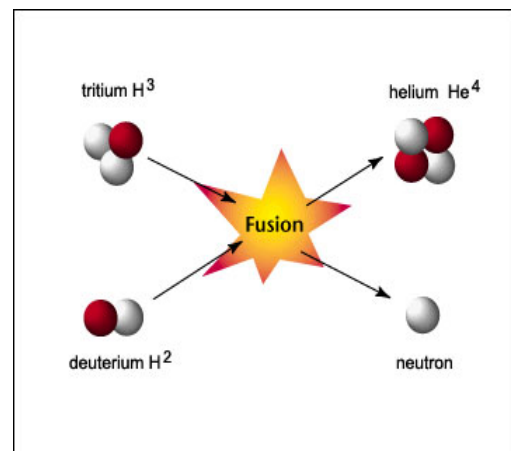
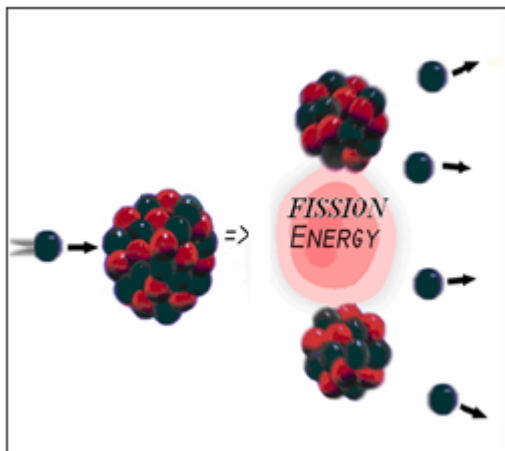
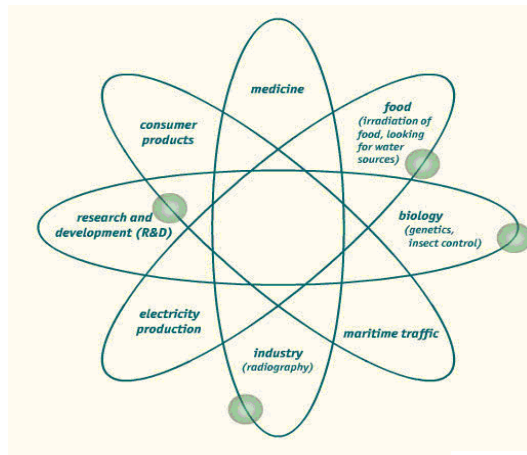




University of Delhi, Delhi
Department of Physics and Astrophysics

M.Tech. in Nuclear Science and Technology





UNIVERSITY OF DELHI
दिल्ली विश्वविद्यालय

Professor Deepak Pental
Vice-Chancellor

2nd May 2008

MESSAGE

I am pleased that the Department of Physics and Astrophysics, University of Delhi is going to start a new M.Tech. Program in Nuclear Science and Technology from the next academic session 2008-2009. It is an important event for the University since nuclear science and technology will play an important and pivotal role in the development of the country in the 21st century. The challenges that lie ahead are in designing the next generation of fission based power plants and to meet rather difficult conditions in an actual fusion reactor for meeting the future energy needs.

I believe that the nuclear science and technology curriculum is sufficiently focused on the development of practical knowledge to make the students immediately productive in several laboratories under the Department of Atomic Energy. Concomitantly, the course will also provide the necessary theoretical fundamentals to prepare the students to undertake meaningful research program in the area of nuclear physics.

I am sure that many bright and enthusiastic students will join this course. My best wishes for a successful start for this initiative at our University.


Deepak Pental
Vice-Chancellor

BULLETIN OF INFORMATION FOR ADMISSION FOR THE ACADEMIC YEAR 2008-2009

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1. Mission Statement

M.Tech in Nuclear Science and Technology is a program that is specifically designed for the study of nuclear power and the radiological applications which have emerged in the latter half of the 20th century. The curriculum is sufficiently focused on the development of practical knowledge to make the students immediately productive in several laboratories under the Department of Atomic Energy. It also provides the theoretical fundamentals to prepare the students to undertake research programs.

