

**UNIVERSITY OF MUMBAI**

**No. UG/128 of 2016-17**

**CIRCULAR:-**

A reference is invited to the syllabi relating to the Master of Pharmacy (M.Pharm.) degree course vide this office Circular No.UG/319 of 2004, dated 5<sup>th</sup> August, 2004 and the Principals of affiliated Colleges in Pharmacy are hereby informed that the recommendation made by Ad-hoc Board of Studies in Pharmacy at its meeting held on 7<sup>th</sup> July, 2016 has been accepted by the Academic Council at its meeting held on 14<sup>th</sup> July, 2016 vide item No. 4.16 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for Master of Pharmacy (Sem. I to IV), which is available on the University's web site ([www.mu.ac.in](http://www.mu.ac.in)) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032

9<sup>th</sup> November, 2016

  
(Dr.M.A.Khan)  
REGISTRAR

To,

The Principals of affiliated Colleges in Pharmacy.

**A.C/ 4.16/14/07/2016.**

\*\*\*\*\*

No. UG/128-A of 2016

MUMBAI-400 032

9<sup>th</sup> November, 2016

Copy forwarded with compliments for information to:-

1. The Dean, Faculty of Technology,
2. The Chairmen, Board of the Studies in Pharmacy.
3. The Director, Board of College and University Development,
4. The Controller of Examinations,
5. The Co-Ordinator, University Computerization Centre.

  
(Dr.M.A.Khan)  
REGISTRAR

... PTO

**M. Pharm. Choice Based Credit System (CBCS)[2016-17]  
Scheme Examination Semesters I to IV  
&  
Syllabus Semesters I to IV**

**For ALL BRANCHES OF M. PHARM.**

**[REVISED 2016]**

## M. Pharm. Semester I: ALL BRANCHES OF STUDY

**Total Credits: Semester I – 24**

Subject Code	Subject	Type of course (C/CBS)	Credits	Contact (hrs/wk)	ESE (hr)	Weightage CIA	Weightage ESE
MPH_C_101_T	Modern Pharm. and Med. Chem.	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_102_T	Modern Pharmaceutics	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_103_T	Modern Pharmacology	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_104_T	Modern Analytical Techniques	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_105_T	Study of Natural Products	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_106_S	Seminar	C_NUES	4	4 IL	-	100 IA	

***IA Internal Assessment;***

***ST Sessional Test/s;***

***L Lectures;***

***IL Integrated Learning involving Tutorials, Group Discussions, Assignments, Field Work;***

***P Practicals, Lab. work, Project;***

***CBS Choice Based Subject;***

***ESE End Semester Examination;***

***A Attendance,***

***C Core;***

***S Self Study.***

In Semester I learners of all Branches will take the above 5 subjects, irrespective of their area of specialization in M. Pharm. The Evaluation pattern for every subject will be 20 marks for Continuous Internal Assessment (CIA) and 80 marks for the End Semester Examination. The 20 marks for CIA will be divided into 5 marks for Attendance and 15 marks for a sessional test held mid-semester.

Every learner will deliver a Seminar. This will be evaluated at the college level by a Committee consisting of the Principal, and faculty of the Department in which the student will be doing his

research work. After the conduct of the Seminar the marks will be forwarded by the college/institution to the University.

### M. Pharm. Semester II: ALL BRANCHES OF STUDY

**Total Credits: Semester II – 24**

Subject Code	Subject	Type of course (C/CBS)	Credits	Contact (hrs/wk)	ESE (hr)	Weightage CIA	Weightage ESE
MPH_C_201_T	Biostatistics and Research Methodology	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_2XX_T	Core I	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_2XX_T	Core II	C	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_E_2XX_T	Choice Based Subject I	CBS	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_E_2XX_T	Choice Based Subject II	CBS	4	3 L + 1 IL	3	15 ST + 5 A	80
MPH_C_299_L	Experimental Techniques in Pharmaceutical Sciences	C	4	8 P	6	15 ST + 5 A	80

***IA Internal Assessment;***

***ST Sessional Test/s;***

***L Lectures;***

***IL Integrated Learning involving Tutorials, Group Discussions, Assignments, Field Work;***

***P Practicals, Lab. work, Project;***

***CBS Choice Based Subject;***

***ESE End Semester Examination;***

***A Attendance,***

***C Core;***

***S Self Study.***

In the second semester, there will be one common paper (Biostatistics and Research Methodology) and a practical (Experimental Techniques in Pharmaceutical Sciences) for all the branches of specialization. At present the syllabus for Experimental Techniques in Pharmaceutical Sciences has been prepared for the main branches of specialization – namely Pharmaceutical Chemistry/Medicinal Chemistry, Pharmaceutics, Pharmacognosy, Pharmaceutical Analysis/Quality Assurance and Pharmacology. Learners of other branches of specialization like Clinical Pharmacy, Medicinal

Natural Products, Biopharmaceutics and Pharmacokinetics etc. can choose to do the exercises prescribed for any one of the above mentioned branches, preferably selecting something closest to their branch of specialization. Each Branch of Specialization will also have two Core subjects in the Branch of Specialization and two Choice Based Subjects that may be selected from the List of Choice Based Subjects specified in the Syllabus.

