DEPARTMENT OF CHEMISTRY
UNIVERSITY OF DELHI
(FACULTY OF SCIENCE)

BULLETIN OF INFORMATION FOR ADMISSION TO
M. Tech. COURSE IN
CHEMICAL SYNTHESIS AND PROCESS TECHNOLOGIES
FOR THE ACADEMIC YEAR 2012-2013

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University of Delhi

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Ph: 27666646/101 (**Section Officer**)

Professor D. S. Rawat
Coordinator, M. Tech. (CSPT)

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IMPORTANT DATES

Last date for the receipt of complete application form: 6th July 2012

Date for display of first list of selected candidates: 16th July 2012

***Last date for deposition of fees: 19th July 2012 (12:00 noon)**

****Date for the start of classes: 23rd July 2012**

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

****In case of any problem associated with the admission to M. Tech. Course, the Head, Department of Chemistry is authorized to take the final decision.**

UNIVERSITY OF DELHI
दिल्ली विश्वविद्यालय

Professor Dinesh Singh
Vice-Chancellor

From the Vice-Chancellor's Desk

I am delighted to know that Department of Chemistry, University of Delhi is admitting the fifth batch of students to the M.Tech. Program in Chemical Synthesis and Process Technologies for the academic session 2012-2013. It is heartening to know that the course is running extremely well and many of the students have published research articles in prestigious international journals and the students are participating actively in the tutorials and the training programs arranged under the aegis of the course. The curriculum of this course is sufficiently focused on the development of practical knowledge to make the students immediately productive and concomitantly, the course also provides the necessary theoretical fundamentals to prepare the students to undertake meaningful research program in the area of chemical synthesis.

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

Dinesh Singh

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About University of Delhi

The University of Delhi is the premier University of the Country and is known for its high standards in teaching and research and attracts eminent scholars to its faculty.

The University of Delhi was established in 1922 as a unitary, teaching and residential University by an Act of the then Central Legislative Assembly. At present, there are 14 faculties, 86 academic departments and 79 colleges spread all over the city, with more than 3,00,000 students.

In an effort to cope with this enormous expansion, the University in the early seventies initiated a new organizational pattern based on the multi-campus concept. The South Campus made a beginning in 1973 by starting postgraduate programmes in some departments of the Faculty of Arts and Social Sciences in a rented building. The campus acquired land near Dhaula Kuan where the building of Arts Faculty was first constructed. Offices and teaching activities shifted to this campus in 1983. A beginning has been made towards establishing the East and West Campuses of the University. The East Campus is being developed with the University College of Medical Science as its nucleus, while the West Campus will have its focus on Engineering and Technology. When the University Grants Commission (UGC) started establishing Centers of Advanced Studies in the early sixties, six of the departments, namely in Chemistry, Physics, Botany, Zoology, Economics and Sociology were recognized as a “Center of Advanced Studies” at the University of Delhi. These Centers of Advanced Studies are now the centers of excellence in teaching and research in their respective areas. In addition, a number of these and other University Departments have received grants under the Special Assistance Programme of the UGC in recognition of their outstanding academic work. The University has 15 libraries. And each of the colleges has its own library. The University Science Instrumentation Centre (USIC) and Central Instrumentation Facility (CIF) have a number of sophisticated research instruments which are used by several departments of the University and by other academic institutions in Delhi and the neighbourhood. The University has just completed the implementation of fibre-optic networks on the North and South Campuses.

The University of Delhi provides several amenities to its staff and students. There is a post office and two banks on the campus for the use of the University community as well as general public. There is also a DTC Bus Pass counter as well as a Railway

Reservation Counter for use of University community. The Cooperative Store is run by the University Employees and it sells all the items of everyday use at discounted prices. The WUS Health Center provides comprehensive health services for the University community. The Computer Center and the University Press are some of the other facilities which can be used by the students and staff of the University. The University Guest Houses can be used by the University staff to house guests.

About Department of Chemistry

The Department of Chemistry of the University is one of the largest and oldest Chemistry Departments in the country with 77 faculty positions and nearly 225 research scholars in addition to 616 M.Sc. and M.Tech. students. The scientific contributions of the Department, in almost all frontline areas of Chemical Sciences and Chemistry interfacing with other such as Physical, Biological and Material Sciences have already made a mark on the international scene. The Department has so far published over 7100 research papers in journals of international repute and nearly 1750 students have received Ph.D. degrees for their work. More than 300 research projects funded by several national and international agencies in different areas of Chemical Sciences, both of pure and applied nature, have been successfully completed in the Department.

