

GENERAL RULES AND GUIDELINES
FOR
INTEGRATED M. Sc. PROGRAMME
AT
UM-DAE CEBS
(Academic Year 2018-19)



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1. PREAMBLE

The University of Mumbai-Department of Atomic Energy Centre for Excellence in Basic Sciences (UM-DAE CEBS) germinated as a result of brainstorming of some senior academicians like Dr. Anil Kakodkar, then Chairman, Atomic Energy Commission and Secretary to Government of India, Prof. Vijay Khole, then Vice Chancellor of UM, and Prof. Shashikumar Chitre on strengthening higher education in basic sciences in India. Although dedicated basic science institutions, such as two IISERs (Kolkata and Pune) had been created, it was felt that alternate models with lesser financial outlay and embedded in a University environment, should be explored. As a result, UM-DAE CEBS was created as a brand institution in the field of Basic Sciences on the campus of University. Accordingly, a memorandum of understanding (MoU) between the University of Mumbai (UM) and the Department of Atomic Energy (DAE), Government of India for starting ‘Centre for Excellence in Basic Sciences (CEBS)’ was signed on March 27, 2007. UM-DAE CEBS started functioning as a BRNS (Board of Research in Nuclear Sciences) funded project from 17 September, 2007 with the induction of first batch of 5-year Integrated M. Sc. students (18 Nos) in physics stream. Initially (2007 and 2008) students were admitted in physics stream, from 2009 Physics, Chemistry and Mathematics streams were started while from 2010 students in all four streams were inducted. The Centre has *ipso-facto* autonomy with regard to academic, financial and administrative activities.

Teaching activities are carried out by the core faculty and is supplemented by a large visiting faculty from neighbouring institutes like the Bhabha Atomic Research Centre (BARC), Tata Institute of Fundamental Research (TIFR), Homi Bhabha Centre for Science Education (HBCSE) and invited teachers from local colleges and the University of Mumbai. The Centre has established excellent organic linkages with the University Departments and Constituent Colleges. One of the hall marks of CEBS is its Visitors' program. Visiting and Adjunct faculty coming from proximate research institutions contribute immensely to the teaching and research programs at the Centre. The primary objective of the Centre is to enhance the quality of undergraduate education in basic sciences in an integrated manner for seamless convergence to their higher studies, by implementing innovative teaching methods that emphasize creative thinking, and help develop experimental and analytical skills through laboratory as well as project works. This would partially satisfy the inevitably increasing demand for highly qualified, motivated, and talented young scientific manpower and also prepare them to pursue their career in emerging research areas in the field of basic sciences. In short, the Centre aims at performing the role of a world-class teaching in natural sciences and a hub of highly creative research and technology development in various areas of basic sciences.

The *Union Cabinet* has approved an ‘*Aided Institution*’ status to CEBS on 18 December 2015. Effective from 1 January 2016, CEBS has been notified as an aided institution of the Department of

Atomic Energy, Government of India. CEBS is also Registered under Society Registration Act, 1860 on 31 May 2017 (No. 1383) as well as under Bombay Public Trust Act, 1950 on 17 October 2017 (No. 69356 (M)).

2. ACADEMIC PROGRAMME: FIVE-YEAR INTEGRATED M. Sc.

UM-DAE CEBS offers a five-year integrated M.Sc. Programme in basic sciences to the students who enrol after their 10+2 years of schooling (or equivalent). Once a student completes the academic programme successfully, he/she is awarded a Master of Science (M. Sc.) degree in one of the subjects (Biology, Chemistry, Mathematics or Physics) from Mumbai University. The Centre also plans to run research programme leading to Ph. D. degree in all these subjects.

2.1 ADMISSION PROCEDURE

There are two routes for admission of the students to the Centre. The policy of the Government of India regarding reservation of seats for admission is followed.

- (a) Students are admitted to the M.Sc. Programme of the Centre based on the performance in the National Entrance Screening Test (NEST) conducted every year at several venues across the country. Eligibility criteria for appearing in NEST are: (i) Students who have either passed class-XII examination in the past two years or appearing in the class-XII examination of a recognised Board in India (ii) secured minimum 60% marks for general category and 55% for SC/ST/PD candidates and (iii) not more than 20 years of age which is relaxable to SC/ST/PD candidates as per GoI rules.
- (b) The KVPY/Olympiad route for admission is also available from 2018—2019 Academic Session, details of which including the qualifying criteria are given on the website of the Centre, www.cbs.ac.in.