The ESE in the subject Experimental Techniques in Pharmaceutical Sciences will be conducted by the college/institution on behalf of the university. After the conduct of the examination, the marks will be forwarded by the college/institution to the University

## **M. Pharm. Semester III and Semester IV: ALL BRANCHES OF STUDY**

**Total Credits: Semester III – 24 (MPH\_C\_301\_D), Semester IV-24 (MPH\_C\_401\_D)**

### **Research work related to the title of the thesis that has been registered with the University.**

The learner should be allotted a Research Guide in Semester I. The Guiding Teacher (Research Supervisor) along with the learner may plan the Research area to be pursued during Semesters III and IV. The title of the thesis should be communicated to the University before the commencement of Sem. III. Title change request if any, at a later time, should have a valid reason and will be considered under the existing rules of the University for title change (minor or major). Any request for change in title should be communicated to the University by the learner through the Research Guide and the Principal of the College/Institute. The learner is expected to work a minimum of 40 hrs/week in Research to be entitled for 24 Credits each in Semester III and IV. The Guiding Teacher (Research Supervisor) will sign a statement to this effect at the conclusion of Semesters III and IV, which may be communicated to the Controller of Examinations at the conclusion of each semester. Before completing the course, the learner will be required to give a Colloquium on the research work carried out by him/her during Semesters III and IV. The Colloquium will follow an open structure and will be assessed besides others by the Head of the Department, the Guide and the Principal of the College. A Statement that the learner has delivered a Colloquium must be sent to the University and will be mandated before the conduct of the viva-voce examination by the University.

Learners should be encouraged to attend conferences, seminars where they may present their research work, and to publish the findings of their research.

There will be no ESE at the end of Semester III. A learner will be permitted to submit his/her synopsis no earlier than 20 months (after 20 months) from the beginning of the M. Pharm program as instructed by the Government/Regulatory Authority for the respective year, BUT will have to submit the final thesis by the end of 24 months from the beginning of the M. Pharm program as instructed by the Government/Regulatory Authority. The time between submission of synopsis and thesis should be at least one month.

**Any late submission of synopsis or thesis will result in the learner requiring to keep terms for the next semester and any subsequent semester/s till the learner finishes his/her degree.**

At the end of Semester IV the learner will submit a thesis to the university. This will jointly be evaluated by the guiding teacher and an external examiner appointed by the university from academia or from the pharmaceutical industry. The evaluation will be for a total of 100 marks (**value of 48 credits**), of which 50 marks will be given by the guiding teacher and 50 marks by the external examiner. The parameters on which the marks will be given are: a. Literature Survey (10 marks) b. Presentation (8 marks) c. Methodology (7 marks) d. Results and Discussion (10 marks) and e. Viva-voce (15 marks). This makes a total of 50 marks each to be given by the guiding teacher and by the external examiner separately. These marks will be allotted to the course designated as **MPH\_C\_301\_D + MPH\_C\_401\_D for a total value of 48 credits.**

**The submission of synopsis and the holding of the viva voce examination shall be done independent of the fact whether the student has successfully cleared semester I and Semester II. However, the result of the viva voce of M. Pharm. Examination will be declared only if the student has successfully cleared Semester I and Semester II examinations**

**Total Credits for M. Pharm:**

**Semester I -24 + Semester II -24 + Semester III - 24 + Semester IV - 24 = 96 credits**

## INTRODUCTION

### **Recommendations of National Regulatory Authorities**

**The University Grants Commission (UGC), the National Assessment and Accreditation Council (NAAC), the Distance Education Council (DEC) and the National Knowledge Commission (NKC)** have time and again come out with recommendations for improving the quality and effectiveness of Higher education provisions in the country. The ministry of Human Resource Development at the Central level and the Ministry of Higher & Technical Education, Govt. of Maharashtra have also repeatedly stressed on the need for universities to pay prompt attention to improve the quality of education. **The National Knowledge Commission (NKC)** under the chairmanship of Mr. Sam Pitroda, in its report to the Prime Minister on 29th November 2006) has also reiterated the importance of higher education and the contribution it has made to economic development, social progress and political democracy in independent India.

An important concern voiced more strongly in recent times, is the need to develop a Choice-Based Credit System (CBCS) in tune with global trends and the adoption of a sound grading system for reflecting learner performance. This is in line with the **recommendation of the UGC** in its *Action Plan for Academic and Administrative Reforms* (Ref. UGC letters January 2008; March 2009) “..... *Curricular flexibility and learners’ mobility is an issue that warrants our urgent attention. These can be addressed by introducing credit based courses and credit accumulation. In order to provide with some degree of flexibility to learners, we need to provide flexibility in course selection and also a minimum as well as a maximum permissible span of time in which a course can be completed by a learner... The Choice-Based Credit System (CBCS) imminently fits into the emerging socioeconomic milieu, and could effectively respond to the educational and occupational aspirations of the upcoming generations. In view of this, institutions of higher education in India would do well to invest thought and resources into introducing CBCS. Aided by modern communication and information technology, CBCS has a high probability to be operationalised efficiently and effectively — elevating learners, institutions and higher education system in the country to newer heights...*”.