2. Important dates related to the admission procedure

- Last Date for receipt of Form: **July 15, 2008**
- Declaration of List of Candidates for Interview: **July 17, 2008**
- Date of Interview: **July 24, 2008**
- Declaration of Merit List: **July 26, 2008**
- Last Date for Receipt of Fee: **July 29, 2008**
- Commencement of Classes: **July 30, 2008**

3. General Information

- The M.Tech. Course in Nuclear Science and Technology will be conducted by the Department of Physics and Astrophysics under the Faculty of Science.
- The duration of the course is six semesters. However, students will be required to undergo teaching/training in the summer vacations during the three years of the programme.
- The number of seats for the course is **14**.
- If a student does not attend at least 80 % of the classes during the first two weeks without any serious medical reason, his/her admission will stand automatically cancelled and the seat will be offered to the next candidate in the waiting list.
- The detailed syllabus of the course can be accessed at our website <http://www.du.ac.in>

4. Minimum Eligibility Conditions

1. A candidate seeking admission to this course must qualify in the Joint Admission Test to M.Sc. (JAM)-2008 for admission to M.Sc. and other post-B.Sc. programmes, conducted by the Indian Institutes of Technology (IITs).

Only those candidates who qualify in JAM-2008 by obtaining a rank in the merit list of a Test Paper shall be eligible to apply for admission to this program.

Details of the JAM can be found from the IITs and are also available on the website <http://www.iitk.ac.in/jam/>

OR

Students who appear in entrance test for admission to M.Sc. (Physics)-2008 to be held by Department of Physics & Astrophysics would also be eligible to take admission in M.Tech. Nuclear Science & technology and short listed candidates in order of merit would be called for interview.

2. Minimum educational qualification for the course is same as in JAM-2008: Bachelor's degree with Physics as a subject for at least two years/four semesters and Mathematics for at least one year/two semesters.
3. All candidates shall be required to fulfill the following additional eligibility criteria for admission to this course:
 - (a) At least 60% aggregate marks or equivalent grade for General category candidates. Relaxation of 5% marks in the minimum eligibility conditions will be allowed to candidates belonging to all reserved categories.
 - (b) Final selection will be made on the basis of an Interview of the short-listed candidates.

5. Reservation

- (a) Fifteen percent of the seats will be reserved for Scheduled Caste candidates. (If no Scheduled Caste candidate is eligible the seat will be given to a qualifying Scheduled Tribe candidate.)
- (b) Five percent seats will be reserved for the children/widows of armed forces personnel including para-military personnel killed or disabled during hostilities and who die on duty.
- (c) Reservation for Other Backward Classes (OBC) will be as per University norms.

In case sufficient number of eligible candidates mentioned at 5a, b & c above are not available, the vacancies will be treated as unreserved in their respective categories.

NOTE:(i) Candidates belonging to the reserved categories will note that a column has been provided in the Application form for the purpose. They must declare their reserved status by indicating the same in the form. They are also required to enclose two photostat copies of the Scheduled Caste/Tribe Certificate or Entitlement Card. Two Photostat copies of the OBC certificate (issued by an appropriate authority) are required in the case of OBC applicants.

(ii) For General/SC/ST/Candidates: In case two or more candidates have the same marks in JAM-2008, the marks obtained in qualifying examination will become the criteria for admission. In the case of marks in qualifying examination being equal, the candidate born earlier will be given preference.

Certificate required for Scheduled Castes/ Scheduled Tribes:

For admission to a seat reserved for Scheduled Castes/ Scheduled Tribes, a certificate, in original, from an approved district authority stating the Scheduled Caste/Tribes to which the candidate belongs will have to be presented at the time of the interview. The list of approved authorities is given below:

- (i) District Magistrate/Additional District Magistrate/ Deputy Commissioner/ Collector/Additional Deputy Commissioner/Deputy Collector/ Ist Class Stipendiary Magistrate/ City Magistrate (not below the rank of Ist Class Stipendiary Magistrate, Sub-Divisional Magistrate/ Taluka Magistrate/ Executive Magistrate/Extra Assistant Commissioner.
- (ii) Chief Presidency Magistrate/Additional Chief Presidency Magistrate/ Presidency Magistrate.
- (iii) Revenue Officer not below the rank of Tehsildar.
- (iv) Sub-Divisional Officer of the area where the candidate and/or his/her family normally resides.
- (v) Administrator/Secretary to Administrator/Development Officer (Locative & Minicoy Islands).

6. Age Requirements

No Person shall be qualified for admission to the M.Tech course unless he/she is at least 20 years of age before the first of October in the year in which he/she seeks admission. However, the Vice-Chancellor may, on the basis of individual merit, relax the age limit up to a maximum period of six months.

