

**REGULATIONS 2019:
COURSE CONTENT AND EXAMINATIONS**

KERALA UNIVERSITY OF HEALTHSCIENCES
Thrissur -680596



POST GRADUATE COURSE IN PHARMACY
Master of Pharmacy (M.Pharm.)

(2019-20 Academic year onwards)

2019

II. COURSECONTENT

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II. COURSE CONTENT

2.1 Title of the course

These regulations shall be called as “**Master of Pharmacy (M. Pharm.) Degree Program - Credit Based Semester System (CBSS) 2019**” of the “**Kerala University of Health Sciences**” (M.Pharm-CBSS 2019). They shall come into effect from the Academic Year 2019-20. The regulations framed are subject to modifications from time to time by the authorities of the Kerala University of Health Sciences, Thrissur (hereinafter mentioned as the University).

2.2 Objectives of course

To generate Pharmacy Post Graduates with profound knowledge in various branches of Pharmaceutical Sciences to meet with the rapidly increasing demands in

- Pharmaceutical Manufacturing & Technology
- Pharmaceutical & Herbal Drug Research
- Pharmaceutical & Herbal Formulation Development
- Computer aided Drug design and Development
- Clinical research including Preclinical & Clinical studies.
- Pharmaceutical Drug Analysis
- Clinical Toxicology & Toxicological Analysis
- Drug Regulatory affairs

To discover the potential to become Faculty in Pharmaceutical Sciences with unmatched quality and excellence, so as to educate the future pharmacy generation (Undergraduate, Post graduate, and Doctoral candidates).

2.3 Medium of Instruction

Medium of instruction and examination shall be in English.

2.4 Course Outline

The specialisations in M.Pharm. Program is given in Table 1.

Table – 1: M.Pharm. Specialisation and their code

S.No	KUHS Course Code	Specialisation	Specialisation Code
1.	276	Pharmaceutics	MPH
2.	277	Pharmaceutical Chemistry	MPC
3.	278	Pharmacognosy	MPG
4.	279	Pharmaceutical Analysis	MPA
5.	280	Pharmacology	MPL
6.	281	Pharmacy Practice	MPP

The course of study for M. Pharm shall include Semester wise Theory & Practical as given in Table – 2 & 3. The number of hours to be devoted to each theory and practical course in any semester shall not be less than that shown in Table – 2a-2f& 3.

Table – 2a: Course of study for M.Pharm.Pharmaceutics I & II Semester

MPH	PHARMACEUTICS				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPT101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPH 102T	Drug Delivery Systems	4	4	4	100
MPH 103T	Modern Pharmaceutics	4	4	4	100
MPH 104T	Regulatory Affairs	4	4	4	100
MPH105P	Pharmaceutics Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPH 201T	Molecular Pharmaceutics (Nanotechnology and Targeted Drug Delivery Systems)	4	4	4	100
MPH 202T	Advanced Biopharmaceutics & Pharmacokinetics	4	4	4	100
MPH 203T	Computer Aided Drug Development	4	4	4	100
MPH 204T	Cosmetics and Cosmeceuticals	4	4	4	100
MPH205P	Pharmaceutics Practical II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 2b: Course of study for M.Pharm.Pharmaceutical Chemistry I & II Semester

MPC	PHARMACEUTICAL CHEMISTRY				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPT101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPC 102T	Advanced Organic Chemistry –I	4	4	4	100
MPC 103T	Advanced Medicinal Chemistry	4	4	4	100
MPC 104T	Chemistry of Natural Products	4	4	4	100
MPC 105P	Pharmaceutical Chemistry Practical – I	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPC 201T	Advanced Spectral Analysis	4	4	4	100
MPC 202T	Advanced Organic Chemistry –II	4	4	4	100
MPC 203T	Computer Aided Drug Design	4	4	4	100
MPC 204T	Pharmaceutical Process Chemistry	4	4	4	100
MPC 205P	Pharmaceutical Chemistry Practical II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 2c: Course of study for M.Pharm. PharmacognosyI & II Semester

MPG	PHARMACOGNOSY				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPT101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPG 102T	Advanced Pharmacognosy	4	4	4	100
MPG 103T	Phytochemistry	4	4	4	100
MPG 104T	Industrial Pharmacognostical Technology	4	4	4	100
MPG105P	Pharmacognosy Practical – I	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPG 201T	Medicinal Plant Biotechnology	4	4	4	100
MPG 202T	Advanced Pharmacognosy -II	4	4	4	100
MPG 203T	Indian System of Medicine	4	4	4	100
MPG 204T	Herbal Cosmetics	4	4	4	100
MPG 205P	Pharmacognosy Practical II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 2d: Course of study for M.Pharm. Pharmaceutical AnalysisI & II Semester