### **Rationale for introduction of Credit and Grading System**

The UGC while outlining the several unique features of the Choice-Based Credit System (CBCS) has, in fact, given in a nutshell, the rationale for its introduction. Among the features highlighted by the UGC are: *Enhanced learning opportunities, ability to match learners' scholastic needs and aspirations, inter-institution transferability of learners (following the completion of a semester), part-completion of an academic programme in the institution of enrolment and part-completion in a specialized (and recognized) institution, improvement in educational quality and excellence, flexibility for working learners to complete the programme over an extended period of time, standardization and comparability of educational programmes across the country, etc.*

This Choice Based Credit System enables a much-required shift in focus from teacher-centric to learner-centric education since the workload estimated is based on the investment of time in learning, not in teaching. It also focuses on continuous evaluation which will enhance the quality of education. It can be concluded from the above discussion that it is very much essential to implement the Choice Based Credit System in higher education in India. Course credit structure, examination/assessment and grading are mainly focused aspects of this manual and discussed in subsequent chapters.

## 1. ADMISSION CRITERIA

### 1.1 B. Pharm.

Admission to the B. Pharm. program of University of Mumbai is governed by the rules and regulations of University of Mumbai and is as per norms of the Govt. of Maharashtra through the Directorate of Technical Education (DTE), the All India Council for Technical Education (AICTE, New Delhi), and Pharmacy Council of India (PCI, New Delhi). Minimum qualification for admission into Bachelor of Pharmacy program would be according to the rules and regulations of AICTE, PCI, DTE and University of Mumbai in force at the time of admission.

In general, a learner who has passed HSC or its equivalent examination with Physics and Chemistry as compulsory subjects along with one of the Mathematics or Biotechnology or Biology and obtained at least 45% marks (at least 40 marks in case of candidates of backward category and persons with disability belonging to Maharashtra state only.) in the above subjects taken together and obtained score in CET is eligible for admission to Semester I of First Year B.

Pharm. However, the rules/regulations and qualifications for admission will be those in effect at the day and time of admission.

**The minimum qualification for admission into Semester III of Bachelor of Pharmacy (Lateral Entry to Second Year B. Pharm.) is as follows:**

In general, a learner who has passed Diploma course in Pharmacy with an aggregate of 45% (at least 40 marks in case of candidates of backward category and persons with disability belonging to Maharashtra state only.) from an All India Council for Technical Education or Pharmacy Council of India or Central or State Government approved institutions or its equivalent. However, the rules/regulations and qualifications for admission will be those in effect at the day and time of admission.

**1.2M. Pharm.**

Admission to the M. Pharm. program of University of Mumbai is governed by the rules and regulations of University of Mumbai and as per norms of the Govt. of Maharashtra through the Directorate of Technical Education (DTE) and the All India Council for Technical Education (AICTE, New Delhi) in force at the time of admission and as amended from time to time.

In general, a learner who has passed the examination for the B. Pharm. Degree from All India Council for Technical Education or Pharmacy Council of India or Central or State Government approved institutions, with at least 55 % marks (at least 50% marks in case of SC or ST category and persons with disability belonging to Maharashtra state only.) and obtained Score in Graduate pharmacy Aptitude Test conducted by All India Council of Technical Education may be admitted to the M. Pharm. Program (Partly by Papers and Partly by Research). However, the rules/regulations and qualifications for admission will be those in effect at the day and time of admission.

The branches of Pharmaceutical Sciences to which the learner can register as a post-graduate student are:

1. Pharmaceutical Chemistry
2. Pharmacology

3. Pharmaceutics
4. Pharmacognosy and Phytochemistry
5. Pharmaceutical Analysis
6. Clinical Pharmacy
7. Medicinal Natural Products
8. Biopharmaceutics and Pharmacokinetics
9. Quality Assurance
10. Medicinal Chemistry
11. Drug Discovery Technology
12. Pharmaceutical Biotechnology

## **2. COURSE CREDIT STRUCTURE**

As the requirements for a particular degree (undergraduate or postgraduate), a certain quantum of academic work measured in terms of credits is laid down in general. Learner earns credits every semester by satisfactorily clearing courses/other academic activities. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly the credit associated with any of the other activities is dependent upon the quantum of work expected to be put in for each of the other activity per week.

### **2.1 Credit Assignment**

#### **2.1.1 Theory and Laboratory Courses:**

Courses are broadly classified as *Theory courses* and *Laboratory Courses*. Theory courses consist of lecture (**L**) and /or tutorial (**T**) hours. Laboratory courses consist of practical hours, but may have attached tutorial hours in special cases. Credit (**CR**) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (**1**) for lecture and tutorial hours, and a multiplier of half (**1/2**) for laboratory hours. Thus, for example, a theory course having **four** lectures and **one** tutorial per week throughout the semester carries a credit of **5**. Similarly, a laboratory course having **two** laboratory hours per week throughout semester carries a credit of **1**.

