

**ANDHRA UNIVERSITY**  
**AU COLLEGE OF PHARMACEUTICAL**  
**SCIENCES**



**MASTER OF PHARMACY**  
**(2013)**

Regulations and Syllabus

Four semester pattern with effect from 2013-14

## M.PHARM (2013) REGULATIONS AND SYLLABUS

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### **1. Admission, instruction and attendance**

The degree of Master of Pharmacy of the Andhra University will be conferred on a candidate who has satisfied the following conditions:

- 1.1. The candidate must have passed the B.Pharm. Degree examination of this University or B.Pharm Degree examinations of any other University recognized by the Academic Council as equivalent thereto in First or Second class; and must have qualified in any entrance examination, if prescribed.
- 1.2. The candidate should have undergone a regular course of study as prescribed hereunder extending over a period of four semesters, ordinarily consecutive, and satisfied the academic requirements as prescribed hereinafter. The course of instruction and periods of study shall be as given in the scheme of instruction and in the syllabus.
- 1.3. The specializations for Master of Pharmacy Course shall be as follows:
  1. Pharmaceutical Analysis and Quality Assurance
  2. Pharmaceutical Chemistry
  3. Pharmaceutical Technology
  4. Pharmaceutical Biotechnology
  5. Pharmacology
  6. Pharmacognosy and Phytochemistry
  7. Pharmaceutical Management and Regulatory Affairs
  8. Pharmaceutical Analysis and Quality Control
  9. Pharmaceutics
  10. Industrial Pharmacy
  11. Pharmacy Practice

- 1.4. Instruction and examination in each academic year is spread over two semesters with a minimum of 90 working days in each semester (180 in any given academic year).
- 1.5. Each period of instruction is of 45 minutes duration. Nine periods of instruction are provided on each day and there are five working days in a week (Monday to Friday).
- 1.6. Attendance Requirements: A regular course of study during an academic semester means a minimum of average attendance of 75% of all the courses of the semester computed by totaling the number of periods of lectures and practicals, as the case may be, held in every course. In special cases where sufficient causes were shown, the Vice-Chancellor may on the recommendation of the Principal concerned condone the deficiency in the average attendance to an extent of 9% for reasons such as ill health, if the application for condonation is submitted at the time of actual illness and is supported by certificate of; authorized Medical officer approved by the Principal. However, in the case of students, who participate in activities like N.S.S., N.C.C., Inter-Collegiate tournaments conducted by Andhra University, Inter-University tournaments conducted by Inter-university Board and any such other activities involving the representation of the College/University with the prior approval of the principal, the candidate may be deemed to have attended the college during the period solely for the purpose of the examination
- 1.7. A candidate who cannot satisfy the attendance requirements in clause 1.6 because of late admission under special circumstances reasonable and acceptable to the University on the basis of document, shall fulfill the following conditions; Average attendance: A candidate shall have attended at least a total of 90% of the periods-lectures/practicals as the case may be held from the date of admission and also shall attend at least 50% of the total working days during that academic semester (Late admission means, admissions made after 45 days from date of commencement of the academic semester for the course).
- 1.8. If any candidate fails to satisfy the regulation under 1.6 or 1.7 she/he shall not be allowed for the University Examinations at the end of the semester, and he/she shall not be allowed for promotion to the next higher class of study. He/she shall be required to repeat the regular course of study of that academic semester along with the next regular batch

## **2. Examinations - Sessional and Semester-end**

- 2.1 Assessment for the award of degree shall consist of (a) Internal evaluation for 20 marks in each of the theory and practical courses separately.  
(b) Semester-end examination as detailed in the scheme of examination for 80 marks in each of the theory and practical.
- 2.2 Regulations concerning sessional examination: (a) There shall be two sessional examinations in each theory course and the average of the two shall be taken; (b) the marks for the internal evaluation for the practical are awarded based on the continuous assessment of the performance of the candidate at the practical classes and the records. (c) The teacher who teaches the subject shall ordinarily be the internal examiner (d) There shall be no provision for the improvement of the sessional marks. There is no minimum mark prescribed for sessional examination.
- 2.3 Regulations concerning M.Pharm I and II semester evaluation pattern: There shall be one semester end examination in each theory course based on the question paper set by an external paper setter and there shall be double valuation. There shall be one semester end examination in each practical course as per the scheme of examination and valuation shall be done jointly by two examiners, one external and one internal. The duration of the practical examination is of 6 hours as prescribed.
- 2.4 Regulations concerning M. Pharm. III and IV Semester evaluation pattern:
- 2.4.1 Evaluation of the seminar on the objectives and work plan of the proposed project is to be completed within one month from the commencement of the project date with three examiners from the same college consisting of research guide, another teacher in the concerned specialization and third teacher from different specialization. These teachers must fulfill the eligibility criteria laid down in Section 3
- 2.4.2 Evaluation of the M.Pharm III Semester Mid-term project review and seminar on selected topic will be done by the research guide and external examiner. The seminar on the selected topic shall not be one connected with the topic of the thesis work but should be related to concerned specialization.
- 2.4.3 A candidate shall submit four copies of his/her thesis either printed or typed, embodying the results of research work done by him under direction of an

approved research director following the specific guidelines as stipulated under Section 5. All the candidates must submit their thesis within the prescribed date as per the academic calendar.