MPA	PHARMACEUTICAL ANALYSIS				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPT101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPA 102T	Advanced Pharmaceutical Analysis	4	4	4	100
MPA 103T	Pharmaceutical Validation	4	4	4	100
MPA 104T	Food Analysis	4	4	4	100
MPA105P	Pharmaceutical Analysis Practical- I	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPA 201T	Advanced Instrumental Analysis	4	4	4	100
MPA 202T	Modern Bio-Analytical Techniques	4	4	4	100
MPA 203T	Quality Control and Quality Assurance	4	4	4	100
MPA 204T	Herbal and Cosmetic Analysis	4	4	4	100
MPA205P	Pharmaceutical Analysis Practical– II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 2e: Course of study for M.Pharm. PharmacologyI & II Semester

MPL	PHARMACOLOGY				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPT101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPL 102T	Advanced Pharmacology-I	4	4	4	100
MPL 103T	Pharmacological and Toxicological Screening Methods-I	4	4	4	100
MPL 104T	Cellular and Molecular Pharmacology	4	4	4	100
MPL 105P	Pharmacology Practical -I	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPL 201T	Advanced Pharmacology II	4	4	4	100
MPL 202T	Pharmacological and Toxicological Screening Methods –II	4	4	4	100
MPL 203T	Principles of Drug Discovery	4	4	4	100
MPL 204T	Clinical research and Pharmacovigilance	4	4	4	100
MPL 205P	Pharmacology Practical -II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 2f: Course of study for M.Pharm. Pharmacy PracticeI & II Semester

MPP	PHARMACY PRACTICE				
Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPP101T	Clinical Pharmacy Practice	4	4	4	100
MPP102T	Pharmacotherapeutics-1	4	4	4	100
MPP103T	Hospital &Community Pharmacy	4	4	4	100
MPP104T	Clinical Research	4	4	4	100
MPP105P	Pharmacy Practice Practical I	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPP201T	Principles of Quality use of Medicines	4	4	4	100
MPP202T	Pharmacotherapeutics II	4	4	4	100
MPP203T	Clinical Pharmacokinetics and therapeutic Drug Monitoring	4	4	4	100
MPP204T	Pharmacoepidemiology&Pharmacoeconomics	4	4	4	100
MPP205P	Pharmacy Practice Practical II	12	6	12	150
-	Seminar /Assignment	7	4	7	100
Total		35	26	35	650

Table – 3: Course of study for M. Pharm. III & IV Semester(Common for all Specialisations)

Course Code	Course	Credit Hours	Credit Points
Semester III			
MRM 301T	Research Methodology and Biostatistics	4	4
-	Journal Club	1	1
-	Discussion / Presentation(ProposalPresentation)	2	2
-	Research Work	28	14
Total		35	21
Semester IV			
-	Journal Club	1	1
-	Presubmission Discussion / Presentation	3	3
-	Research Work	31	16
Total		35	20

Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, practical classes, seminars, assignments, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. 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 academic, co/extracurricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week/per activity.

Credit assignment**a) Theory and Laboratory courses**

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and Practical (P) courses consist of hours spent in the laboratory. Credits (C) 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 a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having four lectures per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2. The contact hours of seminars, assignments and research work shall be treated as that of practical courses for the purpose of calculating credits. i.e., the contact hours shall be multiplied by 1/2. Similarly, the contact hours of journal club, research work presentations and discussions with the supervisor shall be considered as theory course and multiplied by 1.

b) Minimum credit requirements

The minimum credit points required for the award of M. Pharm. degree is 95. However based on the credit points earned by the students under co- curricular activities, a student shall earn a maximum of 100 credit points. These credits are divided into Theory courses, Practical, Seminars, Assignments, Research work, Discussions with the supervisor, Journal club and Co-

Curricular activities over the duration of four semesters. The credits are distributed semester-wise as shown in Table 4.

Courses generally progress in sequence, 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.

Table – 4: Semester wise credits distribution

Semester	Credit Points
I	26
II	26
III	21
IV	20
Co-curricular Activities* (attending Conference, Scientific Presentations and other scholarly Activities)	Minimum = 02 Maximum = 07
Total Credit Points	Minimum = 95 Maximum = 100

*Credit points assigned for co-curricular activities shall be given by the Principals of Colleges and the same shall be submitted to the University along with the attendance and marks scored by the candidates in semester IV.

Table – 5: Guidelines for Awarding Credit Points for Co-Curricular Activities

Name of the Activity	Maximum Credit Points Eligible/Activity
Participation in National Level Seminar/ Conference/ Workshop/Symposium/Training Programmes (related to the specialization of the student)	01
Participation in International* Level Seminar/ Conference/ Workshop/ Symposium/ Training Programs (related to the specialization of the student)	02
Academic Award/Research Award from State Level/National Agencies	01
Academic Award/Research Award from International Agencies	02
Research/Review Publication in National Journals (Indexed in Scopus/Web of Science)/ National Level Seminar/ Conference/ Workshop/Symposium/Training Programmes (related to the specialization of the student)	01
Research/Review Publication in International* Journals (Indexed in Scopus/Web of Science)/ International* Level Seminar/ Conference/ Workshop/ Symposium/ Training Programs (related to the specialization of the student)	02

* International Conference: Conference in which resource persons from two or more nations or nationalities participate. International Journal: One quarter of editorial board is from an outside nation/ one third of papers published originate from an outside nation.