For example –

<b>Theory course</b>			
<b>L</b>	<b>T</b>	<b>=</b>	<b>CR</b>
<b>4</b>	<b>1</b>		<b>5</b>
<b>Laboratory course</b>			
<b>P</b>	<b>T</b>	<b>=</b>	<b>CR</b>
<b>4</b>	<b>0</b>		<b>2</b>

### 2.1.2 Seminars

Seminar is a requirement for M. Pharm. Seminar is a course wherein under the guidance of a faculty member a learner is expected to do an in-depth study in a specialized area by doing survey of published technical literature, understanding different aspects of the problem. While doing this, the learner is expected to critically analyze works of various authors /researchers, learn the investigation methodologies, study concepts, techniques and the results presented in these papers, and present a seminar. It is mandatory to give a seminar presentation before a panel constituted for the purpose as mentioned in syllabus / curriculum manual, in order to earn the prescribed credits as indicated in the curriculum.

### 2.1.3 Projects/Dissertations

**B. Pharm Project :** A Project is a requirement for the B. Pharm. degree, wherein under the guidance of a faculty member, a group of not more than five learners in the eighth semester, is required to do some innovative work with the application of knowledge gained while learning various courses in the earlier years. The learner/s is/are expected to do a survey of literature in the subject, work out a Project plan and carry it out through survey, experimentation and/or modeling / computation. Through the Project work the learner has to exhibit skills for both analysis and critical thinking. The complete details of the project have to submitted as a report of not less than 25 pages (A4, 1 inch margins, single line space, font Times Roman, font size 12, excluding count of reference pages) to the College before the prescribed date. The credits assigned for Project is **6** credits.

**M.Pharm. Dissertation:** Dissertation / Project is a mandatory requirement in the post-graduate programme. The Dissertation/Project is spread over one year duration, normally starting from the third semester and ending with the fourth semester. These are essentially research and development projects, where a learner trains him/herself, under the guidance of supervisor/s, in

in-depth analysis of pharmacy related research area and attempts a solution to the issue under investigation. It includes literature survey, problem analysis and problem definition, extensive experimental/modeling work, and analysis of results typically form various components of the Dissertation/Project work. Dissertation carries **a total of 48** credits.

## **2.2 Minimum Credit Requirements**

The minimum credit required for award of a B. Pharm. degree is **208**. This is normally divided into Theory courses, laboratory courses, and project in duration of eight semesters. The minimum credit required for award of a M. Pharm. degree is **96**. The credits are distributed semester wise as shown in the structure and syllabus manual of each programme. Courses generally progress in sequences, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester wise schedule of courses given in the syllabus manual of respective programmes.

## **2.3 Course/Subject codes**

**B. Pharm./M. Pharm. Programmes:** In the syllabus manual of each programme of a particular discipline, subject code is assigned for each course. The subject code consists of eight characters appropriately separated by underscore marks. First three are alphabets and indicate the program of a particular discipline (BPH for B. Pharm. and MPH for M. Pharm., the next alphabet indicates if course is either core/compulsory (C) or choice based/elective (E). A fifth character is an Arabic numeral and indicates the semester. The sixth and seventh characters are Arabic numerals and indicate the course numbers of the given semester. The eighth character is an alphabet that indicates a theory (T) or Laboratory (L) or Seminar (S) or Project/Dissertation (D).

For example -

**BPH\_C\_101\_T** indicates a B. Pharm. core course of semester one and a theory course

**BPH\_E\_605\_T** indicates a B. Pharm. elective course of semester six and a theory course

**BPH\_C\_709\_L** indicates a B. Pharm. core course of semester seven and a laboratory course

**BPH\_C\_804\_D** indicates a B. Pharm. core course of semester eight and a project/dissertation

## **3. EXAMINATION / ASSESSMENT AND GRADING**

Semester wise performance assessment of every registered learner is to be carried out through various modes of examinations, in both theory and laboratory classes. These include Internal Assessment and End Semester Examination. Internal Assessment includes one mid semester test/examination (15%) and overall semester attendance (5%). Normally weightage of Internal Assessment and End Semester Examination is 20% (15% + 5% as above) and 80%, respectively.

### **3.1 Attendance**

Attendance for all Theory classes, Tutorial classes, Practical sessions, Seminar and Project/Dissertation is compulsory. As per the University Ordinance 119, a minimum 75 % attendance is compulsory for keeping the term.

For class attendance the allotment of marks are as follows: For 90% or more attendance the complete - 5% marks, for 85-89% attendance - 4% marks, for 80-84% - 3% marks and 75-79% - 2% marks and below 75% - zero marks, should be given.

### **3.2 Modes of Assessment/Evaluation**

#### **3.2.1 Modes of Evaluation for Theory Courses**

Various modes of assessment used for rating learners' performance in a theory course include Internal Assessment and End Semester Examination. Relative weightage for Internal Assessment is typically 20 per cent. This will consist of mid semester test/examination for 15% marks (generally one hour duration) and 5% for attendance.

The end semester examination will be held as per the university schedule and the relative weightage for this would be 80 per cent. It will normally be of 3 hours duration and will cover the full syllabus of the course. **The end semester examination is mandatory.** The **grade for theory courses** can be **awarded** only after **successfully completion** of both **Internal Assessment** and **End Semester Examination** of the respective course as per the curriculum manual of the respective programme.

