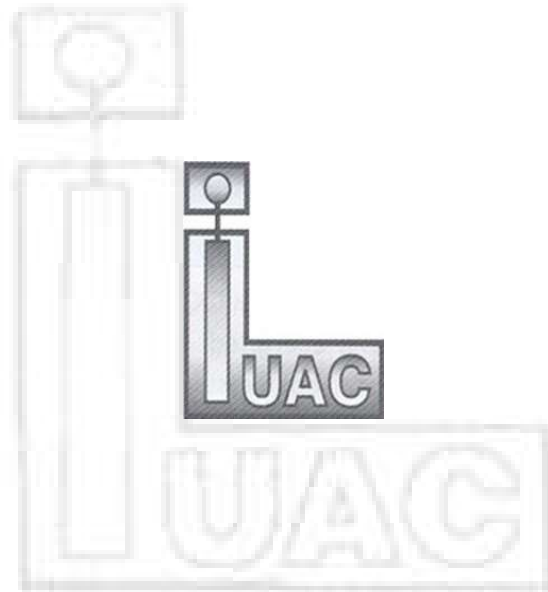


Ph.D PROGRAMME at IUAC

Guidelines



IUAC, New Delhi

INTER UNIVERSITY ACCELERATOR CENTRE (IUAC)
ARUNA ASAF ALI MARG, NEW DELHI-110067
Website: www.iuac.res.in

1. Introduction

The Inter University Accelerator Centre (IUAC) is an autonomous research institute under UGC. Its main objective is to provide front-ranking research facilities and training in accelerator based research for university users. IUAC offers research opportunities in accelerator based experimental physics in areas.

IUAC conducts one year (two semester) teaching programme.

Monsoon semester beginning in the month of August

Winter semester beginning in the month of January

The course modules contain specialized subjects related to accelerator based research. University students joined in university who wishes to attend the classes may contact the Teaching coordinator well in advance through the recommendation of their supervisors.

2. PhD in experimental physics

IUAC offers PhD programme registered under Jawaharlal Nehru University (JNU). The Programme has a strong orientation towards ion accelerator based experimental physics research. The priority areas for PhD research are ion induced experimental studies in:

Atomic & Molecular Physics, Nuclear Physics, Materials Science, Accelerator Physics, Accelerator Mass Spectrometry and Radiation Biology.

3. Programme Management

The JNU Ordinance and the decisions of IUAC-JNU Academic Committee along with UGC-(M.PHIL.-Ph.D.-DEGREES)-REGULATIONS, -2016 as amended up to date from time to time provides the regulatory framework for the PhD programme.

4. Committees:

The IUAC-JNU Academic Committee shall consist of the following:

- (i) Director of the Centre who will be the Chairman of the Committee;
- (ii) Two senior members of research staff of the Centre recognised by the University as teachers of the University for instructional and research guidance of students registered for the programme;
- (iii) Two outside experts nominated by the Academic Council of the JNU representing areas of research pursued by the Centre;
- (iv) Two senior faculty members of the University nominated by the Vice-Chancellor.

Barring the Director all other members of the Committee shall hold office for a period of two years. No member shall serve more than one term unless otherwise nominated for not more than one more term.

5. IUAC Research Degree Committee (IRDC)

IRDC will be constituted by the Director, with the following members.

- 1) Director IUAC as Chairman,
- 2) Among all the recognized supervisors, one from each of research discipline being pursued will be the member. The Convener will be appointed for a period of two years and will be one of the three senior most members on a rotation basis.

The convener of IUAC Research Degree Committee–appointed by the Director is empowered to oversee the working of the PhD Programme, including the course work. The committee will monitor the programme and communicate with the PhD students through periodic meetings to discuss any issues that may arise from time to time with respect to the programme. The PhD students and post-doctoral students shall regularly participate and present the papers under the aegis of Journal Club as prescribed by IRDC.

6. Research Advisory Committee (RAC)

There will be a Research Advisory Committee (RAC) for each research scholar. It will consist of the Supervisor as Convener of respective RAC, Convener of IRDC and one members from IRDC from some other group and additional external member if deemed necessary from relevant area of research.

Further, RAC may have observers from SC/ST/OBC/PWD community among the panel nominated by Director on rotation. These observers shall be over and above the defined composition without any right of vote except the observance of reservation rules.