Program Committee

The M. Pharm. programme shall have a Programme Committee constituted by the Head of the institution in consultation with all the Heads of the departments.

The composition of the Programme Committee shall be as follows:

A teacher at the cadre of Professor shall be the Chairperson; One Teacher from each M. Pharm specialization and four student representatives (two from each academic year), nominated by the Head of the institution.

Duties of the Programme Committee:

- Periodically reviewing the progress of the classes.
- Discussing the problems concerning curriculum, syllabus and the conduct of classes.
- Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.
- Communicating its recommendation to the Head of the institution on academic matters.
- The Programme Committee shall meet at least twice in a semester preferably at the end of each sessional exam and before the end semester exam.

2.5 Duration

The program of study for M.Pharm. shall extend over a period of four semesters (two academic years). The curricula and syllabi for the program shall be prescribed from time to time by the Kerala University of Health sciences.

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

2.6 Syllabus

Given separately for each specialisation.

2.7 Total number of hours

As mentioned in Course outline (clause 2.4)

2.8 Branches if any, with definition

As mentioned in Syllabus (clause 2.6)

2.9 Teaching Learning methods

A regular record of attendance both in Theory, Practical, Seminar, Assignment, Journal club, Discussion with the supervisor, Research work presentation and Dissertation shall be maintained by the department / teaching staff of respective courses.

2.10 Content of each subject in each year

As mentioned in Syllabus (clause 2.6)

2.11 Number of hours per subject

As mentioned in Syllabus (clause 2.6)

2.12 Practical Training

As mentioned in Course outline (clause 2.4)

2.13 Records

To be maintained for all Practical Work

2.14 Dissertation

As mentioned in Project work to be done (clause 2.16)

2.15 Speciality Training if any

As mentioned in Syllabus (clause 2.6)

2.16 Project work to be done if any

All the students shall submit a thesis/dissertation on the basis of regular research work in Semester III to IV under the supervision of a teacher (project guide). The format for printing the thesis is given in Annexure 4.

The Internal Examiner (project guide) and External Examiner appointed by the University shall evaluate the project at the end of Fourth semester. (Annexure 4)

2.17 Any other Requirements [CME, Paper Publishing, etc.,]

As mentioned in Course outline (clause 2.4)

2.18 Prescribed/Recommended textbooks for each subject

As mentioned in Syllabus (clause 2.6)

2.19 Reference books

As mentioned in Syllabus (clause 2.6)

2.20 Journals

All Pharmacy and related Medical Journals

2.21 Logbook

Registers to be maintained :

The Institution have to maintain registers for student activities such as Seminar/Assignment (Semester 1 & Semester II), Journal club presentation (Semester III & Semester IV), Minutes of Research Monitoring committee (Semester III & Semester IV), and Co-curricular activities (Semester 1 to IV) in addition to the mandatory general records as specified by the University from time to time.

III. EXAMINATION

3.1 Eligibility to appear for exams

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations. The candidate must secure 50% marks for internal assessment in theory and practical (including viva) separately in a particular subject in order to be eligible to appear in the university examination of the subject.

3.2 Schedule of Regular / Supplementary exams

Semester examinations will be conducted once in every six months after fulfilling 100 working days. Re-examination shall be conducted as per the notifications of the University from time to time.

Table: 6 - Question paper pattern for end semester theory & practical examinations

Question paper pattern for end semester theory examinations			
I.	Long Answers	3 x 10	30 Marks
II.	Short Answers	9 x 5	45 Marks
Total			75 Marks
Question paper pattern for end semester practical examinations			
I.	Synopsis		15 Marks
II.	Experiment - I		40 Marks
III.	Experiment – II		30 Marks
IV.	Viva voce		15 Marks
Total			100 Marks

3.3 Scheme of examination showing maximum marks and minimum marks

The End Semester Examinations for each theory and practical course through semesters I to IV shall be conducted by the University.

The Schemes for internal assessments and end semester examinations are given in Table 7a-7f and 8 below.

Table – 7a: Schemes for internal assessments and end semester examination

MPH	PHARMACEUTICS							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPT101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPH 102T	Drug Delivery System	10	15	1 Hr	25	75	3 Hrs	100
MPH 103T	Modern Pharmaceuics	10	15	1 Hr	25	75	3 Hrs	100
MPH 104T	Regulatory Affairs	10	15	1 Hr	25	75	3 Hrs	100
MPH105P	Pharmaceutics Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPH 201T	Molecular Pharmaceutics (Nanotechnology&TargetedDrug Delivery Systems)	10	15	1 Hr	25	75	3 Hrs	100
MPH 202T	AdvancedBiopharmaceutics &Pharmacokinetics	10	15	1 Hr	25	75	3 Hrs	100
MPH 203T	Computer AidedDrug Development	10	15	1 Hr	25	75	3 Hrs	100
MPH 204T	Cosmetics andCosmeceuticals	10	15	1 Hr	25	75	3 Hrs	100
MPH205P	Pharmaceutics Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.								

