 | 4 | 4-0-0 |
| <i>Core (Lab)</i> | PHYSICS LAB IV | PHY22412 | 1 | 3 | 0-0-3 |
| <i>Discipline Specific Advanced Elective (Lab)</i> | (ADVANCED ELECTIVE LAB I) MATERIAL SCIENCE LAB/ SENSOR AND MEDICAL INSTRUMENTS LAB/ HIGH ENERGY PHYSICS LAB I/ ADVANCED PHOTONICS LAB I | PHY22427/ PHY22428/ PHY22429/ PHY22453 | 1 | 3 | 0-0-3 |
| <i>Compulsory</i> | TERM PAPER LEADING TO DISSERTATION | PHY25430 | 1 | 4 | |
| <i>Compulsory</i> | INTERNSHIP | PHY24431 | 1 | 2 | |
| | Total | | 4 + 2 + 1+1 = 8 | 28 | |

Semester IV

| Type of Course | Paper Name | Paper Code | No of Papers | Credit | L-T-P |
|---|--|---|--------------|--------|-------|
| <i>Discipline Specific Advanced Elective (Theory)</i> | (ADVANCED ELECTIVE III) COLLECTIVE PHENOMENA OF SOLIDS/ BIOMEDICAL SPECTROSCOPY AND MEDICAL IMAGING TECHNIQUE/ QUANTUM FIELD THEORY II/ PHYSIOLOGY AND BIOPHYSICS/ NANOSCALE TRANSPORT PHENOMENA/ GUIDED WAVE OPTICS AND ELECTRO OPTICAL SENSING | PHY21432/ PHY21433/ PHY21434/ PHY21435/ PHY21436/ PHY21451 | 1 | 4 | 4-0-0 |
| <i>Discipline Specific Advanced Elective (Theory)</i> | (ADVANCED ELECTIVE IV) DIELECTRIC OPTICAL AND TRANSPORT PROPERTIES OF SOLIDS/ BIOSENSORS AND LASER IN MEDICAL APPLICATION/ PARTICLE PHYSICS II/ BRAIN COMPUTER INTERFACE/ NANOELECTRONICS AND NANOPHOTONICS/ LASER AND ADVANCED OPTOELECTRONICS | PHY21437/ PHY21438/ PHY21439/ PHY21440/ PHY21441/ PHY21452 | 1 | 4 | 4-0-0 |
| <i>Discipline Specific Advanced Elective (Lab)</i> | (ADVANCED ELECTIVE LAB II) CONDENSED MATTER PHYSICS LAB/ MICROPROCESSOR AND IMAGE PROCESSING LAB / | PHY22442/ PHY22443/ PHY22444/ PHY22445/ | 1 | 3 | 0-0-3 |

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|-------------------|---|--------------------|----------------------|-----------|--|
| | HIGH ENERGY PHYSICS LAB II/ NUMERICAL METHODS AND PROGRAMMING LAB/ COMPUTATIONAL NANOSCIENCE LAB/ ADVANCED PHOTONICS LAB II | PHY22446/ PHY22454 | | | |
| <i>Compulsory</i> | SEMINAR ON CONTEMPORARY RESEARCH IN PHYSICS AND APPLIED PHYSICS | PHY25447 | 1 | 3 | |
| <i>Compulsory</i> | DISSERTATION | PHY25448 | 1 | 10 | |
| | Total | | 2 + 1 + 1 + 1 = 5 | 24 | |

Total Credit = 24 + 24 + 28 + 24 = 100