This Committee shall regularly monitor the progress of the research work of the scholar. A Scholar shall submit 6-monthly progress reports to the RAC and also an annual seminar outlining his research work during the year. Non-submission of two consecutive reports or failure to give the annual seminar can be basis for possible cancellation of registration. If the RAC finds that the progress of the work is not satisfactory, a report to that effect shall be submitted to the IRDC for appropriate action.

7. Admission / Enrollment / Confirmation / Thesis submissions

PhD admission, enrollment, confirmation and thesis submission procedures shall be as per JNU PhD ordinance dated 22/12/2017 and as amended from time to time. The Procedure for Registration & Submission of thesis shall be as follows;

- **Admission:** Student get admitted to IUAC Ph.D. program through selection procedure consisting of a written test and interview. The date of joining IUAC as JRF for PhD programme is their official Date of Admission.
- At the time of joining IUAC every student must submit following Documents.
 - Certificate and mark sheet of qualifying degree
 - Proof of date of Birth,
 - NET-JRF Award Letter
 - Photograph
 - Migration Certificate within 4 weeks after joining.
- The student shall have to undergo course work as prescribed by IRDC.
- The student shall collect the enrollment forms (available from Coordinator), fills them up (4 copies) and submit to A.O (P), IUAC for writing a forwarding letter (signed by Director, IUAC). The student shall submit the forwarding letter and 2 forms to JNU along with one time joining Fee 7615 as D.D drawn in favour of Finance Officer, JNU.
- **Registration:** After the registration to PhD program, the enrollment number of student is communicated by Assistant Registrar (Evaluations).

- **Declaration of Results of Course Work:** After going through the course work his/her grades are scrutinized by JNU team and approved by Director. These are officially approved in the Academic Committee (JNU) and the student is informed.
- **Allocation of Supervisor:** Supervisors are identified and students are asked to interact with prospective guides. Once student has decided to join a particular guide as decided by rule 16 given below, an undertaking from guide and student shall be obtained for mutual agreement.
- **Confirmation:** At a suitable time after course work (within two semester), the student submits a synopsis of thesis. This is presented to a committee (RAC) consisting of the Ph.D. supervisor, program coordinator, research committee members and one external expert (if necessary) for evaluation. The recommendation of thesis proposal by the committee is passed on to the Director for approval. This date is the date of confirmation. The date of confirmation of the candidate is passed on to the candidate with a copy to JNU where record of date is kept. The date of confirmation of the candidates may be reported in the Academic Committee(JNU). The proposal and recommendation copy shall be sent to JNU evaluation branch
- **Review of progress:** Student will make progress presentation (six monthly) before monitoring committee and they will submit the progress report to the Academic Committee.
- **Pre-Submission:** Before submission of thesis, the scholar shall publish at least one research paper in refereed journal and make two presentations in conferences, seminar etc and produce at the time of submission, evidence for the same in the form of reprint or photocopy of the paper published and certificates of paper presentation.
- **Panel of Examiners:** Prior to submission of thesis (by at least three months) Three copies of synopsis and the two copies of panel of examiners for thesis examination should be sent to JNU (evaluations). Soft copy of panel also to be sent. It should ensure that no examiner is a collaborator of the guide or co-guide so as to avoid any conflict of interest. The examiners names may be suggested by the supervisor, but the form containing the names of examiners will be signed by Director. There will be five names in the panel of which two will be selected by JNU. No person who is in employment of IUAC or in Special committee of the Centre shall be included in the panel of examiners.
- **Pre-PhD Submission:** Before submission of thesis student will make presentation on the thesis/work before the research committee and get feedback/comments from members. The presentation will be open to all
- **Submission of thesis:** Student should submit three copies of thesis and soft copies of thesis along with all affidavits to AO(Per) who will send it to Assistant Registrar (Evaluations) along with a forwarding letter.
- **Viva-voce examination:** Once the Examiners reports are available, they will be sent by JNU to Director, IUAC along with viva-forms. IUAC will contact one of the two examiners who evaluated the thesis and will seek his/her convenient date/time of conducting the viva-voce examination of student at IUAC. Once the consent is received, the student will be informed of the date and time of the viva-voce. Viva must be held with at least one external examiner present after he agreed to come for the viva. The supervisor will also be in the examination board. The viva-voce will be open to other students and faculties. Viva-voce can be conducted through Skype, if the student justifies the reason of his absence especially working abroad.