Objectives of the Course:

1. One of the fastest growing industrial sectors in India is the Pharmaceutical industries, which is thriving on the synthesis of patent free drugs and their intermediates. The total export value of the products of these industries is about six billion dollars annually. One of the objectives of the present M. Tech. course on **"Chemical Synthesis and Process Technologies"** is to train students to take up leadership in Indian pharmaceutical industries; no other University in India is offering such a course.
2. To train students in the fundamentals of chemical synthesis and process technologies.
3. To expose the students in relevant chemical industries / advanced laboratories / universities on chemical synthesis and process technologies in India or abroad by giving those a short term (2 semesters) advance training according to their specialization.
4. To encourage and nurture high creativity and innovative ideas among the students.
5. Special emphasis will be given on research and training in chemical synthesis

and process technologies which areconsidered to be productive and have direct relevance to chemical industries.

Affiliations:

The programme will be conducted by the Department of Chemistry, University of Delhi, and the degree will be given by the University of Delhi under the Faculty of Science.

Admission Criteria:

Total number of students to be admitted: *Twenty*

a. 50% Seats, i.e. 10 seats will be filled up on the basis of merit based on marks obtained by the candidates who have secured 60% or above marks in aggregate and 60% or above marks in Chemistry in B.Sc. (Hons.) Courses Examination from University of Delhi.

Or

70% or above marks in aggregate and 70% or above marks in Chemistry in B. Sc. (Programme) from University of Delhi.

Out of these 10 seats, 8 seats will be filled by B.Sc. (Hons) candidates and 2 seats will be filled by B. Sc. Programme candidates.

b. Remaining 50% seats, i.e. 10 seats will be filled up on the basis of merit based on marks obtained by the candidate in the Joint Admission Test (JAM)- 2012 to M. Sc. Chemistry, conducted by the Indian Institutes of Technology (IITs).

c. In addition to having passed BSc (H)/BSc (Programme) the candidates seeking admission to M. Tech. Course should have passed 10+2 (senior secondary) or equivalent examination recognized by the University of Delhi with Mathematics as one of the subjects.

The list of selected candidates will be displayed on the Notice Board of the Department of Chemistry, University of Delhi on 16th July 2012 and will also be posted on the Delhi University website: **htt://www.du.ac.in**, second and subsequent lists of selected candidates will be displayed, if necessary.

Note: Merely fulfilling the minimum qualification or the eligibility criteria does not entitle a candidate to be admitted in the course.

Deposition of Fee: The last date for deposition of fee for admission in the course in 19th July, 2012 (12.00 noon).

Fee: ₹ 4250/-per year.

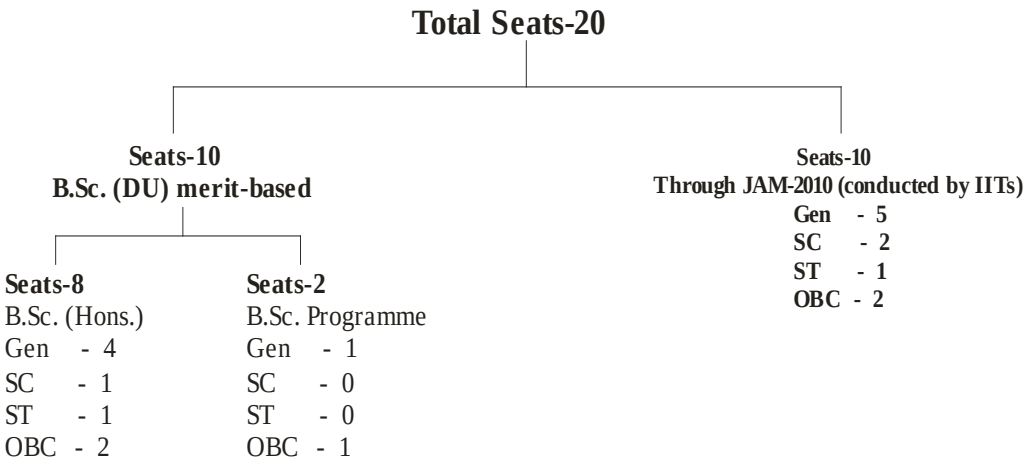
Scheme of Examination: Semester system

Internal Assessment (I.A.): As per University Ordinances

Reservations:

The under-mentioned categories carry the following reservations: 15% for Scheduled Caste (SC), 7½% for Scheduled Tribe (ST) and 27% for Other Backward Classes (OBC) for the year 2012-2013.

Category	Seats
Total no of seats	20
General	10
Schedule Caste	3
Schedule Tribe	2
OBC	5



Note: (i) Candidates belonging to the reserved categories may note that a column has been provided in the application form for the purpose. They are required to disclose this fact and indicate the same and are also required to enclose two photo-copies of the Scheduled Caste / Scheduled Tribe/Other Backward Classes Certificate Entitlement card.