Table – 7b: Schemes for internal assessments and end semester examination

MPC	PHARMACEUTICAL CHEMISTRY							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPT101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPC 102T	Advanced Organic Chemistry –I	10	15	1 Hr	25	75	3 Hrs	100
MPC 103T	Advanced Medicinal Chemistry	10	15	1 Hr	25	75	3 Hrs	100
MPC 104T	Chemistry of Natural Products	10	15	1 Hr	25	75	3 Hrs	100
MPC 105P	Pharmaceutical Chemistry Practical – I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPC 201T	Advanced Spectral Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPC 202T	Advanced Organic Chemistry –II	10	15	1 Hr	25	75	3 Hrs	100
MPC 203T	Computer Aided Drug Design	10	15	1 Hr	25	75	3 Hrs	100
MPC 204T	Pharmaceutical Process Chemistry	10	15	1 Hr	25	75	3 Hrs	100
MPC 205P	Pharmaceutical Chemistry Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.								

Table – 7c: Schemes for internal assessments and end semester examination

MPG	PHARMACOGNOSY							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPT101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPG 102T	Advanced Pharmacognosy	10	15	1 Hr	25	75	3 Hrs	100
MPG 103T	Phytochemistry	10	15	1 Hr	25	75	3 Hrs	100
MPG 104T	Industrial Pharmacognostical Technology	10	15	1 Hr	25	75	3 Hrs	100
MPG105P	Pharmacognosy Practical – I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPG 201T	Medicinal Plant Biotechnology	10	15	1 Hr	25	75	3 Hrs	100
MPG 202T	Advanced Pharmacognosy -II	10	15	1 Hr	25	75	3 Hrs	100
MPG 203T	Indian System of Medicine	10	15	1 Hr	25	75	3 Hrs	100
MPG 204T	Herbal Cosmetics	10	15	1 Hr	25	75	3 Hrs	100
MPG 205P	Pharmacognosy Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.								

Table – 7d: Schemes for internal assessments and end semester examination

MPA	PHARMACEUTICAL ANALYSIS							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPT101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPA 102T	Advanced Pharmaceutical Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA 103T	Pharmaceutical Validation	10	15	1 Hr	25	75	3 Hrs	100
MPA 104T	Food Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA105P	Pharmaceutical Analysis Practical- I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPA 201T	Advanced Instrumental Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA 202T	Modern Bio-Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPA 203T	Quality Control and Quality Assurance	10	15	1 Hr	25	75	3 Hrs	100
MPA 204T	Herbal and Cosmetic Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA205P	Pharmaceutical Analysis Practical– II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.								

Table – 7e: Schemes for internal assessments and end semester examination

MPL	PHARMACOLOGY							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPT101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPL 102T	Advanced Pharmacology-I	10	15	1 Hr	25	75	3 Hrs	100
MPL 103T	Pharmacological and Toxicological Screening Methods-I	10	15	1 Hr	25	75	3 Hrs	100
MPL 104T	Cellular and Molecular Pharmacology	10	15	1 Hr	25	75	3 Hrs	100
MPL 105P	Pharmacology Practical -I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPL 201T	Advanced Pharmacology II	10	15	1 Hr	25	75	3 Hrs	100
MPL 202T	Pharmacological and Toxicological Screening Methods –II	10	15	1 Hr	25	75	3 Hrs	100
MPL 203T	Principles of Drug Discovery	10	15	1 Hr	25	75	3 Hrs	100
MPL 204T	Clinical research and Pharmacovigilance	10	15	1 Hr	25	75	3 Hrs	100
MPL 205P	Pharmacology Practical -II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
<p>*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.</p>								

Table – 7f: Schemes for internal assessments and end semester examination

MPP	PHARMACY PRACTICE							
Course code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPP101T	Clinical Pharmacy Practice	10	15	1 Hr	25	75	3 Hrs	100
MPP102T	Pharmacotherapeutics-1	10	15	1 Hr	25	75	3 Hrs	100
MPP103T	Hospital &Community Pharmacy	10	15	1 Hr	25	75	3 Hrs	100
MPP104T	Clinical Research	10	15	1 Hr	25	75	3 Hrs	100
MPP105P	Pharmacy Practice Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
SEMESTER II								
MPP201T	Principles of Quality use of Medicines	10	15	1 Hr	25	75	3 Hrs	100
MPP202T	Pharmacotherapeutics II	10	15	1 Hr	25	75	3 Hrs	100
MPP203T	Clinical Pharmacokinetics and Therapeutic Drug Monitoring	10	15	1 Hr	25	75	3 Hrs	100
MPP204T	Pharmacoepidemiology & Pharmacoeconomics	10	15	1 Hr	25	75	3 Hrs	100
MPP205P	Pharmacy Practice Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment*	-	-	-	100	-	-	100
Total								650
*In the case of “Seminar/Assignment” of Semester I and II, the total marks is split up as 25 marks each for the 4 theory courses, out of which 10 marks are awarded for seminars and 15 marks awarded for assignment, based on the syllabus of the respective theory course.								