2.2 SCHOLARSHIPS

- (a) All students admitted to the Centre through the NEST route are eligible for DST-INSPIRE or DAE-DISHA scholarship during the first year. The continuation of the scholarship in subsequent years will depend on performance and will be governed by the rules framed by the Department of Science & Technology (DST) / Department of Atomic Energy (DAE), Government of India from time to time. At present, a student receives a scholarship of ₹ 5,000 per month and a summer internship grant (mentorship cost) of ₹ 20,000 per year.
- (b) Students admitted through NEST route, those who are eligible for KVPY scholarships, can avail the same, but not in parallel with DST-INSPIRE or DAE-DISHA scholarships. The

continuation of scholarship beyond first year will be guided by the KVPY rules (www.kvpy.iisc.ernet.in).

- (c) Students admitted through the KVPY route are required to avail their KVPY scholarships only, for which the continuation beyond first year will again be guided by the KVPY rules.
- (d) All students are entitled to receive a book grant of ₹ 6,000 per academic year. (Each academic year comprises of two semesters: i) Autumn Semester (August to November) and ii) Spring Semester (January to April).
- (e) There is also a provision for merit-cum-means scholarship for eligible students.

2.3 RESIDENCE REQUIREMENT

The integrated M. Sc. programme of the Centre is a fully residential course and hence students are required to stay in the hostels provided by the Centre for the entire duration of each semester of the programme. A nominal fee is charged for hostel accommodation. The students are entitled for about 25 days of winter vacation (typically, 5th December to 31st December) and about three months of summer vacation (typically, 5th May to 31st July).

3. CURRICULUM

The curriculum for the students is detailed in the brochure 'Courses of Study', available in the Dean's office. The course structure is available on the website. The syllabus is formulated by a Syllabus Committee constituted by the Director of the Centre and approved by its Academic Board. The course structure is designed so as to help the student to perform a journey from introduction of the subject in the first semester to an advanced level of understanding in the final semester and also give him/her glimpses of contemporary research in the stream of specialization and/or other interdisciplinary areas.

- (a) The curriculum for the first two semesters (first year) is common to all students and will consist of (i) Introductory theory courses in biology, chemistry, mathematics and physics, (ii) Laboratory courses, and (iii) courses in communication skills, computer basics as well as electronics.
- (b) At the beginning of the second year (third semester), a student will opt for specialization in one of the streams (Biology, Chemistry, Mathematics or Physics) and will be allotted a seat based on his/her academic performance in the first year.
- (c) In the second and third years of study, the students are taught courses not only in the specialised discipline, but often courses from other science disciplines as well, as recommended for an integrated understanding of the subject matter.

- (d) The courses in fourth and fifth years of the integrated M.Sc. Programme are more advanced in nature and are mainly from the respective disciplines, although there are some interdisciplinary elective courses to choose from.
- (e) The Centre focuses on imparting a complete education and prescribes some compulsory courses which belong to humanities, social sciences, technical communication, history of science, environmental and energy sciences, etc.
- (f) In order to expose the young minds to research early in their career, the students are offered projects from 4th year onward. Thus, in 7th semester they are exposed to supervised learning of a research topic, followed by a mini research project in 8th semester. The 9th semester entails a dissertation, spanning about 25 weeks, during May to November.
- (g) The Centre always supports enhancement of the Curriculum through value-added activities. The students are thus encouraged to take up summer projects and visit reputed national, international laboratories and universities, so as to broaden their vision and widen their horizon. In this context, exposure and linkages with the DAE institutions and programmes are given special emphasis for the students. Academic visits to important research institutes of the city make an impact on the young minds as they are exposed to the various research programmes and facilities in these institutes.

Students also get an opportunity to learn from and interact with eminent scientists from India and abroad who are invited to the Centre at regular intervals to deliver colloquia and seminars. The colloquia are generally scheduled to be organised on Tuesday in the afternoon slot, and the students are expected to attend the same.