- **Date of Award of degree:** The report of the viva-voce together with other reports will be sent by Director to Asst. Registrar(Evaluations). The results as received from IUAC will be approved from the Vice-Chancellor and the Ph.D. degree will be awarded subsequently. The date of award of degree to the student will be the date on which the results are forwarded by the Director, IUAC to Asst Registrar, JNU.

8. Financial Assistance, Contingency etc.:

- The re-reimbursement of contingency shall be as per the CSIR/UGC rules. The expenditure bill shall be verified and signed by the supervisor and submitted to accounts section wherever applicable.
- **Fellowship assistance to students.** For some unforeseen reason, if the scholar could not submit thesis (due to failure of experiments/ breakdown of facilities etc) within the stipulated 5-year term and fellowship is stopped, Centre may provide assistant-ship to students of IUAC till he submits the thesis within the extended period as applicable by JNU guidelines.
- **Project assistant-ship to students after submitting Ph.D thesis:** Director may offer project assistant-ship to IUAC students after submitting Ph.D thesis for a project which will be in a different area than his/her Ph.D and it will be for a maximum period of six months. Vacant position of research associates(RA) can be used for this purpose under Director's power for ad-hoc appointments till the RAs are recruited. The project will have to be with someone different from the Ph.D guide and it will be ensured that any work connected with the Ph.D programme will be done in extra hours.
- **Hostel Accommodation.** IUAC students shall be offered free hostel accommodation during their tenure of fellowship for a period maximum up to five years. After submission of thesis, for stay beyond five years, hostel accommodation may be provided on paid basis, if it is available, subject to approval of competent authority. Once the tenure is over, students are required to vacate the hostel accommodation after clearing all Dues, if any.
- **No Dues clearance:** PhD students are required to get No Dues clearance completed from personnel section before completion of viva-voce.

9. Recognition/Appointment of Supervisors:

The supervisor shall be a member of research staff of IUAC recognized by JNU as teacher of University to participate in the research guidance of students. A regular IUAC scientist who had Ph.D. and spent considerable time (at the level of Scientist E and above) in development and research activities at IUAC may qualify to become a research supervisor on the recommendation of the IRDC. Some of the scientists may need some guidance before taking a student for the first time. In such cases, Committee may decide to advise a faculty member to gain experience in guiding a student as a co-guide (along with a senior faculty as a guide) before permitting him to take up a student as a guide at a later stage.

The recognition to become supervisor will be accorded after taking into consideration of his/her experience, contribution to development and research activities, quality of research publications, the suitability of the research subject that can substantially lead to high quality PhD work within the

mandate of IUAC. The committee may recommend new supervisors only if the number of currently available supervisors in relevant subjects are not sufficient to meet the requirement. The recognized Supervisor should have minimum two years' research experience and published at least two research publications in "High impact factor Thomson Reuters and Scopus Journals" after the award of PhD.

The number of students supervised by each recognized guide should be in accordance with JNU pay levels applicable to faculties as under: -

Category	Pay Level 7 th CPC	No. of students*	Equivalent level in IUAC
A	Level 14 BP Rs.1,44,200/-	Eight	Scientist-H
B	Level 13 A Rs.1,31,400/-	Six	Scientist-G after reaching basic pay of Rs.1,31,400/-
C	Level 11 to 13 BP Rs. 57,700/- BP Rs. 68,900/- BP Rs.79,800/-	Four	Scientist-F Scientist-E Scientist-D

*** The number includes co-supervisor ship (internal as well as external)**

In each year the vacancy may be determined according to available supervisor(s) and facility available to PhD scholars.

No scholar shall be allotted for supervision, if the scientist has less than three years to superannuate from service.

10. Role and responsibility of guides

The Guide should help the student in writing a research proposal for Ph.D programme. While selecting guide, it should make sure that his/her area of expertise matches with the research interests of the student and the topic is identified within the mandate of IUAC and research facilities are available. The Guide is expected to provide academic guidance by:

- providing scholarly direction;
- encouraging student in his/her academic work;
- setting up a regular schedule of meetings with student to allow for regular interaction
- providing regular and prompt feedback on progress to student
- helping student publish his/her work as appropriate.