### **B. Pharm. Programme**

The End Semester Examinations in Semesters I, II, III, IV, V and VI of the B. Pharm. Degree course will be conducted by the respective institutions/colleges where the learner has been admitted following rules and regulations. The examinations in Semesters VII and VIII will be conducted by the university.

A common time-table and common question papers for all the theory examinations of different semesters will be prepared/set by the university as per the procedure.

The question papers for the Theory courses in Semesters I, II, III, IV, V, VI, VII, VIII will be set by examiners and paper-setters appointed by the University.

The assessment and moderation of the answer booklets for the examinations in Theory courses in Semesters I to VI will be carried out by respective institutions/colleges by the examiners and moderators appointed by the principals of the institutions/colleges for each paper from the panel approved by the Ad-hoc Board of Studies in Pharmacy.

Principals of the respective institutions/colleges are authorized to appoint examiners in the Practical examinations at Semesters I to VI on behalf of the university, only from the panel of suitable persons for appointment as examiners prepared by the Ad-hoc Board of Studies in Pharmacy.

It is mandatory for every student to undergo industrial/hospital/research organization training for a minimum period of 4 weeks (150 hours) with component of evaluation after completion of VI semester. The report submitted after In-plant training will be evaluated with the following grading pattern. Grade A: Excellent, Grade B: Good, Grade C: Poor. The records of the training are to be maintained by the Institution.

The assessment and moderation of the answer booklets of the Theory courses in Semesters VII and VIII will be conducted by the University through Central Assessment Programme (CAP).

### **M. Pharm. Programme**

The End Semester Examinations in Semesters I and II of the M. Pharm. degree, and the *viva-voce* examination of the thesis at the end of Semester IV for the M. Pharm. Degree course will be conducted by the university.

A time-table and question papers for all the theory examinations of Semesters I and II will be prepared/set by the university as per the procedure.

The question papers for the Theory courses in Semesters I and II will be set by examiners and paper-setters appointed by the University.

The assessment and moderation of the answer booklets for the examinations in Theory courses in Semesters I and II will be carried out by examiners and moderators appointed by the Ad-hoc Board of Studies in Pharmacy and approved by the University.

The assessment and moderation of the answer booklets of the Theory courses in Semesters I and II will be conducted by the University through Central Assessment Programme (CAP).

### **3.2.2 Modes of Evaluation for Laboratory Courses**

As indicated earlier examinations include Internal Assessment and End Semester Examination. Internal Assessment includes one mid semester test/examination (15%) and overall semester attendance (5%). Normally weightage of Internal Assessment and End Semester Examination is 20% (15% + 5% as above) and 80%, respectively.

The mid semester test (15% of overall marks) should include the assessment based on regular supervision of the learner's work and the quality of their work as prescribed through laboratory journals (this should be about 1/3 rd of the 15% marks for internal assessment, rounded off to the nearest whole number). It is obligatory to maintain a laboratory journal as prescribed by the course instructor. Final submission/examination for laboratory courses will normally be held before the end semester examination.

Scheme of assessment for Practical - B.Pharm. program

Mid semester test/examination + overall attendance	End Semester Examination	Total for Practical
15% + 5% = 20% marks	80% marks	100% marks

### **B. Pharm. Programme**

The End Semester Examination for Laboratory classes for Semesters I to VI would be done at the institutional level by a pair of examiners appointed by the institution. For Semesters VII and VIII, the University would appoint two examiners for each Laboratory prescribed in Semesters VII and VIII. Evaluation would be done by the examiners appointed by the University at the place and time announced by the University. The examination in each Laboratory class would be of 4 hours duration and would be for a total of 80% marks assigned to that laboratory class.

### M. Pharm. Programme

The evaluation and the End Semester Examination in the subject Experimental Techniques in Pharmaceutical Sciences will be conducted at the college/institutional level by PG teachers recognized as research guides by the university.

Scheme of assessment for Practical - Experimental Techniques in Pharmaceutical Sciences in the M.Pharm. program

Internal assessment (Continuous mode of evaluation)	End Semester Examination	Total for Practical
20% marks	80% marks	100% marks

This would be done as given in above table. For the Practical, continuous assessment should be carried out and for each practical, a proper record of the same to be preserved by the concerned faculty for the purpose of inspection as and when required. It is obligatory to maintain a laboratory journal as prescribed by the course instructor. Of the 20% marks reserved for internal assessment, 10% marks may be allotted to an oral/practical examination conducted mid-semester, 5% marks for the laboratory handbook (journal) cum overall performance of practicals over the semester and 5% marks for attendance.

#### 3.2.3 Modes of Evaluation for Seminars

The evaluation of Seminar at the M. Pharm. level will be conducted at the college/institutional level by PG teachers recognized as research guides by the university. Scheme of assessment for Seminar in the M. Pharm. program

Internal assessment	Scientific content	Presentation, communication skills etc	Discussion and defense	Report	Total
	20	15	15	50	100

Every learner will deliver a Seminar preferably on the subject on which he will write his dissertation i.e. thesis. This will be evaluated according to above Table at the college level by a Committee consisting of the Principal, the Head and faculty of the Department in which the student has enrolled for his research work. Faculty from other departments is also encouraged to attend the Seminars and may give their assessment of the seminar delivered by the learner.