3.1 COURSE STRUCTURE AND CREDIT REQUIREMENTS

- (a) The curriculum consists of lecture (including tutorials) and laboratory (practical) courses. Each course is identified by a unique code and title. Being a credit-based system, weightage of each course in the curriculum is measured by assigning a credit depending on the contact hours per week. Typically, a four-credit course corresponds to four contact hours per week.
- (b) For a student to qualify for the 5-year integrated M.Sc. degree, he/she is required to accumulate at least 240 credits, the average number of credits per semester is thus approximately 24.

3.2 ACADEMIC CALENDAR

To carry out all the academic activities in a smooth and timely manner, a duly approved Academic Calendar, which is released at the beginning of each academic year, is strictly followed for execution of academic activities, starting from registration of courses to declaration of examination results. (Refer to www.cbs.ac.in for details).

3.3 REGISTRATION FOR COURSES

- (a) Each student has to register for the courses at the beginning of each semester on the dates mentioned in the Academic Calendar, irrespective of whether the course is compulsory or elective. The responsibility of course registration lies solely with the student.
- (b) Late registration may be permitted with prior approval by the Dean (Academic Affairs) with a payment of late registration fee. A student will however not be allowed to register after the prescribed last date for late registration and/or change/drop of courses.
- (c) Students may opt for auditing certain courses, with permission from the respective instructor and the office of the Dean, over and above the prescribed course work.

4. ACADEMIC ADMINISTRATION

In Academic Administration, the supreme, statutory body that formulates, approves, and governs all the academic programmes of the Centre is the Academic Board and the rulings of its Chairperson shall be treated as final in all matters of academic activities. The other key positions in Academic Administration are the Dean (Academic Affairs), Associate Dean (Academic Affairs), Academic Affairs Committee and Chairs of Schools.

4.1 DEAN, ACADEMIC AFFAIRS AND THE ACADEMIC OFFICE

The Academic office working under Dean (Academic Affairs) is responsible for the implementation of the decisions/recommendations of the Academic Board on academic matters. The office of the Dean takes care of all academic matters of students till the completion of their courses. It processes and maintains all academic records related to courses, academic calendar, course registration, leave, teaching, examinations, grades, degrees, certificates, etc. It also serves as a link between the students, teachers, Schools and the Centre.

4.2 ACADEMIC AFFAIRS COMMITTEE

The Director of the Centre constitutes an Academic Affairs Committee, comprising of the Dean (Academic Affairs) as the chairperson, and the Associate Dean (Academic Affairs) and chairpersons of the School of Chemical Sciences, School of Physical Sciences, School of Biological Sciences and School of Mathematical Sciences as members. This Committee shall meet as and when required to

discuss about general policy matters, coordination and review of the academic matters, modifications of contents/credits of already approved courses, examinations and declaration of results, procedures to deal with weak students, any other matter to be referred to Academic Board, etc.

4.3 FACULTY ADVISOR

Every student, on joining in the first year, is assigned to a Faculty Advisor (mentor), who will generally remain associated with the student throughout his/her stay at the Centre unless change is required for some reason. The Faculty Advisor plays an important role in the student's life at the Centre and provides an important link between a student and the Centre.

- (a) The Faculty Advisor may bring to the notice of the Dean (Academic affairs), any deficiency or special calibre of a student so as to propose to reduce or enhance (as the case may be) his/her academic course load, in the interest of the student.

- (b) The Faculty Advisor is expected to keep track of student's academic performance and social life and any troubled phase, signs of depression, or any kind of addiction, and alert the appropriate authorities, for necessary help or counselling.

5. TEACHING & EVALUATION OF THE STUDENTS

Teaching constitutes the most important activity of the Centre. The medium of instruction in the Centre is English. The courses chosen are based on the recommendation of expert committee and are approved by the Academic Board of the Centre. The teaching Faculty is drawn from the core faculty of the Centre and from the teachers/scientists of different Institutes.

- (a) The faculty members teach courses, conduct examinations, evaluate performances of the students, and submit grades to the Dean's office.

- (b) Assessment is an important part of teaching at the Centre. Attendance in lectures, tutorials and laboratory classes is compulsory. There is a continuous evaluation for each course besides the mid-semester and end-semester examinations. The continuous evaluation may be based on class tests, quizzes, attendance, assignments, class work, seminars, projects, reports, etc. and is left to the discretion of the course Instructors.