Table – 8: Schemes for internal assessments and end semester examinations (Semester III& IV)

COMMON FOR ALL SPECIALISATIONS								
Coursecode	Course	Internal Assessment				End Semester Exams		Total Marks
		ContinuousMode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER III								
MRM 301T	Research Methodology and Biostatistics	10	15	1 Hr	25	75	3 Hrs	100
-	Journal Club	-	-	-	25	-	-	25
-	Discussion / Presentation (proposal presentation)	-	-	-	25	-	-	25
-	Research Work	-	-	-	-	350	1 Hr	350
Total								500
SEMESTER IV								
-	Journal Club	-	-	-	25	-	-	25
-	Presubmission Discussion / Presentation	-	-	-	75	-	-	75
-	Research Work and Colloquium	-	-	-	-	400	1 Hr	400
Total								500

Table – 9: Scheme for awarding internal assessment

Criteria	Maximum Marks
Theory	
Attendance (Refer Table – 10)	8
Student – Teacher interaction	2
Total	10
Practical	
Attendance (Refer Table – 10)	10
Based on Practical Records, Regular viva voce, etc.	10
Total	20

Table – 10: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	8	10
90 – 94	6	7.5
85 – 89	4	5
80 – 84	2	2.5
Less than 80	0	0

Allowed to keep terms (ATKT):

No student shall be admitted to any examination unless he/she fulfills the norms given in clause 3.1. ATKT rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I, II and III semesters till the IV semester examinations. However, he/she shall not be eligible to submit the project work (thesis) until all the courses of I, II, III and IV semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to IV semesters within the stipulated time period as per the norms. If the candidate does not fulfill any one of the pass criteria and at the same time secure aggregate of 50% or above (Sessional and End semester theory and practical), the candidate will fail and hence the letter grade shall be “F” and Grade point shall be “0”.

The Semester Grade Point Average (SGPA) of a semester shall be awarded only to those candidates who pass all papers in that semester. The Cumulative Grade point Average (CGPA) shall be awarded only to those candidates who pass the entire course.

Note: Grade AB should be considered as failed and treated as one head for deciding ATKT. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

Grading of performances**a) Letter grades and grade points allocations:**

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course. The letter grades and their corresponding grade points are given in Table – 11.

Table – 11: Letter grades and grade points equivalent to Percentage of marks and performances

Percentage of Marks obtained	Letter Grade	Grade point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average

Less than 50	F	0	Fail
Absent	AB	0	Fail

A student who remains absent for any end semester examination shall be assigned a letter grade of AB and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

b) The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called ‘Semester Grade Point Average’ (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester. For example, if a student takes five courses (Theory/Practical) in a semester with credits C1, C2, C3 and C4 and the student’s grade points in these courses are G1, G2, G3 and G4, respectively, and then students’ SGPA is equal to:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4}{C_1 + C_2 + C_3 + C_4}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and ABS grade awarded in that semester. For example if a learner has a F or ABS grade in course 4, the SGPA shall then be computed as:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4*ZERO}{C_1 + C_2 + C_3 + C_4}$$

c) Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the IV semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all IV semesters and their courses. The CGPA shall 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 shall only reflect the new grade and not the fail grades earned earlier. The CGPA is calculated as:

$$CGPA = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4}{C_1 + C_2 + C_3 + C_4}$$

where C1, C2, C3,.... is the total number of credits for semester I,II,III,.... And S1, S2, S3... is the SGPA of semester I, II, III....

3.4 Papers in each year

As mentioned in Course outline (clause 2.4)

3.5 Details of theory exams

As mentioned in Schedule of Regular / Supplementary Exams (clause 3.2)

3.6 Model question paper for each subject with question paper pattern

Given separately for each specialisation. (clause 2.6 and 3.2)

3.7 Internal assessment component

As mentioned in Scheme of examination. (Clause 3.3)

Two sessional exams shall be conducted for each theory/practical course including Seminar/Assignments as per the schedule fixed by the college(s). The average marks of two sessional exams shall be computed for internal assessment as per the requirements

A student shall have the opportunity to improve his/her performance only once in the sessional exam component of the internal assessment. The re-conduct of the sessional exam shall be completed before the commencement of end semester theory examinations.

3.8 Details of practical / clinical practicum exams.

As mentioned in Schedule of Regular / Supplementary Exams (clause 3.2) Scheme of examination. (Clause 3.3)

3.9 Number of examiners (Internal & External) and their qualifications

- A post graduate (PG) degree in the M. Pharm specialisation concerned shall be eligible as teacher.
- A post graduate degree in the M. Pharm specialisation concerned with 5 years Post PG teaching experience is eligible as internal examiner.
- A post graduate degree in the M. Pharm specialisation concerned with 10 years Post PG teaching experience is eligible as external examiner.
- A post graduate degree in the M. Pharm specialisation concerned with 5 years Post PG teaching experience is eligible to guide maximum of 5 candidates for M. Pharm dissertation.