The Guide as convener should also make sure that the Research Committee meets once in six months to review the progress made by the student and conduct pre-PhD seminar

11. Admission & Eligibility

IUAC Research Degree Committee shall decide, on an annual basis, the maximum number of candidates to be admitted to the programme, which shall be announced in advance in a notification and on the website. Admission to the Ph.D. programme will be made once a year in the beginning of Monsoon semester. The admission to the Ph.D. programme of the centre shall be in accordance with the provisions contained in the Ph.D. Ordinance of the JNU along with UGC-(M.PHIL.-Ph.D.-DEGREES)-REGULATIONS, -2016 as amended from time to time.

12. Eligibility Criteria

- Candidates who have qualified themselves in National Level Ph.D. eligibility test UGC/CSIR NET-JRF and secured a minimum score at the Post-Graduate Examination (M.Sc. in Physics or Engineering Physics or Applied Physics or B.E. / B.Tech. or Equivalent) of 55% marks (or the equivalent Letter Grade/Grade Point under the seven-point Letter Grade Scale wherever grading system is followed), laid down by the UGC in the case of General candidates and 50% marks (or the equivalent Letter Grade / Grade Point) in the case of OBC/SC/ST/PH candidates in their Master's Degree in the subject concerned are eligible to apply. Not more than one III division (or equivalent Letter Grade/Grade Point) in the academic career before graduation or a candidate having III division (or equivalent Letter Grade/Grade Point) at the graduate and post-graduate examinations shall not be considered for admission to D.Phil. Programme. A relaxation of 5% marks may be allowed for those belonging to SC/ST/OBC (non-creamy layer) /Differently-abled and other categories other categories of candidates as per the decision of the UGC from time to time. The eligibility marks of 55% or an equivalent grade and the relaxation of 5% to the categories mentioned above are permissible based only on the qualifying marks without including the grace.
- Candidates who have qualified the National Eligibility Test (NET) conducted by the University Grants Commission (UGC)/Council of Scientific and Industrial Research (CSIR) shall be exempted from the Level 1 Test of Research Admission Test (RAT) conducted by the IUAC.
- Provided further, If the candidate desires to appear at Level 1 of the RAT he/she is allowed to appear at Level 1 of RAT, but his eligibility shall be determined only on the basis of the marks obtained by him/her in the RAT
- There shall be negative marking in objective-type questions; for every correct answer 4 marks will be awarded and for each wrong answer one mark will be deducted

13. Admission Committee:

PhD Admission Committee will be constituted by Director for each year to take care the selection of students with following members.

- 1) Director IUAC or his nominee as Chairman
- 2) Convener IRDC and other members of IRDC who are eligible to take research scholars preferably one member each from various specialization within IUAC. Two external experts preferably in the synergy areas, one from JNU and other from other institutes/universities.

14. Admission Procedure:

14.1 The IRDC will ask the members to submit a list of topics (with a brief description) on which they want to admit a scholar. The list of research topics thus provided by the interested faculty members will be discussed and a consolidated list of approved topics and number of scholars to be inducted will be prepared before calling the interviews. The list of topics with supervisors will be displayed on the notice board and also provided to research scholars before interviews.

14.2.1 Registration of students having cleared national tests for PhD: All the candidates interested in applying to the IUAC PhD programme must fill the online application form. Fulfilling minimum qualification and filling online application do not guarantee a call for an interview (level-3). The applications received shall be scrutinized by taking into account the CSIR-UGC-NET-JRF/GATE/JEST scores and Post-Graduation scores and shortlist will be prepared. Candidates shortlisted as per IUAC norms will be called for an interview(level-3).

14.2.2 Registration of fellow under project for PhD: If JRF joins a project at IUAC which is financially supported by external agency with JRF project fellowship, student may join PhD registration under JNU if the procedures for admission is followed as per JNU ordinances. Such vacancy shall be advertised as regular PhD programme. The fellowship support shall be provided under project for entire duration. The student shall join the coursework and confirm the registration before undertaking the research work in the project.