7. Procedure for Admission

- Application form can be downloaded free of cost from the University web site (<http://www.du.ac.in>). However, the application form along with the necessary documents must reach the following office by **July 15, 2008**

Office In-charge
Room No. 189, Multistoreyed Building,
Second Floor,
Department of Physics and Astrophysics,
University of Delhi, Delhi – 110007.

- The Bulletin of Information along with the Application Form will be available from the above-mentioned office from **10:00 A.M. to 1:00 P.M.** (on all working days).
- *Application Form by Post:* The Bulletin of Information with the Application Form can also be obtained by post on remitting a crossed bank draft of Rs 50/- for the general category and Rs 30/- for SC/ST/OBC candidates, in favour of The Registrar, University of Delhi, payable at New Delhi. A self-addressed envelope of size 10"×7" affixed with postage stamp worth Rs.30/- should also be enclosed with the request. The request for the Bulletin of Information should be addressed to the above-mentioned office. Last date for receipt of applications by post is **July 15, 2008**. The Department will not be responsible for any postal loss/delay.
- Candidates must apply for admission to the course only on the prescribed application form available with this Bulletin.
- The completed application form together with photostat copies (only) of the detailed mark sheets of B.Sc. Exam, Matriculation/Secondary School Certificate bearing the date of birth and proof of rank for M.Sc entrance/JAM-2008 exam, must be submitted to the above-mentioned address in person or reach by post on or before **July 15, 2008 by 4.00 P.M.**
- Erasing, cutting and omission or supplying false information may lead to cancellation of candidature. For any lapse on this account, the entire responsibility shall lie with the candidate.
- Incomplete applications will be rejected and the Entrance Examination fee sent along with the application form will be forfeited. Examination fee will also be forfeited in case the applicant is not found eligible to appear at the Entrance Examination.

8. Interview

Interview will be conducted on **July 24, 2008**.

The list of candidates selected for the interview will be displayed on the Notice Board of the Department of Physics & Astrophysics, University of Delhi on **July 17, 2008 at 4.00 p.m.** and will also be posted on the Delhi University website: <http://www.du.ac.in>

NOTE: Merely fulfilling the minimum qualification or the eligibility criteria does not entitle a candidate to be necessarily considered or called for Interview.

9. Intimation regarding Admission

Admission results will be displayed on the Notice Board of the Department of Physics & Astrophysics, University of Delhi on **July 26, 2008 at 4.p.m.** They may also be viewed on the Delhi University website: <http://www.du.ac.in>

Second list and subsequent lists of all selected candidates will be displayed, if necessary.

10. Scholarship

All candidates selected for this course will be provided a scholarship of **Rs.3000/- per month.**

11. International Collaboration

Candidates selected for this course are likely to be sent to reputed Universities/Institutes in France and USA for dissertation/course work. University of Delhi will make all the necessary arrangements for the trip, and will also bear the financial costs.

12. Provision for Foreign Students

Foreign Students seeking admission to various Courses of the University under the Faculty of Science are required to apply directly to the Advisor, Foreign Students Registry, Faculty of Management Studies, University of Delhi, Delhi – 110 007. Foreign Students who are stationed in India and have passed their last examination from a University in India may seek admission on the basis of merit along with other students after obtaining a No Objection Certificate from the Foreign Students' Advisor.

13. Attendance Requirements

Once admitted, no student shall be allowed to take the examination in Semesters I to V unless he/she has attended at least 75% of the total lectures delivered/classes held in each theory and practical paper. There shall be at least 45 lectures in each theory paper. No student shall be allowed to appear in the Examination for the VIth Semester unless the supervisor guiding the student for the Dissertation work has reported that he/she is satisfied with the student's project work.

14. Fee Structure

The fee for this programme is payable at the beginning of the Academic Year. The annual fee to be paid for this programme is the same as for the M.Sc. programme.

15. Residential Accommodation

Some provision for hostel accommodation is being made for outstation students.

