Orientation: PhD Students, Semester-I, 2020-21
Department of Physics, IIT Delhi
(PhD Program Since 1961)

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Congratulations!!
Welcome to the Department of Physics and IIT Delhi
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• Total number of applications received: **1053**

• Shortlisted for interview: **447**

• Selected for supervisor selection: **88**

• Finally selected and joined: **35**
Physics @ Physics Department

- Condensed Matter Experiment
- Condensed Matter Theory
- Plasma Physics
- Computational and Statistical Physics
- High Energy Physics
- Optics and Photonics
- Physics of Quantum Matter
- Atomic and Molecular Physics

Multidisciplinary Research
Experimental and Theoretical/Computational Facilities

**Department Level**
(1) **PPMS** (physical properties measurements system)
(2) **XPS** (X-ray photoelectron spectroscopy)
(3) **SQUID** (for highly sensitive magnetic measurements)
(4) **UFO-Raman-PL Facility** (ultrafast optics and spectroscopic measurements, complete Raman and PL measurements)
(5) **XRD** (material characterization for crystallinity)

**Institute level**
(1) **HPC** (High Performance Computing System)
(2) **NRF** (Nanoscale research facility for various types of nanomaterial synthesis, device fabrication and characterization)
(3) **CRF** (central research facility having many advanced high end equipments for material synthesis and characterization)

Apart from these, there are many individual labs and facilities which you will have opportunity to use depending on your research topic and interest.
Starting Your Fellowship

1. The candidates with Institute Fellowships has to send the joining letter to department. You can send this via email to me on bkmani@physics.iitd.ac.in.

2. The candidates with CSIR/UGC-NET-JRF fellowships, in addition to sending the joining letter to the department, has to fill a form (contact PG section at drpgsr@admin.iitd.ac.in for that) and get it approved by thesis supervisor and submit to CSIR/UGC office. Your fellowship will start once it is approved by the corresponding agency.

3. Candidates with DST-Inspire fellowships, in addition to sending the joining letter to the department, has register to the DST-Inspire portal and submit the following documents.

   a) Copy of the Offer letter
   b) An Endorsement letter issued by the PG section
   c) Research Proposal
   d) CV of the thesis supervisor

You can contact PG section for more details at drpgsr@admin.iitd.ac.in
Pre PhD Course Work

Each student will be required to take course work as prescribed by the supervisor(s) and approved by the DRC.

<table>
<thead>
<tr>
<th>Qualifying degree</th>
<th>Minimum credits</th>
<th>Core courses (compulsory)</th>
<th>Electives Courses</th>
<th>Audit course (compulsory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.Sc./ B. Tech. or equivalent</td>
<td>12</td>
<td>01</td>
<td>03</td>
<td>Research Writing (HSL800)</td>
</tr>
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<td></td>
<td></td>
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<td>PYL7xx/PYL8xx Level Courses</td>
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<tr>
<td>M. Tech. or equivalent</td>
<td>6</td>
<td>01</td>
<td>01</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- **Core Courses:**
  1. PYL800: Numerical and computational methods in research (3 credits)
  2. PYL707: Characterization techniques of materials (3 credits)

- **Electives: Courses of Study @** [http://old.iitd.ac.in/content/curriculum-info](http://old.iitd.ac.in/content/curriculum-info)

- **You can also take any course from other department with the consent of your thesis supervisor/DRC**
Electives Floated This Semester

1. Physical Foundations of Materials Science (PYL 701)
2. Physics of Semiconductor Devices (PYL 702)
3. Electronic Properties of Materials (PYL 703)
4. Vacuum Science and Cryogenics (PYL 723)
5. Advanced Condensed Matter Theory (PYL 740)
6. Field Theory and Quantum Electrodynamics (PYL 741)
7. Non-equilibrium Statistical Mechanics with Interdisciplinary Applications (PYL 746)
8. Non-linear Optics (PYL 747)
9. Quantum Information and Computation (PYL 749)
10. Optical sources, photometry and metrology (PYL 751)
11. Basic optics and optical instrumentation (PYL755)
12. Computational optical imaging (PYL759)
13. Fiber Optics (PYL791)
14. Photonic Devices (PYL793)
15. Optics and Lasers (PYL795)
Important Instructions Related to Your Course Work

1. All of you have got your entry number from PG section and officially are part of Department of physics.

2. Students must register for these courses on the [https://eacademics.iitd.ac.in/sportal](https://eacademics.iitd.ac.in/sportal) preferably before September 25, 2020.

3. Discuss with your thesis supervisor to choose courses from electives

4. Course work is expected to be completed within 2 semesters (3 Sem. for P.T.)

5. Minimum CGPA required to pass course work is 7.5

6. Make sure that you all familiarize yourself with moodle [https://moodle.iitd.ac.in](https://moodle.iitd.ac.in)

7. Please get in touch (via email) with course coordinator to get various details related to classes, course material, slides details, scheme of evaluation, etc.
Important Guidelines and Instructions for Your PhD

1. SRC Formation (within 3-4 months):
   - Student Research Committee (SRC) is a 4 faculty members which monitors the progress of the student throughout the PhD programme.
   - Two experts from the department, one expert from our side the department, and the thesis supervisor.
Important Guidelines and Instructions for Your PhD

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2. Comprehensive Exam (within 18 months, 24 months for part-time students):
   - Every PhD student needs to write a written exam and after passing that he/she has to give an oral presentation conducted by SRC.

   - The student would be declared passed after passing the oral test and securing minimum 65% marks in total in both the exams.

   - The student has to present a sketch of tentative research plan that must be approved by SRC.
Important Guidelines and Instructions for Your PhD

3. **Renewal of Registration:**
- Every student will be required to renew the registration every semester till the submission of the thesis.

- The renewal of registration every semester shall be subjected to the completion of specified number of credits and/or satisfactory progress in the research work as recommended by Department Research Committee (DRC).

- Every student has to give a progress oral presentation before the SRC at the end of every semester after the comprehensive exam.

4. **Teaching Assistantship**
   Starting from second semester each PhD student has some specific hours of TA duty to help MSc/Btech students
Once again, many congratulations to all and welcome to the physics department family!!

Thank you for your attention!

Any Question?