(ii) For General/SC / ST/ OBC Candidates : In case two or more candidates have the same marks in JAM-2012, B.Sc. (Hons.) / B.Sc. Programme, preference will be given to the candidate born earlier.

Certificate Required For Scheduled Caste / Scheduled Tribe/ Other Backward classes:

For admission to a seat reserved for Scheduled Caste / Scheduled Tribe / Other Backward Classes, a certificate in original from an approved district authority stating the Scheduled Caste / Tribe / Other Backward Classes to which the candidate belongs. A list of approved authorities is given below:

(a) District Magistrate / Additional District Magistrate / Deputy Commissioner / Collector / Additional Deputy Commissioner / Deputy Collector / 1-Class Stipendiary Magistrate / City magistrate (not below the rank of 1-Class Stipendiary Magistrate / Sub-Divisional Magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner.

(b) Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.

(c) Revenue Officer not below the rank of Tehsildar.

(d) Sub-Divisional Officer of the area where the candidate and /or his / her family normally resides.

(e) Administrator / Secretary to Administrator / Development Officer (Locative & Minicoy Islands).

Age Requirements:

There is no minimum age requirement for admission to this M. Tech. Course of the University of Delhi.

Application Form for Admission:

The Bulletin of Information along with the application form can be obtained from the office of the Head, Department of Chemistry, University of Delhi (North Campus) on all working days (Monday to Friday) between 10.30 a.m. to 3.30 p.m. on remitting a bank draft of ₹ 250/-. The Bulletin of Information along with the application form can also be obtained by post on remitting a Bank Draft of ₹ 250/-. A self-addressed envelope of size (25 cms x 17 cms) with postage stamps worth ₹ 27/- affixed should also be enclosed with the request. The request for the Bulletin of Information should be addressed to: The Head, Department of Chemistry, University of Delhi (North Campus), Delhi-110007. Application form can also be downloaded from the website **http;//www.du.ac.in** and deposited at the Department of Chemistry along with a Bank Draft of ₹ 250/-.

In all the cases, the Demand Draft should be made in favour of **The Registrar, University of Delhi"** payable at State Bank of India, Service Branch, New Delhi (Code no.7687). Draft must be purchased only from the branches of State Bank of India. No application either complete or incomplete will be entertained after the last date of receipt of application in any case.

Incomplete applications will be rejected. Supplying false information may lead to cancellation of candidature. For any lapse on this account, the entire responsibility is of the candidates.

Classes:

A student has to pursue a regular course of study of Theory / Practical /Tutorials / Projects as prescribed by the University.

Span Period:

No student shall be admitted as a candidate for the examination for any of the semesters after the lapse of 5 years from the date of admission to the First Year of M. Tech. in "Chemical Synthesis and Process Technologies" programme.

Commencement of Classes: w.e.f. 23rd July 2012

Teaching Arrangement:

The teaching and the Laboratory work will be conducted by the faculty of the Department of Chemistry and specialized ad-hoc & guest faculty from other institutions

or industries.

Attendance:

No student shall be considered to have pursued a regular course of study unless he/she is certified by the Head, Department of Chemistry, University of Delhi, to have attended minimum 75% of the total number of lectures, and practical, separately conducted in each semester, during his/her course of study. Provided that he/she fulfils other conditions the Head, Department of Chemistry may permit a student to the next semester who falls short of the required percentage of attendance by not more than 10 per cent of the lectures and practical conducted during the semester.

Deposition of Fees:

The candidates selected for provisional admission to M.Tech. Course should report for admission in the office of the Department of Chemistry, University of Delhi.

Information About Residential Accommodation:

The University has limited residential accommodation in University hostels. The following institutions provide hostel accommodation.

HALLS/HOSTELS

S. No	Men	S. No	Women
1.	Gwyer Hall	1.	P.G. Women's Hostel
2.	Jubilee Hall	2.	Meghdoot Hostel
3.	P.G. Men's Hostel	3.	Geetanjali Hostel (South Campus)
4.	Dr. D.S. Kothari Hostel	4.	International Students' House for Women
5.	Mansarover Hostel	5.	Ambedkar Ganguly Students House for
6.	International Student's House (ISH)	6.	North-Eastern Students (NESHW)

Course Structure:

The M. Tech course in Chemical Synthesis and Process Technologies is a three year full time course consisting of six semesters.