- (c) For each course, the relative weights for continuous evaluation, mid-semester examination and end-semester examination shall be 40%, 20% and 40%, respectively. The marks as well as letter grades are finally assigned by the Instructors based on the cumulative performance of the student in the course during the semester.

- (d) CEBS follows a grading system with seven passing grades. The letter grades and the corresponding grade points are as follows:

O	10
A⁺	9
A	8
B⁺	7
B	6
C	5
P	4
F	0

- (e) Since each letter grade corresponds to a grade point, an index known as the Semester Grade Point Average (SGPA) is calculated by taking a weighted average of the grade points of all the courses in a semester, using the credits of each course as the weight factors. Analogously, CGPA is also calculated in the same manner but by taking a weighted average of the grade points of all the courses a student has taken so far, using the credits of each course as the weight factors.
- (f) If a student gets an F (Fail) grade in a course, he/she will have to appear for a re-examination, as per the schedule spelled out in the Academic Calendar. In such cases, the student can get at the best minimum passing grade.
- (g) II or Incomplete Grade: Only students with a satisfactory in-semester record like quizzes, assignments, etc. but who has missed the end-semester examination for medical reasons or for a valid reason acceptable to the Dean (Academic Affairs) may be awarded II grade. II Grade must, however, be converted by the teacher into an appropriate letter grade by giving make-up examination and communicated to the Dean's office.
- (h) Attendance in lectures, tutorials and laboratories is compulsory. If a student fails to have attendance below 85% in any course, an appropriate penalty will be imposed as per the existing rules of the Centre.

6. TERMINATION OF CANDIDATURE AND WITHDRAWAL FROM THE COURSE

- (a) At the beginning of the second academic year, if a student has a CGPA less than 4.0 and/or has accumulated two or more F grades, then the student's enrollment in the programme and continuation at CEBS shall be terminated.
- (b) At the beginning of the third academic year, if a student has a CGPA less than 4.0 and/or has accumulated two or more F grades, then the student's enrollment in the programme and continuation at UM-DAE CEBS shall also be terminated.
- (c) At the beginning of the fourth academic year, if a student has a CGPA less than 4.0 and/or has accumulated two or more F grades, then the student's enrollment in the programme and continuation at CEBS shall be terminated. A B.Sc. degree, may be awarded, if the student fulfills the credit requirements of 140.
- (d) The continuation of a student in the academic programme or in the hostel may be terminated if he / she involves himself / herself, in misconduct.
- (e) Normally, withdrawal from the M.Sc. programme is not permitted, although a student might be allowed to withdraw from the programme as a special case based on justifiable grounds, as determined by the Centre Administration.

7. REQUIREMENTS FOR THE AWARD OF DEGREE (M. Sc.)

A student shall be awarded M.Sc. degree, if the he/she passes all the required courses and accumulates a total of at least 240 credits. The student also has to clear all the dues to the Centre and there should not be any disciplinary action pending against him/her.

8. CODE OF CONDUCT AND DISCIPLINE

- (a) The students are expected to maintain decorum and discipline in the Centre. Further, they are expected to behave courteously with all the members of the CEBS community.
- (b) Misconduct, indiscipline, wilful damage to property, unethical behaviour and breach of Centre and hostel rules shall attract disciplinary action.
- (c) Quantum of punishment for any breach of the rules of the Centre may include expulsion from the programme and / or hostel, monetary fines, academic penalties and reprimands.

- (d) Use of unfair means in examinations or plagiarism in project reports or any other breach of academic etiquette will be dealt with seriously by the Dean's office.
- (e) Severe offences will be referred to the Disciplinary Action Committee, duly constituted by the Director.
- (f) Ragging in any form or of any kind, sexual harassment or any other illicit activity is prohibited and is considered a serious offense and can lead to expulsion of the student from the Centre.

9. HOSTEL RULES

Please refer to the CEBS Website (www.cbs.ac.in) for details.

10. CANTEEN

UM-DAE CEBS has canteen facility.

11. AMENDMENTS

The Academic Board of UM-DAE CEBS reserves the right to modify and/or amend this document without notice, with respect to different aspects mentioned in the manual, pertaining to its undergraduate programmes.