**FOR Non University Exam System (NUES) subjects,** i.e. Seminar and Experimental Techniques in Pharmaceutical Sciences, of the M. Pharm. programme, the question papers for NUES courses will be set by examiners and paper-setters appointed by principals of the institutions/colleges and will be evaluated at the institutional level following the same pattern as that for other theory subjects and marks and grade will be forwarded to the university. Both these subjects will **not** be considered for calculation of CGPA.

### **3.2.4 Modes of Evaluation for Projects/Dissertation**

**B. Pharm. Project:** This project is supervised or guided, and need regular interaction (at least once a week) with the supervisor/guide. Project group has to submit a project report and defend it in front of a panel of examiners. Evaluation of Project will be conducted by two examiners. One examiner shall be the Internal examiner (guiding teacher). The second examiner will be an External examiner who will be appointed by University. The examination shall be as follows:

#### **A. Evaluation of Project Report:**

Objective(s) of project	20 Marks
Methodology adopted	30 Marks
Results and Discussions	25 Marks
Conclusions and Outcomes	25 Marks
<b>Total</b>	<b>100 Marks</b>

#### **B. Evaluation of Presentation:**

Presentation quality (audio-visual, content, format)	30 Marks
Verbal presentation quality/Communication	25 Marks
Viva and critical discussion	45 Marks
<b>Total</b>	<b>100 Marks</b>

**NOTE:** The 100 marks assigned to the project report shall be same for all the students in a group. But, the 100 marks assigned for presentation shall be awarded based on the performance

of individual students in the given criteria. Both the examiners shall each give marks out of 200 marks assigned to the project and their individual marks shall be averaged to give the final marks. The dates for submission of reports, the dates for presentations are to be scheduled as per the guidelines of University and details of mode of assessment are given in the curriculum manual.

**M. Pharm. Dissertation:** For **evaluation of Dissertation**, a learner has to submit required number of hard bound Dissertation/Thesis reports to the respective section of University.

### **Writing the thesis**

The thesis will be typed using Times New Roman font, size 11, 1.5 line spacing, with all headings/subheadings in bold.

The thesis will be of maximum 125 pages and composed in the following manner

Chapter 1 – Introduction. This should be limited to about 30 pages and will describe all background information of the research described in the thesis.

Chapter 2 – Aims and objectives, limited to 2 pages.

Chapter 3 – Plan of Work, limited to 4 pages

Chapter 4 – Experimental. This section should preferably include only the optimized experiments from which the inferences and conclusions were drawn.

Chapter 5 – Results and Discussion, this should constitute 40 to 50 pages of the thesis.

Chapter 6 – References. This should be in ACS format. Refer to Ch. 14 *In The ACS Style Guide*; Coghil, A., et al.; American Chemical Society: Washington, DC, 2006.

If any deviations are found in the style of writing the thesis, the thesis is liable to be rejected by the University.

### **Scheme of assessment for Thesis**

Assessment	External Examiner	Internal (Guiding Teacher)	Total
	50	50	100

The *viva voce* examination on the thesis submitted by the learner will be done according to Table 4. Both the external examiner and PG teacher shall jointly examine the student on the research work compiled in the thesis and will separately allot marks based on the following parameters:

- a). Literature Survey (10 marks)
- b). Presentation (8 marks)
- c). Methodology (7 marks)
- d) Results and Discussion (10 marks) and
- e) *Viva-voce* (15 marks)

The assessment of the thesis submitted at the end of Semester IV will be done by both the internal (guiding) teacher and an external examiner chosen from the industry with established competence in the field or may be any recognized research guide from another recognized university. It is proposed that every learner will submit a synopsis of the research work carried out by him/her during Semesters III and IV which forms the content of the thesis. A learner will be permitted to submit his/her synopsis no earlier than 20 months (after 20 months) from the beginning of the M. Pharm. program as instructed by the Government/Regulatory Authority for the respective year, BUT will have to submit the final thesis by the end of 24 months from the beginning of the M. Pharm program as instructed by the Government/Regulatory Authority. The time between submission of synopsis and thesis should be at least one month. The learner must submit his thesis to the University in a format as prescribed by the University. The university will take all steps to conduct the *viva-voce* examination at the earliest after the submission of the thesis. It is expected that only the synopsis of the thesis submitted by the learner will be forwarded by the university to the external examiner at least one week before the conduct of the *viva-voce* examination. Only at the time of the *viva-voce* examination, the external examiner will be presented the thesis submitted by the candidate for the award of the degree.

The evaluation will be done by a pair of examiners (research guide and external examiner), appointed by the University, based on the report and a *viva-voce*. The *viva-voce* will be conducted in the parent Institute. Final Grade reports are to be sent by the Institute to the respective section of university on completion of the *viva-voce*. The criteria of evaluation of Dissertation are given in the curriculum manual.