14.2.3. If the sufficient number of qualified students desirous of seeking admission to PhD programme are not available as per 14.2.1/14.2.2 OR otherwise, then admissions to the programme can also be made through two stage process consisting of Entrance Examination (Open for all including the Scientists working in IUAC eligible for pursuing PhD) subject to the screening criteria decided by IRDC considering the logistics of conducting such tests and level-3 Test (interview / viva-voce) from among the candidates shortlisted by Admission committee.

The Scientists working in IUAC who are actively engaged in research in a challenging area to establish an international reputation at the forefront of high tech, may be given the opportunity to support the individual career development provided the period of active service spent on pursuing research degree simultaneously with assignment without taking any kind of leave shall not compromise the assigned duty and the research output as decided by competent committee for all practical purposes.

14.2.3.1 Exam Pattern

Level 1 Test Duration of this Section will be 01:30 hours

This test is of objective type questions and it is divided into two sections - Section A and Section B. Negative Marking for wrong answers is applicable for Level 1 Test.

Section A

Academic and Research Aptitude: This Section of the paper will comprise of 50 multiple choices type objective questions of the subject opted by the candidate. All questions are to be attempted. Each question carries four marks.

Section B

Subject Proficiency in the subject: This Section will comprise of 50 multiple choices type questions of the subject opted by the candidate. All questions are to be attempted. Each question carries four marks.

Level 2 (Written Subject Test) Duration of this Section will be 02:30 hours

The duration of Level 2 (Written Subject Test) shall be two hours and the total marks shall be 200; this test will comprise of 3 sections consisting of Short Answer (10 questions of 10 marks each to be answered in 200 words), Medium Answer (3 questions of 20 marks each to be answered in 200 words) and Long Answer question (1 question of 40 marks to be answered in 400 words)

In all 14 questions are to be answered in Level 2 Test. There may or may not be internal choices within each question.

Note

- Test for Level 1 - Section A, Level 1 - Section B and Level 2 (Written Subject Test) will be in continuation. Candidates will not be allowed to leave the exam room in between these Sections
- Immediately after completion of Section A duration, i.e. 1:30 hours, the question/answer booklet for Section A will be collected and simultaneously question booklet and answer sheet for Section B will be distributed. Total duration of Level 1 Test (Level 1 A and Level 1 B) is 3 hours.

- After qualifying level 1 test and level 2 test, the candidate shall be qualified to appear in level 3 test which will comprise personal interview and presentation.

14.2.3.2 Minimum Qualifying Marks

In order to qualify Level 1, 50% marks are essential. Similarly, to qualify for Level 3, 50% marks at Level 2 is necessary. However, if a candidate fails to score 50% marks at Level 1 or at Level 2, he/she shall be eligible for Level 3 provided that the total marks at Level 1 and Level 2 is 50%; the merit of

14.2.3.3 Application Fees (shall be finalized subject to approval of finance Committee)

Test Fees for candidates required to appear for (Level 1, Level 2 and Level 3 Tests) or (Level 2 and Level 3 Tests)

For General/OBC: Rs.1500/-

For ST/SC/PH/VH: Rs.700/-

Test fees for candidates exempted from the Level 1 and Level 2 Tests, and required to appear only for the Level 3 Test

For General / OBC- Rs.1200/-

For ST/SC/PH/VH: Rs.700/-

15. Course work

There shall be a compulsory two semester pre-Ph. D course work. The candidate shall be eligible for confirmation in the PhD Programme, if the scholar has

(i) Completed the course work carrying 16 credits with a minimum of 55% marks or CGPA of 5.0 [4.5 in case of candidates belonging to SC/ST/OBC (non-creamy layer) / differently able categories].

(ii) His/Her thesis proposal approved by the IRC within two semesters from the date of completion of the course work.

(iii) The IUAC Scientists whose research employment activity matches that of the research degree pursuing PhD shall have to undergo Pre-PhD Course work as prescribed by IRDC for which they shall have to work over 10 hours per week whilst being registered as a full-time student.

16. Allocation of Supervisors:

The allocation of Research Supervisor for a selected research scholar shall be finalized by IRDC the candidate's interests as indicated (and duly recorded) during the interview, the specialization of the supervisor and the number of scholars per research supervisor in area of specialization and in no case will be left to the student or teacher to decide on their own. The list of topics with supervisors will be provided to selected candidates and they will get the consent from the supervisor on the form.

