

M.Sc. Program overview: Physics@IIT Delhi



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The Coordinators for Course/Lab/Project



MSc. Program Coordinator



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MSc. Laboratory Coordinator



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MSc. Project Coordinator



Prof. Rahul
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M.Sc. curriculum overview



The Department of Physics offers two options to students.

Regular M.Sc. degree with a total of 80 credits

M.Sc. with Departmental specialization with a total of 86 credits.

Credit structure for regular MSc:



- Total Number of credits: 80
- Program core (PC): 62 credits
- Program electives (PE): 12 credits
- Open Electives (OE): 6 credits

Credit structure for M.Sc with departmental specialization:



- Total Number of credits: 86
- Program core (PC): 62 credits
- Program electives (PE): 12 credits
- Open Electives (OE): 6 credits
- Departmental Specialization (DS): 6 credits

List of Program Core (PC) Courses:



1. Project-1 PYD561 [L,T,P]=[0-0-6], 3
2. Project-2 PYD562 [0-0-12], 6
3. Classical Mechanics PYL551 [3-1-0], 4
4. Electrodynamics PYL552 [3-1-0], 4
5. Mathematical Physics PYL553 [3-1-0], 4
6. Quantum mechanics-1 PYL555 [3-1-0], 4
7. Quantum mechanics-2 PYL556 [3-0-0], 3
8. Electronics PYL557 [3-1-0], 4
9. Statistical mechanics PYL558 [3-1-0], 4
10. Applied Optics PYL560 [3-1-0], 4
11. Solid State physics PYL563 [3-1-0], 4
12. Atomic and molecular physics PYL567 [3-0-0], 3
13. Nuclear and Particle physics PYL569 [3-0-0], 3
14. Laboratory-1 PYP561 [0-0-8], 4
15. Laboratory-2 PYP562 [0-0-8], 4
16. Advanced Laboratory PYP563 [0-0-8], 4

Total credits = 62

List of Program Electives (PE):

1. Mini Project PYD658 [0-0-6], 3
2. Semiconductor Electronics PYL653 [3-0-0], 3
3. Microwaves PYL656 [3-0-0], 3
4. Nanostructured materials PYL705 [3-0-0], 3
5. Vacuum science and cryogenics PYL723 [3-0-0], 3
6. Physics of Amorphous Materials PYL725 [3-0-0], 3
7. Optical electronics PYL792 [3-0-0], 3



List of Department Specialization (DS) courses:



(A) Specialisation in photonics (minimum 12 credits)

1. Fibre and Integrated Optics PYL650 [3-0-0],3
2. Laser Physics PYL655 [3-0-0],3
3. Laser Spectroscopy PYL659 [3-0-0],3
4. Non-linear Optics PYL747 [3-0-0],3
5. Quantum Optics PYL748 [3-0-0],3
6. Quantum Information and Computation PYL749 [3-0-0],3
7. Bio-medical Optics and Bio-photonics PYL760 [3-0-0],3
8. Liquid Crystal PYL761 [3-0-0],3
9. Statistical Optics PYL762 [3-0-0],3
10. Ultra-fast Optics and Applications PYL770 [3-0-0],3
11. Photonic Devices PYL793 [3-0-0],3
12. Guided Wave Photonic Sensors PYL892 [3-0-0],3

List of Department Specialization (DS) courses:



(B) Specialisation in Condensed Matter Physics (minimum 12 credits)

1. Advanced Solid State Physics PYL651 [3-0-0],3
2. Magnetism and Spintronics PYL652 [3-0-0],3
3. Physics of Semiconductor Devices PYL702 [3-0-0],3
4. Science and Technology of Thin Films PYL704 [3-0-0],3
5. Characterization Techniques for Materials PYL707 [3-0-0],3
6. Energy Materials and Devices PYL727 [3-0-0],3
7. Quantum Heterostructures PYL728 [2-0-0],2
8. Computational Techniques for Solid State Materials PYL739 [3-0-0],3
9. Advanced Condensed Matter Theory PYL740 [3-0-0],3