2.4.4 The thesis submitted by the candidate shall be examined by a Board of Examiners consisting of an External Examiner and the research director and shall have to be approved after holding a viva voce examination to test the knowledge of the candidate in the subject. The thesis will be evaluated independently by the external examiner and research director and in case the difference between examiners is more than 20%, the thesis shall be sent to a second external examiner whose award shall be the final. The Thesis viva-voce examination will be jointly conducted both by the external examiner and research director. A candidate can re-submit the thesis in a revised form after further work, if required to do so.

2.4.5 A candidate desires of improving his/her class shall take either or both of the first two semesters as a whole.

## 2.5 Guidelines for writing the thesis

The thesis should have the following pages in order:

1. Title page highlighting the title, name of the candidate, reg. no., guide name, college name and month and year of submission
2. The inner title page containing the same details on white background
3. Certificate from the Head of the institution
4. Certificate from the Research Director
5. Certificate from the ethical committees for approval of study, if any
6. Declaration by the student
7. Acknowledgement
8. Index highlighting chapter titles and sections title
9. Index for tables, figures and plates, if any
10. Abbreviations and symbol
11. Materials used in the investigation with their procurement details like name of the company, batch number etc
12. Equipment used in the study with the model number and other details

13. The thesis should contain the following chapters

a) Aim and objectives of the investigation b) Introduction and literature survey  
c) Description: Methods and Materials, etc. d) Experimental work e) Results and discussion  
f) Summary and conclusions g) References (The references may be included at the end of each chapter or at the end of the thesis according to the convenience)

2.5.1. The thesis should be typed in times new roman in 12 font size with 1.5 line spacing from the beginning of the thesis including titles to the chapters and sections. Bold font may be used wherever necessary. The students are expected to follow scientific grammar for writing *in vivo* etc. which should be in italics.

2.5.2. The citation of references should be done carefully by citing the complete reference i.e. name of all the authors. Usage of et al. is not allowed in the citation of reference. The students are expected to give the primary references rather than secondary or higher levels of references. The presentation of reference must be in Vancouver style.

2.5.3. No code names or numbers are allowed to be written in the thesis for the materials used in the project.

2.5.4. The examiners of thesis evaluation are expected to verify all this and appropriate corrections are to be made before conducting the Thesis viva-voce examination.

### **3. Eligibility criteria for appointment as examiner for M.Pharm examination**

3.1. In order to eligible to be appointed as an internal examiner for the semester end examination in the respective specialization, a teacher shall have M. Pharm. or Ph.D. in the respective specialization with at least three years of M.Pharm teaching experience for the course concerned.

3.2. The eligibility of a teacher for guiding the M.Pharm III and IV semester project is as follows:

3.2.1. The teacher must have M.Pharm/Ph.D. in the respective specialization with an experience of minimum 3 years of Post Graduate teaching in the respective specialization.

3.2.2. The eligibility of such teachers qualified for guiding M.Pharm projects must be ratified by the Board of Studies before commencement of M.Pharm guidance.

3.2.3. The recognised M.Pharm guides are not eligible to guide more than 6 students in one academic year including joint guidance.

#### **4. Regulations for pursuing M.Pharm III and IV Semester project**

4.1. Students desirous of pursuing M.Pharm III and IV semester projects outside college are required to get the approval from the college before one month from the commencement of the project work. The research work can be carried out in a GMP compliant industry (as approved by WHO, USFDA etc.) and Central research laboratories like IICT, CDRI, NIH etc. or DSIR and Drug Control Administration recognized laboratories. A certificate to that effect must be incorporated in the M.Pharm thesis indicating the duration of stay. If the duration of stay is less than nine months the remaining period of stay in the college should be certified by the research supervisor and the Principal.

4.2. All the students should present a seminar on the objectives of their work, work plan, etc. within one month from the commencement of the project. The students should attend a mid-term review seminar in the presence of a committee consisting of one external examiner, research director. The suggestions made by the committee are to be taken into consideration for further work and should be presented in the thesis.