For the conduct of practical examination of Semester I of the specialisations Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmaceutical Analysis and Pharmacology, one external examiner in the M. Pharm specialisation concerned and two internal examiners (one examiner in the M. Pharm specialisation concerned and one examiner in the M. Pharm specialisation dealing with Modern Analytical and Research methods) shall be appointed by the University.

For the conduct of practical examination of Semester I of the Pharmacy Practice specialisation and practical examination of Semester II of all specialisations, and for the Research Work presentation of Semester III & IV one internal and one external examiner each, in the M. Pharm specialisation concerned shall be appointed by the University.

3.10 Details of viva:

As mentioned in Schedule of Regular/Supplementary Exams (clause 3.2) Scheme of examination. (Clause 3.3)

IV. INTERNSHIP

Not applicable

V. ANNEXURES

ANNEXURE 1: Guidelines for conducting end semester practical examination of**SEMESTER I****Total Marks: 100****Duration: 6 Hrs****1. Specialisation –Pharmaceutics –MPH105P**

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
IIa	Formulation and evaluation of floating Drug Delivery Systems. OR In vitro dissolution profile of CR/SR marketed formulation. OR Determination of similarity factor.	25
IIb	Determination of Carr's Index, Hausner's ratio and angle of repose of powders / granules. OR Determination of preformulation parameters for tablet formulation.	15
III	Quantitative analysis of the given sample by Spectrofluorimetry /UV-Visible Spectroscopy	30
IV	Viva voce	15
	Total	100

2. Specialisation –Pharmaceutical Chemistry –MPC105P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
IIa	Any one experiment from the following: Benzilic acid rearrangement/Claisen – Schmidt reaction/ Beckmann rearrangement / Hoffmann rearrangement / Mannich reaction	25
IIb	Synthesis of any one medicinally important compound. OR Any one degradation reaction on selected plant constituent. OR Estimation of elements and functional groups in any one organic natural compound.	15
III	Quantitative analysis of the given sample by Spectrofluorimetry /UV-Visible Spectroscopy	30
IV	Viva voce	15
	Total	100

3. Specialisation –Pharmacognosy –MPG105P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
IIa	Extraction of active constituents of any one crude drug (eg- Aswagandha, Tulsi, Bael, Ginger, Vidang, Lawsonia etc.) and development of finger print by TLC/ HPTLC.	25
IIb	Monograph analysis of clove oil / castor oil. OR Phytochemical screening of crude plant extract. OR Estimation of piperine in formulations. OR Qualitative analysis of caffeine.	15
III	Quantitative analysis of the given sample by Spectrofluorimetry /UV-Visible Spectroscopy.	30
IV	Viva voce	15
	Total	100

4. Specialisation –Pharmaceutical Analysis –MPA105P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
IIa	Estimation of given combination (eg- Paracetamol-Ibuprofen tablets, Diclofenac-paracetamol tablets) by Simultaneous equation method.	25
IIb	Determination of hydroxyl/amino groups in organic compounds. OR Calibration of UV Spectrophotometer / FTIR. OR Determination of fat content in milk. OR Determination of preservative content in food items.	15
III	Quantitative analysis of the given sample by Spectrofluorimetry /UV-Visible Spectroscopy.	30
IV	Viva voce	15
	Total	100

5. Specialisation –Pharmacology –MPL105P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
IIa	Evaluate the given test sample for the presence of specified pharmacological activity (eg- Anticonvulsant, anxiolytic, analgesic, anti-inflammatory, antidepressant, skeletal muscle relaxation, change in locomotion etc.) using suitable animal models (rats/mice) and perform the appropriate statistical test.	25
IIb	Isolation and quantification of DNA/RNA from the given biological sample. OR Enzyme based invitro assay for acetylcholinesterase / α amylase / α glucosidase / myeloperoxidase activity.	15
III	Quantitative analysis of the given sample by Spectrofluorimetry /UV-Visible Spectroscopy.	30
IV	Viva voce	15
	Total	100

6. Specialisation –Pharmacy Practice —MPP105P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Case study presentation as per SOAP format	40
III	Patient counseling/ Patient leaflet preparation	30
IV	Viva voce	15
	Total	100

**ANNEXURE 2: Guidelines for conducting end semester practical examination of
SEMESTER II**

Total Marks: 100

Duration: 6 Hrs

1. Specialisation –Pharmaceutics –MPH205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiment (Any ONE of the following) a) Preparation and evaluation of microspheres/liposomes b) Formulation and evaluation of cream using different excipients. c) Protein binding studies of highly protein bound and poorly protein bound drugs. d) Comparison of Dissolution of different marketed products /brands	40
III	Minor Experiment (Any ONE of the following) a. Improvement of dissolution characteristics of slightly soluble drug by solid dispersion technique b. Formulation and evaluation of /shampoo/toothpaste c. Formulation data analysis /DoE using experimental design software d. Pharmacokinetic data analysis by pharmacokinetic software	30
IV	Viva voce	15
	Total	100