List of Department Specialization (DS) courses:



(C) Specialisation in Theoretical Physics (minimum 12 credits)

1. Plasma Physics PYL657 [3-0-0],3
2. Advanced Plasma Physics PYL659 [3-0-0],3
3. Advanced Condensed Matter Theory PYL740 [3-0-0],3
4. Field Theory and Quantum Electrodynamics PYL741 [3-0-0],3
5. General Relativity and Introductory Astrophysics PYL742 [3-0-0],3
6. Group Theory and its Applications PYL743 [3-0-0],3
7. High Energy Physics PYL744 [3-0-0],3
8. Advanced Statistical Mechanics PYL745 [3-0-0],3
9. Non- equilibrium Statistical Mechanics
with Interdisciplinary Applications PYL746 [3-0-0],3
10. Quantum Optics PYL748 [3-0-0],3
11. Quantum Information and Computation PYL749 [3-0-0],3

Semester breakup of Courses



Semester I

1. PYL551 Classical Mechanics (3-1-0) Credits: 4
2. PYL553 Mathematical Physics (3-1-0) Credits: 4
3. PYL555 Quantum Mechanics (3-1-0) Credits: 4
4. PYL557 Electronics (3-1-0) Credits: 4
5. PYP561 Laboratory-I (0-0-8) Credits: 4

Total credits = 20

Semester II

1. PYL552 Electrodynamics (3-1-0) Credits: 4
2. PYL556 Quantum Mechanics II (3-0-0) Credits: 3
3. PYL558 Statistical Mechanics (3-1-0) Credits: 4
4. PYL560 Applied Optics (3-1-0) Credits: 4
5. PYL 562 Laboratory-II (0-0-8) Credits: 4
6. PYL563 Solid State Physics (3-1-0) Credits: 4

Total credits = 23

Semester breakup of Courses



Semester III

1. PE (I) (3-0-0) Credits: 3
2. PYL557 Atomic and Molecular Physics (3-0-0) Credits: 3
3. PYL569 Nuclear and Particle Physics (3-0-0) Credits: 3
4. PYP563 Advanced Laboratory (0-0-8) Credits: 4
5. PYD561 Project I (0-0-6) Credits: 3
6. PE-2 (3-0-0) Credits: 3
7. OE-1 (3-0-0) Credits: 3
8. DS-1 (3-0-0) Credits: 3

Total credits = 25

Semester IV

1. PYD562 Project II (0-0-12) Credits: 6
2. PE-3 (3-0-0) Credits: 3
3. PE-4 (3-0-0) Credits: 3
4. OE-2 (3-0-0) Credits: 3
5. DS-2 (3-0-0) Credits: 3

Total credits = 18

Time table In-charge for the Course



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Prof. Bodhaditya
Santra

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Check List for Immediate job to start with!



- Collect Course Registration details (Contains user id, password)
- Registration for M.Sc. program for special cases, please fill form A and contact Mr. Atul Vyas. Students who have not received the Entry no. so far, do also contact Mr. Atul Vyas [drpgsr@admin.iitd.ac.in] immediately.
- The course Microsoft Team link will be sent to you by the respective faculty in charge. Please email them if you have not received the same before commencement of the first class.
- The last date for submitting the certificates for qualifying course is the 31st of October
- Do get yourself introduced with moodles and imparctus of IIT Delhi by visiting <https://moodle.iitd.ac.in/login/index.php> as the course materials will be uploaded here.
- Figure out your Medical booklet, Electronic Data capture for regular/temporary ID card in this #new_normal mode.
- Please collect all other information related to a. Library b. Security c. Student Counselling Service d. ERP and CSC Resources e. ETSC and Online Teaching Methods from IIT Delhi website. Just google with respective keywords+IIT Delhi, you should get it.

Welcome to the Department!
Have a wonderful time at Physics@IIT Delhi!



THANKS!