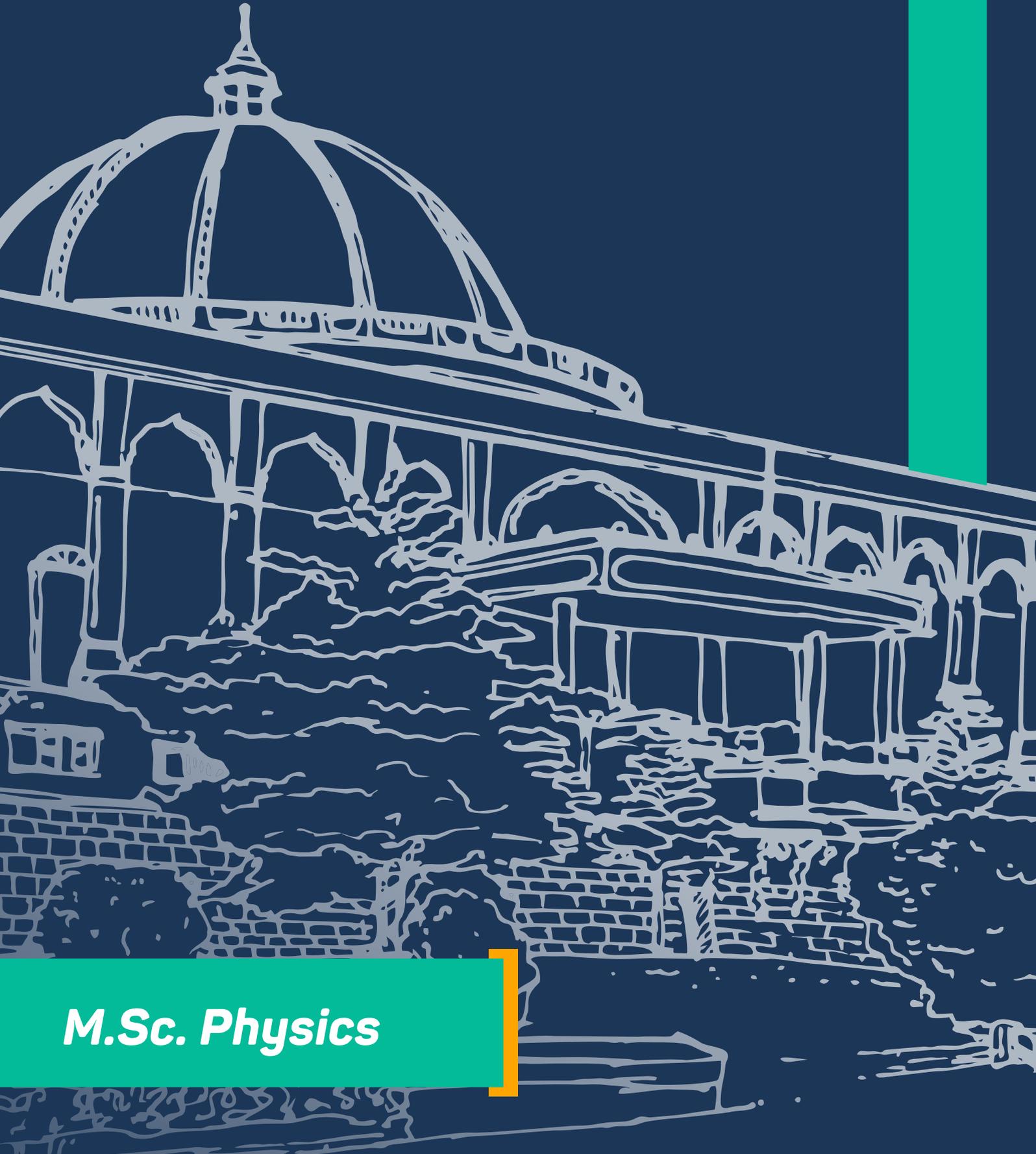




FACULTY OF  
SCIENCE AND  
HEALTH SCIENCE



## *M.Sc. Physics*

Programme Structure

 [mitwpu.edu.in](http://mitwpu.edu.in)

Division	Faculty of Science and Health Science
School Name	School of Science & Environmental Studies
Department Name	Department of Physics
Programme Name	M.Sc. Physics

+ + + + + + + + + + + + + + **COURSE BASKET** + + + + + + + + + + + + + + +

| Course Type               | Description   |
|---------------------------|---|
| Programme Core (PC)       | Courses dealing with the foundations, depth and breadth of the major in which the student is admitted at MIT-WPU  |
| Programme Electives (PE)  | Open electives under the Programme allow students to specialise in a particular area connected to their major.  |
| Programme Major (PM)      | This encompasses the specialised, in-depth coursework within a specific major. It focuses on the core concepts and skills relevant to that particular field of study. |
| Programme Foundation (PF) | These courses provide the essential background knowledge and skills needed to succeed in the chosen Programme.  |
| University Core (UC)      | Courses that reflect the core MIT-WPU values and the mission of Life Transformation of students.  |
| University Electives (UE) | Multidisciplinary courses across the faculties at MIT-WPU and outside the Programme core.   |