**Any late submission of synopsis or thesis will result in the learner requiring to keep terms for the next semester and any subsequent semester/s till the learner finishes his/her degree.**

**The submission of synopsis and the holding of the viva voce examination shall be done independent of the fact whether the student has successfully cleared semester I and**

**Semester II. However, the result of the viva voce of M. Pharm. Examination will be declared only if/after the student has successfully cleared Semester I and Semester II examinations**

### **3.3 Grading of Performance**

#### **3.1 Letter Grade and Grade Point Allocation**

The Choice Based Credit System will be effective from the academic year 2016-2017 for Faculty of Technology of University of Mumbai. In every course, based on the combined performance in all assessments in a particular semester as per the curriculum/syllabus, the student is awarded a letter grade. These letter grades not only indicate a qualitative assessment of the learner's performance but also carry a quantitative (numeric) equivalent called the Grade Point. The letter grades and their equivalent grade point applicable for **undergraduate** programme are given below:

<b>Percentage of Marks Obtained</b>	<b>Letter Grade</b>	<b>Grade Points</b>	<b>Performance</b>
80.00 and above	O	10	Outstanding
75.00 – 79.99	A	9	Excellent
70.00 – 74.99	B	8	Very Good
60.00 – 69.99	C	7	Good
50.00 – 59.99	D	6	Fair
45.00 – 49.99	E	5	Average
40.00 – 44.99	P	4	Pass
Less than 40.00	F	0	Fail

For a learner who remains **absent** in any form of **evaluation/examination**, **letter grade** allocated to him/her should be **AB** and corresponding **grade point** should be assigned as **zero**. S/he should reappear for the said evaluation/examination in due course.

The letter grades and their equivalent grade point applicable for **post graduate** programme are given below:

<b>Percentage of Marks Obtained</b>	<b>Letter Grade</b>	<b>Grade Points</b>	<b>Performance</b>
80.00 and above	O	10	Outstanding
75.00 – 79.99	A	9	Excellent
70.00 – 74.99	B	8	Very Good
60.00 – 69.99	C	7	Good
55.00 – 59.99	D	6	Fair
50.00 – 54.99	E	5	Average

45.00 – 49.99	P	4	Pass
Less than 45.00	F	0	Fail

For a learner who remains **absent** in any form of **evaluation/examination**, **letter grade** allocated to him/her should be **AB** and corresponding **grade point** assigned should be **zero**. S/he should reappear for the said evaluation/examination in due course.

### **3.2 SGPI/ CGPI Calculation**

#### **3.2.1 Semester Grade Performance Index (SGPI)**

The performance of a learner in a semester is indicated by a number called Semester Grade Performance Index (SGPI). The SGPI is the weighted average of the grade points obtained in all the courses by the learner during the semester. For example, if a learner passes five courses (Theory/labs./Projects/ Seminar etc.) in a semester with credits  $C_1, C_2, C_3, C_4$  and  $C_5$  and learners grade points in these courses are  $G_1, G_2, G_3, G_4$  and  $G_5$  respectively, then learners' SGPI is equal to:

The SGPI is calculated to two decimal places. The SGPI for any semester will take into consideration the "**F** or **AB**" grade awarded in that semester. For example if a learner has failed or absent in course 4, the SGPI will then be computed as:

#### **3.2.2 Cumulative Grade Performance Index (CGPI)**

##### **B. Pharm. Programme**

The CGPA is calculated for Semesters VII and VIII to two decimal places and is indicated in final grade report card and is the weighted average of the grade points obtained in all the courses by the learner during Semesters VII and VIII.

The CGPI will reflect the **failed status** in case of **F grade(s)**, till the course(s) is/are **passed**. When the **course(s)** is/are **passed** by obtaining a **pass grade** on subsequent examination(s) the **CGPI** will only reflect the **new grade** and not the **fail grades** earned earlier.

Example: If in semesters VII and VIII a learner has registered for  $n$  courses, among which s/he has “**F**” grade in  $i^{th}$  course. The cumulative grade point index at the end of semesters VII and VIII therefore will contain a CGPI calculated as:

Even if a learner has **failed** in a course **more than once**, the course will figure **only once** in the **numerator** as well as the **denominator**. At the end of any subsequent semester s/he has appeared for examination for  $k$  number of courses including the  $i^{th}$  **backlog course** and has cleared all the courses including the **backlog course**, the CGPI at the end of this semester is calculated as,

### **M. Pharm. Programme**

The CGPA is calculated for Semesters I to IV to two decimal places and is indicated in final grade report card and is the weighted average of the grade points obtained in all the courses by the learner during Semesters I to IV.

The CGPA will reflect the **failed status** in case of **F grade(s)**, till the course(s) is/are **passed**. When the **course(s)** is/are **passed** by obtaining a **pass grade** on subsequent examination(s) the **CGPA** will only reflect the **new grade** and not the **fail grades** earned earlier.

The CGPA is calculated as:

Where,  $C_i$  is the Credits for course  $i$  and  $G_i$  is the grade for course  $i$ . Even if a learner has **failed** in a course **more than once**, the course will figure **only once** in the **numerator** as well as the **denominator**. At the end of Semester IV or in subsequent attempts the learner has appeared for examination for  $n$  number of courses including the **backlog course  $i$**  and has cleared all the courses including the **backlog course**, the CGPA at the end of Semester IV is calculated as,

The Subjects of Seminar and Experimental Techniques in Pharmaceutical Sciences will **NOT** be considered for calculation of CGPA.