Research students admitted to the PhD programme are required to join the Institute and report to the Convener, IRDC on the stipulated date as indicated in the academic calendar. The research students will meet and interact with the scientist/researchers of an identified specialization and start the process of selection of supervisor.

17. Academic assignment during PhD programme

On recommendation of RAC, permission may be granted to the scholar for any academic assignments / foreign visit (Sandwich Programme) related to his / her thesis work as per NET/UGC

Fellowship guidelines in regard to payment of fellowship. Expenditure on such foreign visit cannot be claimed from IUAC or UGC. However, such leave shall be permitted only after confirmation of enrollment.

18. Residency Period

Minimum residency period shall be three years from the date of admission and before completing the minimum residency period no candidate shall -

- (i) Undertake any employment
- (ii) Join any other course of study
- (iii) Appear in any other examination other than those prescribed by the Centre without prior permission of IRDC.

However, after completion of minimum residency period, the scholar may join teaching assignment / job, provided Supervisor has to certify that the student can complete the remaining work and submit thesis within the stipulated period of time. Before such permission is granted students must give written concurrence of the employer. Students who wish to suspend their studies to take up full-time employment for a limited period after completing minimum residency period will need to apply for temporary removal from the Register of PhD Students for this period. Intermission may be a possibility in certain circumstances. International students who hold Visa for the purpose should be aware of any visa implications before taking this course of action and are advised to contact the International Student Office of JNU for further advice.

19. Re-registration

A Research Scholar who has de-registered from the Ph.D programme may apply for seeking permission to re-register for the programme within five years from the date of de-registration as per the procedure prescribed in JNU Ordinance.

20. Co-Guide / Co-supervisors

As per JNU ordinance, co-supervisor is allowed only if the expertise has to be supplemented from outside the group or lab with the approval of concerned authority.

- (i) **Recognition of Joint supervisor from other or within the institute:** The recognition of researcher from outside IUAC to become supervisor/co-supervisor will be decided by the Director on the basis of recommendation of IRDC in case of topics where the Centre feels that the expertise in the Centre has to be supplemented, Centre may recommend appointing a Co-supervisor from outside the Centre on such terms and conditions as may be specified and agreed upon by IRDC. The factors to be considered after taking into consideration the relevant Ordinances include the place of working along with bio-data and other supporting documents in support of candidature.
- (ii) **IUAC Scientist as co-supervisor to students from other institute.** Regular Scientist at IUAC who has PhD and substantial experience in development and research may be allowed to co-supervise students of other institutions for research work on topics related to research activities where IUAC facilities are availed. The No Objection Certificate(NOC) from Centre and necessary approval and terms and conditions may be specified and agreed upon by the research Committee of the institution. Co-supervision shall be counted to account for the total number of students permissible under a supervisor.

21. Reservation as per Govt guidelines.

Ph.D students are admitted taking into account the reservation policy as per UGC guidelines. The same policy shall be applicable in allocation of students to supervisors.

22. In case of supervisor leaves IUAC

In case guide of a student leaves IUAC, before leaving he shall suggest a new Guide, and Chairman of the academic committee and coordinator may interact with the student and appoint a new guide. Change of guide requires approval of IRDC. In case any member of a research committee leaves IUAC, coordinator may consult Guide and appoint a replacement member.

23. Code of conduct

Each student should conduct himself/herself in a manner befitting his/ her association with IUAC as a research student. He/she must show due respect to faculty and staff, fellow students, residents on the campus, and visitors.

Ragging in any form is strictly prohibited and is a serious offence.

Any written submission by students pursuing research should represent ideas of students in his/ her own words and where others' ideas or words have been included, they should be adequately cited and the original sources should be referenced. Student should also declare that he/she has adhered to all principles of academic honesty and integrity and has not misrepresented or fabricated or falsified any idea/data/fact/source in the submission. Further, he/she must understand that any violation of the above will call for disciplinary action by the Institute, and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed. Any violation of code of conduct will be investigated and can lead to severe indictment including rustication.

24. Miscellaneous

For all other matters related to PhD programme, JNU Ordinance for Ph.D. programme shall be followed.

IUAC, New Delhi