Part I	First Year	Semester I	Semester II
Part II	Second Year	Semester III	Semester IV
Part III	Third Year	Semester IV	Semester VI

Examination and Scheme of Papers:

There shall be an examination at the end of each semester as per the details given below:

Scheme of Papers Part I (First year)

Semester I

Paper No.	Title of the Paper	Duration (hours)	Maximum marks	Credit
101	Spectroscopy-I and Stereochemistry	3	100	4
102	Reaction Mechanisms and Name Reactions	3	100	4
103	Analytical Chemistry and Group Theory and Its Applications	3	100	4
104	Thermodynamics & Chemical Kinetics and Quantum Chemistry	3	100	4
105	Practicals	12	150	6
	Total Marks in Semester I		**550**	**22**

Semester II

Paper No.	Title of the Paper	Duration (hours)	Maximum marks	Credit
201	Reagents in Organic Synthesis and Newer Synthetic Reactions and Methodologies	3	100	4
202	Solution Chemistry and Catalysis in Chemical Synthesis	3	100	4
203	Spectroscopy-II and Heterocyclic Chemistry	3	100	4
204	Chemistry of Life Processes and Naturally Occurring Bioactive Compounds	3	100	4
205	Practicals	12	150	6
	Total Marks in Semester II		**550**	**22**

Part II (Second year)

Semester III

Paper No.	Title of the Paper	Duration (hours)	Maximum marks	Credit
301	Philosophy of Organic Synthesis and Biopolymers	3	100	4
302	Medicinal Chemistry and Polymorphism & Bioinformatics, Molecular Modeling and Drug Designing	3	100	4
303	Process Development and Technologies & Industrial Management	3	100	4
304	Industrially Important Solids & Petroleum Products, Perfumery, Oils	3	100	4

	and Paints			
305	**Practicals**	12	150	6
	Total Marks in Semester III		**550**	**22**

Semester IV

Paper No.	Title of the Paper	Maximum marks	Credit
401	Project Work	400	16

Part III (Third year)

Semester V

Paper No.	Title of the Paper	Maximum marks	Credit
501	Project Work (Continued)	400	16

Semester VI

Four out of following five papers (Nos. 601 to 605) are to be opted by the student in the beginning of the semester VI.

Paper No.	Title of the Paper	Duration (hours)	Maximum marks	Credit
601	Photochemistry & Green and Sustainable Chemistry	3	100	4
602	Polymer Chemistry and Drug Delivery Technologies	3	100	4

603	Supramolecular Chemistry and Organo-metallics & Bioinorganic Chemistry	3	100	4
604	Chemical Engineering & Agrochemicals and Biopesticides	3	100	4
605	Pharmaceutical, Formulation and Advanced Drug Delivery Technologies Development	3	100	4
606	Practicals	12	150	6
	Total Marks in Semester VI		**550**	**22**

Total Marks in M.Tech Course = 3000
Total Credits in M.Tech Course = 120

Note: Each practical examination shall consist of two papers, each of six hours duration, suitably spread over two days and shall be at the end of semesters I, II, III and VI. The 25% of the marks will be reserved for the laboratory records of the candidates and 15% marks for viva-voce.

Project Evaluation: The project work taken up during semesters IV and V will be evaluated by a board of three examiners.

Project Based Experimental Training:

Based on the performance in semester's I-III and/or entrance test, some selected students may be sent for Project based experimental training in Indian or Foreign University / Institute Industry during semesters IV and V.

Out of sixteen students of Third batch, ten students are doing their experimental project work at Japan Advanced Institute of Science and Technology, Kanazawa, Japan; Three students each have been doing their experimental project work at Institute of Life Sciences ILS, Hyderabad, and Indian Oil Corporation (IOC), Faridabad, and one student at Ambedkar Centre for Biomedical Research, University of Delhi.

The students doing their experimental project work at Japan Advanced Institute of Science and Technology, Kanazawa, Japan; are being awarded Master of Materials Science degree of JAIST under the DU-JAIST dual education programe.

Indian Institute of Chemical Technology (IICT), Hyderabad, Central Institute of Aromatic and Medicinal Plants (CIMAP), Lucknow, and some leading Pharmaceutical Companies have also agreed to take our M. Tech (CSPT) students for experimental based project work. However, each year number of students going outside for project work will depend on the performance of the students, seat availability at the host institute and available infrastructures.

Scheme of Examination:

1. English shall be the medium of instruction and examination.

2. Examinations shall be conducted at the end of each semester as per the Academic Calendar notified by the University of Delhi.