### **3.2.3 Semester Grade Report**

At the end of each semester, the current semester grade report, which reflects the performance of the learner in that semester, is prepared and issued to the learner. The Grade Card will reflect the letter grade obtained by the learner, credit points of the individual courses of a particular semester, calculation of SGPA for each semester. The CGPA will be calculated for all the successfully completed courses of B. Pharm. Programme/M. Pharm. Programme. (refer section 3.3).

This report includes the fail grades as awarded. SGPA will be calculated and reflected in the current semester grade report only if the learner has passed in all heads (refer section 3.3). SGPA will not be calculated and reflected in the current semester grade report if the learner does not pass in all heads of passing. When the learner obtains a grade of D or higher on subsequent attempts a new semester grade report will be issued to the learner. The existing system of displaying the carried forward marks/grades and the marks/grades obtained in the current attempt must be used. The abbreviations for the same shall be displayed in the Grade Card as a footnote. (Refer to circular no. UG/181 of 2002 dated 24.04.2002).

Lateral entry learners of the Second Year (Semesters III and IV) B. Pharm. course will have grade reports of semesters III to VIII as they move through the respective semesters.

### **3.3 Heads of Passing**

Internal Assessment (IA) and End Semester Examination (ESE) should be two separate heads for passing.

### **3.4 Promotion of Learner and Award of Grades**

A learner will be declared **PASS** and eligible for **grade** in a particular course of **undergraduate (B. Pharm.)** programme if,

- A learner secures **at least 40% marks in each head of passing** mentioned above.  
OR
- If learner **fails** in **Internal Assessment** but secures **more than 50% in total (Internal Assessment + End Semester Examination)** in that course.

A learner will be declared **PASS** and eligible for **grade** in a particular course of **post graduate (M. Pharm.)** programme if,

- A learner secures **at least 45% marks in each head of passing** mentioned above.  
OR
- If learner **fail** in **Internal Assessment** but secure **more than 50% in total (Internal Assessment + End Semester Examination)** in that course.

### **3.5 Carry Forward of Marks**

In case of a learner who does not fulfill criteria mentioned in section 3.4 and fails in the **Internal Assessment** and/or **End Semester Examination** in one or more courses:

- A learner who **PASSES** in the **Internal Assessment** but **FAILS** in the **End Semester Examination** of the course shall reappear for the **End Semester Examination** of that course. However his/her marks of the **Internal Assessment** shall be **carried over** and he/she shall be entitled for grade obtained by him/her on passing.
- A learner who **PASSES** in the **End Semester Examination** but **FAILS** in the **Internal Assessment** of the course shall **reappear** for the **Mid-semester test/examination** of that course. The marks for attendance component of internal assessment shall be carried over. Further, his/her marks of the **End Semester Examination** shall also be **carried over** and he/she shall be entitled for grade obtained by him/her on passing.

### **3.6 Reexamination of Internal Assessment and End Semester Examination**

**Re-examination** for **mid-semester test/examination component of the Internal Assessment** should be completed before the commencement of next semester theory examination.

**Example:** A learner who is supposed to reappear for mid-semester test/examination component of Internal Assessment in semester-I course will appear for the reexamination before commencement of End Semester Examination of semester -II.

Re-examination of mid-semester test/examination component of Internal Assessment will be based on single test/examination having same marks as of original assessment. Records should be maintained properly for all the re-examinations as well as Internal Assessments.

**Reexamination of End Semester Examination** will be conducted as per the schedule planned by University of Mumbai

### **3.7 Allowed to Keep Terms (ATKT):**

No learner will be admitted to any examination unless he/she keeps term at the institution/college affiliated to the University.

3.7.1 A learner who is admitted to the Odd Semesters i.e. Semester I / III / V / VII shall be eligible to the next even Semester i.e. Semester II / IV / VI / VIII even if the learner fails in all the courses at the Odd Semester.

3.7.2. A learner failing in not more than two Theory courses and one practical of Semester I and II taken together shall be promoted to Semester III. However, if he/she fails in more than two Theory courses and one Practical of Semesters I and II taken together he/she will **not** be promoted to Semester III, until the number of failure subject heads is less than or equal to two Theory courses and one Practical in Semesters I and II, taken together.

3.7.3. A learner failing in not more than two Theory courses and one Practical of Semester III and IV taken together shall be promoted to Semester V provided he/she has cleared all the subjects (Theory courses and Practicals) of Semesters I and II. However, if he/she fails in more than two Theory courses and one Practical of Semesters III and IV taken together, he/she will not be promoted to Semester V, until the number of failure subject heads is less than or equal to two Theory courses and one Practical in Semesters III and IV taken together

3.7.4. A learner failing in not more than two Theory courses and one Practical of Semesters V and VI taken together shall be promoted to Semester VII provided he/she has cleared all the subjects of Semesters I to IV

3.7.5. A lateral entry learner (entering in semester III) failing in not more than two Theory courses and one Practical of Semester III and IV taken together shall be promoted to Semester V.

However, if he/she fails in more than two Theory courses and one Practical of Semesters III and IV taken together, he/she will not be promoted to Semester V, until the number of failure subject heads is less than or equal to two Theory courses and one Practical in Semesters III and IV taken together.

Note: **Grade AB** should be considered as **failed** and treated as one head for deciding **ATKT**.