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| Course Basket                                | % Credit Allotment | Credits Assigned |
|--|--------------------|------------------|
| University Core (UC)                         | 06                 | 5                |
| Research Methodology (RM)                    | 05                 | 4                |
| Programme Foundation (PF)                    | 21                 | 18               |
| Programme Major (Theory and Laboratory) (PM) | 27                 | 23               |
| Programme Electives (PE)                     | 19                 | 16               |
| Project / Internship (PR)                    | 17                 | 15               |
| On-Job Training - OJT (PR)                   | 05                 | 04               |
| <b>Total</b>                                 | <b>100</b>         | <b>85</b>        |

| Semester    | Odd(I) | Even(II) | Total Credits |
|-------------|--------|----------|---------------|
| First Year  | 22     | 23       | 45            |
| Second Year | 23     | 20       | 43            |

## SEMESTER – I

| Semester | Course Type | Course Name / Course Title                                   | Total Credits |
|----------|-------------|--|---------------|
| I        | PF          | Classical Mechanics  | 4             |
| I        | PF          | Mathematical Methods in Physics                              | 4             |
| I        | PE          | Programme Elective – 01                                      | 4             |
| I        | PF          | General Physics Lab  | 2             |
| I        | PM          | Research Methodology   | 4             |
| I        | PF          | Introduction to Computer-Aided Designing (CAD)               | 1             |
| I        | UC          | Scientific Studies of Mind, Matter, Spirit and Consciousness | 2             |
| I        | UC          | Yoga   | 1             |
|          |             | <b>Total Credits:</b>  | <b>22</b>     |

## ELECTIVE BASKET – 01

| Track | Elective Basket       | Name of the Course                         |
|-------|-----------------------|--|
| I     | Photonics             | Optics                                     |
| II    | Astrophysics          | Introduction to Astrophysics and Astronomy |
| III   | Computational Physics | Introduction to Computational Physics      |
| IV    | Devices and Design    | Fundamentals of Semiconductor Devices      |

## SEMESTER – II

| Semester | Course Type | Course Name / Course Title       | Total Credits |
|----------|-------------|----------------------------------|---------------|
| II       | PF          | Electrodynamics                  | 4             |
| II       | PF          | Quantum Mechanics                | 4             |
| II       | PM          | Atomic and Molecular Physics     | 3             |
| II       | PM          | Nuclear and Particle Physics     | 3             |
| II       | PE          | Programme Elective – 02          | 4             |
| II       | PM          | Advanced Physics Lab – I         | 2             |
| II       | PF          | Optical System Design            | 1             |
|          | UC          | Peace Building Global Initiative | 2             |
|          |             | <b>Total Credits:</b>            | <b>23</b>     |

### ELECTIVE BASKET – 02

| Track | Elective Basket       | Name of the Course                      |
|-------|-----------------------|---|
| I     | Photonics             | Opto Electronics                        |
| II    | Astrophysics          | Observational Astronomy and Techniques  |
| III   | Computational Physics | Computational Modelling in Physics      |
| IV    | Devices and Design    | Device Fabrication and Characterisation |

### SEMESTER – III

| Semester | Course Type | Course Name / Course Title         | Total Credits |
|----------|-------------|------------------------------------|---------------|
| III      | PM          | Condensed Matter Physics           | 3             |
| III      | PM          | Statistical Mechanics              | 4             |
| III      | PE          | Programme Elective – 03            | 4             |
| III      | PM          | Advanced Physics Lab – II          | 2             |
| III      | PF          | Advanced Multiphysics Simulation   | 1             |
| III      | PR          | Project                            | 5             |
| III      | PR          | On-Job Training (OJT) / Internship | 4             |
|          |             | <b>Total Credits:</b>              | <b>23</b>     |

### ELECTIVE BASKET – 03

| Track | Elective Basket       | Name of the Course                          |
|-------|-----------------------|---|
| I     | Photonics             | Laser Physics                               |
| II    | Astrophysics          | General Theory of Relativity and Cosmology  |
| III   | Computational Physics | AI & ML in Physics                          |
| IV    | Devices and Design    | Semiconductor Device and Process Simulation |

### SEMESTER – IV

| Semester | Course Type | Course Name / Course Title      | Total Credits |
|----------|-------------|---------------------------------|---------------|
| IV       | PM          | Electronics                     | 3             |
| IV       | PM          | Fiber Optics                    | 3             |
| IV       | PE          | Programme Elective – 04         | 4             |
| IV       | PR          | Project / Industrial Internship | 10            |
|          |             | <b>Total Credits:</b>           | <b>20</b>     |

## ELECTIVE BASKET - 04

| Track | Elective Basket       | Name of the Course                |
|-------|-----------------------|-----------------------------------|
| I     | Photonics             | Bio photonics and Holography      |
| II    | Astrophysics          | Stellar and Galactic Physics      |
| III   | Computational Physics | Quantum Information and Computing |
| IV    | Devices and Design    | Advanced Semiconductor Devices    |

\*Modifications to the programmes and courses are contingent upon adherence to university guidelines and procedures. Any proposed changes must undergo a thorough review process, including consultation with relevant academic departments, approval from the appropriate administrative bodies, and compliance with accreditation standards. Additionally, consideration will be given to feedback from students, faculty, and other stakeholders to ensure that modifications align with the overall educational objectives and mission of the university. The implementation of any approved changes will be communicated transparently to the university community, and appropriate measures will be taken to facilitate a smooth transition for all affected parties.