2. Specialisation –Pharmaceutical Chemistry –MPC205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiments (A) Synthesis of any one organic compound by Oxidation /Reduction / Nitration (20 marks) (B) One experiment from Computer Aided Drug Design (20 marks)	40
III	Minor Experiments (A) Synthesis of any one organic compound by microwave assisted reactions (15 marks) (B) Identification of any one organic compound by spectral Interpretation using IR, NMR and Mass Spectroscopy (15 marks)	30
IV	Viva voce	15
	Total	100

3. Specialisation –Pharmacognosy –MPG205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiments a. Standardisation of a herbal hair oil / a herbal shampoo / choorna / any other herbal liquid formulation-20 marks b. Preparation of a herbal cream / herbal liquid formulation -20 marks	40
III	Minor Experiment (Any ONE of the following) Estimation of total alkaloidal / phenolic / flavanoid content OR Evaluation of a herbal tablet / capsule OR Estimation of aldehyde content of a volatile oil OR Initial steps for establishment of Callus culture.	30
IV	Viva voce	15
	Total	100

4. Specialisation –Pharmaceutical Analysis –MPA205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiments (a) Quality control of formulation / packaging materials (20 Marks) (b) Saponification value or Acid value (20 Marks)	40
III	Minor Experiments (a) Identification of compounds by spectral interpretation (FT-IR, NMR, ¹³ CNMR & MS) (15 marks) (b) Determination of Calcium thioglycolate in depilatories (15 marks)	30
IV	Viva voce	15
	Total	100

5. Specialisation –Pharmacology –MPL205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiment Determination of the concentration of the given sample by Multiple point bioassay using a suitable tissue Preparation of graphs - 30 marks Calculation - 10 marks	40
III	Minor Experiment (Any ONE of the following) Estimation of pA_2 value of the given antagonist using suitable isolated tissue; OR Drug absorption studies using everted ileum preparation; OR Finding the Docking score of the given chemical structure with the given receptor using appropriate software	30
IV	Viva voce	15
	Total	100

6. Specialisation –Pharmacy Practice —MPP205P

Q. No.	Question	Marks
I	Synopsis(20 Min) [Based on experiments mentioned in KUHS syllabus]	15
II	Major Experiment Case study presentation as per SOAP format	40
III	Minor Experiment Detection/identification, monitoring and interpretation of Adverse Drug Reactions/Medication Errors in the given Case /presentation	30
IV	Viva voce	15
	Total	100

**ANNEXURE 3: Guidelines for Mark Distribution of
SEMESTER III**

Total Marks: 500

Course	Particulars	Marks
MRM 301T: Research Methodology and Biostatistics	Internal Assessment and End Semester University examinations as in other courses of Semester I & II	100 Marks
Journal Club		
Each candidate shall present a recent review/research article related to his/her specialisation and the same shall be evaluated by a team of faculty members [Research Monitoring committee] including the project guide of the candidate. The marks distribution is as follows:		
	Relevance of the selected article	5 Marks
	Presentation skills including slide preparation	10 Marks
	Answering to the queries	10 Marks
	Total	25 Marks
Proposal presentation/Discussion		
Shall be carried out immediately after topic selection, before finishing first 3 months of third semester.		
Candidates have to carry out a brief digital slide presentation/Discussion (Maximum 10 minutes duration) of the Aim, Objectives & Proposed work plan of the selected research topic before a Research Monitoring committee including the project guide, formed by the Principal of the institution concerned. The research title and synopsis has to be approved by the Research Monitoring committee with/without necessary modification before submitting to the University		
	Relevance of the selected topic	10 Marks
	Knowledge on its relevant background	15 Marks
	Total	25 Marks
Research work		
Shall be carried out at the end of third semester		
	Digital slide presentation & Discussion on:- Relevant literature, methodology in detail, progress of the work so far conducted, briefing on the works remaining (50min)	300 Marks
	Viva voce	50 Marks
	Total	350 Marks

1. Before finishing the first 3 months, as per the notification of the University, the Synopsis of the Project (with its correct title) selected by all the candidates along with the details of their Project guides have to be sent to the University from the Institutions.

Before uploading the Synopsis it has to be approved, based on the Proposal presentation/Discussion, by the College Research Monitoring committee including the project guide, formed by the Principal of each institution.

Besides, wherever needed, the synopsis has to be approved by the Institutional Human/Animal Ethics Committee before its uploading.