3. The system of evaluation shall be as follows:

3.1 Each course will carry 100 marks, of which 30 marks shall be reserved for internal assessment based on class room participation, seminar, term courses, tests and attendance. The weight age given to each of these components shall be decided and announced at the beginning of the semester by the individual teacher responsible for the course. Any student who fails to participate in classes, seminars, term courses, tests, will be debarred from appearing in the end-semester examination in the specific course and no Internal Assessment marks will be awarded. His/her Internal Assessment marks will be awarded as and when he/she attends regular classes in the course in the next applicable semester. No special classes will be conducted for him/her during other semesters.

3.2 The remaining 70 marks in each paper shall be awarded on the basis of a written examination at the end of each semester. The duration of written examination for

each paper shall be three hours and the practical examination shall be six hours.

4. Regular as well as ex-students shall be permitted to appear/re-appear/improve in courses of earlier semesters as per details given below:

(a) Papers of semester I can be taken (repeated) only at the end of semester III.

(b) Papers of semester II and III can be taken (repeated) only at the end of semester I.

(c) In no case, a student can repeat / reappear in any practical examination and project based experimental work of semesters I, II, III, VI and semesters IV, V respectively.

Promotion Rules:

Minimum marks for passing the examination in each semester shall be 50% aggregate in theory paper and practical / project, separately. Further, passing marks in each paper shall be 45%.

However, a candidate who has been promoted but has not secured the minimum marks in individual paper may reappear in the same in the concerned semester in order to secure the minimum marks prescribed to pass the individual papers (semester Ist papers in semester IIIrd and semester II/III papers in semester VIth theory paper).

The candidate should have passed at least four of the theory papers offered in courses of Part I comprising semester I and semester II by securing at least 45% marks in each of these four papers and should have secured at least 50% aggregate in all theory papers and practical's of Part I separately.

Award of Degree:

A candidate will be awarded M. Tech. degree at the end of semester VI provided he /she have:

1. Passed all the theory papers of Part I (semesters I & II), Part II (semester III) and Part III (semester VI) by securing at least 45% marks in each paper and has also obtained at least 50% in aggregate of Part I, Part II & Part III.

2. Passed the practical examination by securing at least 50% in aggregate of Part I (semesters I & II), Part II (semester III) and Part III (semester VI) and passed every practical examination (at the end of semesters I, II, III and VI with minimum of 45% each).

3. Passed Project work (conducted during semester IV in Part II & semester V in Part III) by securing at least 50% marks.

Scope of Improvement:

1. A candidate is allowed to reappear ONLY in THEORY papers and not in any practical of examination of semesters I, II, III and VI.

2. A candidate can avail a maximum of three attempts to pass and improve in a given paper within a period of 5 years of his/her admission to the M. Tech. course.

3. A candidate appearing in a paper for improvement after completion of Part III of the program will be considered as an ex-student.

4. Candidate will be allowed to reappear at the examination according to the scheme of examination (in the respective semester) and the syllabus prescribed for the year in which the examination is currently being held.

5. The marks obtained by the candidate in the last attempt will be considered for the final result.

Division Criteria:

Successful candidates will be classified on the basis of the combined results of Part I, Part II and Part III examinations as follows:

Candidates securing 60% and above: Ist Division

Candidates securing 50% or more but less than 60%: IInd Division

Research Publications of M. Tech. (CSPT) Students:

Most of the M. Tech students have published their work in high impact factor journals such as *Advanced Functional Materials, Journal of Material Chemistry, Sensors and Actuators B, Nanotechnology, Catalysis Today, Green Chemistry, and Chemical Communications.* **Total 16 research papers have been published so far by the M. Tech (CSPT students.**

Interview for PhD admission to JAIST through SKIPE (May 2012)

Placement of M.Tech (CSPT) First Batch (2011)

S.No.	Name	Name of institute
1.	Amit Kumar	Doctoral student at JAIST, Japan
2.	Ashwani Kumar	Lecturer in I. P. University, Dwarka-16 C, Delhi
3.	Manu Chauzar	Research Analyst at Curadev Pharma, Noida, India
4.	Md. Asif Ali	Doctoral student at JAIST, Japan
5.	Navneet Kr Gupta	Doctoral student at JAIST, Japan
6.	Pinaki Saha	Research Analyst at Curadev Pharma, Noida, India
7.	Prerna	Doctoral student at JAIST, Japan
8.	Rahul Bhardwaj	Doctoral student at JAIST, Japan

9.	Ranjodh	Doctoral student at National Chi Nan University, Taiwan
10.	Roopender	Doctoral student at Free University, Berlin, Germany
11.	Satnam Singh	Doctoral student at Edith Cowan University, Australia
12.	Sumant Diwedi	Doctoral student at JAIST, Japan

INSTRUMENTS IN THE M. Tech LAB