16. Course Structure

The following shall be the Scheme of Examination for the Course:

I. Examination at the end of Semester I:

- 1) Engineering Drawing
- 2) Quantum Mechanics and Electrodynamics
- 3) Radiation Technology and its Applications
- 4) Nuclear Radiation Detection and Experimental Techniques
- 5) Workshop practice and Nuclear Measurement Laboratory –I

II. Examination at the end of Semester II:

- 1) Applied Thermodynamics
- 2) Accelerator Physics and Technology
- 3) Mathematical and Numerical methods in Nuclear Engineering
- 4) Nuclear and Computational Sciences
- 5) Nuclear Measurement Laboratory –II

III. Examination at the end of Semester III:

- 1) Nuclear Reactor Physics
- 2) Plasma Physics and Nuclear Fusion Reactors –I
- 3) Nuclear Power Engineering –I
- 4) Nuclear Measurement Laboratory –III

IV. Examination at the end of Semester IV:

- 1) Nuclear Reactor Design
- 2) Fast Breeder Reactors and Nuclear Engineering Materials
- 3) Plasma Physics & Nuclear Fusion Reactors –II
- 4) Nuclear Measurement Laboratory –IV

V. Examination at the end of Semester V:

- 1) Nuclear Power Engineering –II
- 2) Fusion Reactor Design

NOTE: Each theory paper shall be of three hours duration and shall carry 100 marks. Out of 100 marks, 30 marks will be reserved for Sessionals (Internal Assessment). These marks will be awarded based on the performance of the student in best two out of three tests and a seminar presentation to be conducted during the Course.

The Practical Examination will consist of two practicals to be performed on two days (six hours each) and shall carry 200 marks out of which 60 marks shall be reserved for laboratory record and regularity in the practical classes and 40 marks for viva voce examination.

VI. Examination:

Dissertation:

Students will be required to work on a project from the beginning of Semester V and will continue through Semester VI. The topic of the Dissertation will be given at the beginning of the Semester V. . For this work, students will get an opportunity to work in major research institutes, such as Bhabha Atomic Research Centre (BARC), Mumbai; Raja Ramanna Centre for Advanced Technology (RRCAT), Indore; Institute for Plasma Research (IPR), Ahmedabad; Inter University Accelerator Centre (IUAC), Delhi; Nuclear Power Corporation of India Limited (NPCIL), Mumbai; and Fermi National Accelerator Laboratory (Fermilab), Chicago, USA, and possibly some reputed Institutes/Universities in France.

On completion of their project work, ordinarily by the end of April, students shall be examined for the Dissertation through presentation and viva-voce. This will carry 300 marks. However, if some students are not able to complete their project work in six months, they will be given an additional six months time to complete the project work.

17. Promotion Rules

- Pass marks in each semester shall be 50% in aggregate of Theory and Practicals/Dissertation separately, with at least 40% marks in each theory paper, including the marks in internal assessment. A student will have to pass in each semester separately.
- A student who is unable to pass the examination for Semester I will be allowed to pursue studies for Semester II. However, he/she will be required to obtain pass marks in the remaining papers of Semester I along with the examination for

- Semester II. For promotion to the 2nd year of the course, a student shall be required to have passed in all the papers of Semester I and at least two Theory papers along with Practicals of Semester II.
- A student who is unable to pass the examination for Semester III will be allowed to pursue studies for Semester IV. However, he/she will be required to obtain pass marks in the remaining papers of Semesters II/III carried over by him /her along with the examination for Semester IV. For promotion to the 3rd year of the course, a student shall be required to have passed in all the papers of Semesters II and III and at least two Theory papers along with Practicals of Semester IV.
 - A student who is unable to pass the examination for Semester V will be allowed to pursue his project work in Semester VI. However, he/she will be required to pass the remaining papers of Semesters IV/V carried over by him/her along with the examination for Semester VI.

Classification of Successful Students:

At the end of the final examination, the successful candidates shall be classified on the basis of marks obtained in all the examinations taken together as follows:

First Division with distinction	-	75 % or more marks in the aggregate
First Division	-	60% or more marks but less than 75% marks in the aggregate.
Second Division	-	All others.

If a student fails in any paper of any semester, he/she will not be eligible for merit position.

Miscellaneous:

- The calendar for the Academic Year will be announced at the beginning of the session.
- Scholarship will be discontinued if a student fails to score at least 60 % marks in any examination.
- Students must qualify for the M.Tech. Degree within four years of admission to the first year of the course.
- A student who fails in the 1st year will have to compete afresh for joining the programme again in 1st year. If a student fails to clear any paper even in the second attempt, he/she will have to discontinue in the Course.
- A student who fails to secure 50% marks in dissertation shall be required to improve upon and resubmit the dissertation within three months for re-examination.
- No student will be allowed to reappear in any part of the examination in which he/she has already secured the minimum pass marks.

- There will be no re-evaluation.
- The medium of instruction and examination is English.
- Subject to the Statutes and Ordinances of the University, M.Tech. Course students shall remain under the control and discipline of the Course Coordinator.