The synopsis shall sum up, in not more than 500 words, the problem examined, the methods used and the findings expected. The synopsis shall cover the following components:

- i. Title of the Research Project
- ii. Name of the student with branch and college
- iii. Name of the Guide/Co-Guide, with designation and official address
- iv. Keywords, not more than 10
- v. Shall include Introduction, Review of Literature, Aims & Objectives, Rationale/Background of the study, Research envisaged, Experimental methods/ Methodology, Expected Outcome, etc. in not more than 500 words. (Separate subtitles are not needed.)
- vi. Important references, not more than 7

**ANNEXURE 4: Guidelines for Mark Distribution of
SEMESTER IV**

Total Marks: 500

Course	Particulars	Marks
Journal Club		
Each candidate shall present a recent review/research article related to his/her specialisation and the same shall be evaluated by a team of faculty members [Research Monitoring committee] including the project guide of the candidate. The marks distribution is as follows:		
	Relevance of the selected article	5 Marks
	Presentation skills including slide preparation	10 Marks
	Answering to the queries	10 Marks
	Total	25 Marks
Presubmission presentation/Discussion		
The candidate shall carry out a brief presentation, in the form of a pre submission seminar, of the research work being carried out by him/her, before the Research Monitoring committee formed by the Principal of the institution concerned including the project guide of the candidate, so that he/she gets a chance for the thorough review of his/her work and make necessary modifications on it before submitting it to the University. The marks distribution is as follows:		
	Presentation of the Thesis work	50 Marks
	Viva voce	25 Marks
	Total	75 Marks

At the end of Fourth semester, as per the notification of the University, the details of attendance and marks scored by the candidates, along with the credits scored for co curricular activities have to be uploaded and the eligible candidates have to register for Thesis Submission and Colloquium on Research work.

On the day of University examination the thesis shall be evaluated by the examiners appointed by the university as per the criteria given below:

No.	Particulars	Marks
I	Evaluation of dissertation book	
a	Objectives of the work done	25 Marks
b	Methodology adopted	75 Marks
c	Results & Discussion	100 Marks
d	Conclusion & outcomes	50 Marks
	Total	250 Marks

II	Evaluation of presentation	
a	Presentation of work	75 Marks
b	Communication skills	25 Marks
c	Defense / Answering to the queries	50 Marks
	Total	150Marks
	Grand Total	400Marks

FORMAT FOR PRINTING THE THESIS

The thesis/dissertation shall have the following components:

I. Title page. *See below.*

II. Certificates/Declarations by the Student, Guide/Co-guide and the Head of the Institution.

III. Acknowledgement: *Should not be lengthy; Avoid superlatives.*

IV. Abstract. *To provide a brief summary of the dissertation/thesis in 250 - 300 words, summing up clearly the problem examined, the methods used, and the main findings. Key words, maximum 10; each word relevant and separated by a semicolon.*

V. Table of Contents.

VI. List of Tables & Figures.

VII. List of Abbreviations.

VIII. Research work component, which shall be written under the following headings:

1. Introduction.
2. Review of literature.
3. Aims or Objectives.
4. Material and Methods.
5. Results & Discussion.
6. Summary & Conclusion.
7. References: in Vancouver style. (Not less than 50)
8. Tables & Annexures.

Paper

Only high quality, plain white, unlined bond paper, and 21 cm x 29.7cm (A4 8.27" x 11.69") in size shall be used. Erasable paper should not be used. To allow for binding, the left-hand margin must be at least 3.81 cm (1.5 inch). Other margins shall be 2.54 cm (1 inch).

Times New Roman Font, with size 12 for main text (not in bold) and 1.5 lines spacing shall be used. The size of the titles shall be 14 and Bold, the size of subtitles shall be 12 and bold. The written text of dissertation shall be not less than 75 pages and shall not exceed 150 pages.

Submission of Thesis to University

Four hard bound copies of the thesis (Spiral binding should be avoided) and a soft copy in CD/DVD, in PDF format, shall be submitted. The CD/DVD label shall contain the Title, Name of

the candidate, Register number, Degree name with specialisation, Name of the Guide/Co-guide, Name of the Department, College, Place and Year.

The front cover and the first page of the hard bound copies shall be printed with the title page (See template below) in indelible ink in a suitable font size. Avoid ornamental fonts.

The side-cover (spine) of the thesis book shall contain the title of the thesis, Degree name with specialisation and the Month & year of submission in a font size suitable for reading through a library shelf.

TEMPLATE OF THE TITLE PAGE (front cover and the first page)

SIDE COVER / SPINE OF THE THESIS

(TITLE IN CAPITAL LETTERS; BOLD)

(KUHS Emblem)

By
(Name of the Candidate)
(Reg. No.)

Thesis submitted to the Kerala University of Health Sciences
in partial fulfillment of the requirements for the award of the
Degree of
Master of Pharmacy
In
(Name of Subject/Branch Specialisation)

Under the guidance of
(Name of the Guide/Co-Guide with designation)
(Name of the Department)
(Name of the College)

FACULTY OF PHARMACEUTICAL SCIENCES
KERALA UNIVERSITY OF HEALTH SCIENCES,
THRISSUR – 680596

(Month & Year of submission.)

M.PHARM.
(SPECIALIS
ATION)

(TITLE IN CAPITAL LETTERS; BOLD)

(Month
&
Year)
KUHS