#### **5. Declaration of results and classification:**

5.1. A candidate shall be declared to have passed the examination held at the end of each semester if obtains i) not less than 40% in the each theory and 50% in each practical, seminar, comprehensive viva, thesis and Thesis viva-voce at the end of each semester end examination and ii) an aggregate of 50% of all examinations of that semester including sessionals. There are no minimum marks prescribed for sessional examination.

5.2. A candidate who has successfully completed the examination in a course by securing not less than 50% of marks shall not be permitted to retake the examination in that course.

5.3. A candidate who fails to secure 50% of marks on the aggregate but secures 50% or more in some courses and between 40-49% in the other courses, he/she shall be required to retake

the semester and supplementary examination in one or more of the courses in which he/she secures less than 50% of marks as per his/her choice to satisfy the requirement of 50% aggregate.

## **6. Grading system:**

- 6.1. Appropriate letter grades are awarded in each theory and practical subject to only such candidates who have passed in the university examinations. Internal assessment marks and university examination marks put together will be taken into account for the letter grading system in each subject separately.
- 6.2. A candidate registered for the university examination but fails to appear or fails to score the minimum required 40% marks in the university examination will get a grade 'F', indicating failure or grade of incompleteness.
- 6.3. A subject successfully completed cannot be repeated. Final evaluation of each subject (theory and practical separately) will be carried out on a 10- point grading system corresponding to the marks obtained in that subject. Each subject letter grade is converted into a specific grade value associated with the letter grade as given below (Table).
- 6.4. The following are the credits allotted to each subject in the respective specialization.

### **M.Pharm I & II Semesters**

Theory paper with 100 marks weightage: 4 credits

Practical with 100 marks weightage: 2 credits

Comprehensive viva: 2 credits

### **M.Pharm III Semester**

Seminar on the objectives and work plan of the proposed project: 2 credits

Mid-term project review: 2 credits

Seminar on selected topic: 4 credits

### **M.Pharm IV Semester**

Thesis evaluation: 4 credits

Thesis viva-voce: 2 credits



**Table: 10 Point grading system**

S. No.	Range of marks	Grade	Grade points
	>85%	O	10.0
	75% - 85%	A	9.0
	67% - 74%	B	8.0
	58% - 66%	C	7.0
	50% - 57%	D	6.0
	40% - 49%	E	5.0
	< 40%	F(Fail)	0.0
	The grade W represents failure due to insufficient attendance in the semester or year	W	0.0
	Incomplete (subsequently to be changed into pass or E or O or F grade in the same semester)	I	0.0

6.4. Semester Grade point average (SGPA): The grade points are weighted in accordance with the number of credits assigned to a theory or practical subject and it is a product of credit and grade value. The semester grade point average (SGPA) is the weighed average of grade points awarded to a candidate.

$$SGPA = \frac{\text{Total grade points of a particular semester}}{\text{Total number of credits of the semester}}$$

Performance in the non credit courses in which a pass (i.e., 35% or more) is sufficient will not be considered for calculation of SGPA. SGPA (semester grade point average) for each semester will be calculated for those candidates who have passed all the subjects of that particular semester of the course. D. Pharm holders, who take direct admission to third semester B.Pharm, are exempted from first and second semester B.Pharm credits.

6.5. Cumulative Grade Point Average (CGPA): The weighed average of SGPA's of all Semesters that the student has completed at any point of time is the cumulative grade point

average (CGPA) at that point of time. CGPA up to a semester will be calculated only for those students who have passed all the subjects up to that semester. Generally, CGPA is calculated after the successful completion of the entire B.Pharm course.

$$\text{CGPA} = \frac{\sum (\text{SGAP of each semester} * \text{corresponding number of credits})}{\text{Sum of the entire course credits}}$$

After the results are declared, grade cards will be issued to each student, which will contain the list of subjects for that semester and grades obtained by the student. For Diploma holders, who take direct admission to third semester of B.Pharm, only six semester course credits i.e., 3<sup>rd</sup> to 8<sup>th</sup> semesters of B.Pharm will be considered for CGPA calculation.

## 7. Guidelines for paper setting and model papers.

### 7.1. Guidelines for theory paper setting

7.1.1. The semester end question paper in each theory course is to be set for a total of 80 marks by an external paper setter as per the general model given below.

7.1.2. Question paper consists of 7 questions each carrying 16 marks out of which 5 questions are to be answered by the candidate for a total of 80 marks. Each main question may contain subsections like a, b, c etc

7.1.3. The questions given should be spread over the entire syllabus in an even manner

7.1.4. Model question paper for theory course:

Course No

Title of the course

Time: 3Hrs

Max.Marks:80

Answer any **five** questions out of seven questions                      16X5=80

### 7.2. Guidelines for practical paper setting

7.2.1 The question paper in each semester end practical examination is to be set jointly by two examiners and evaluated, one external and one internal as per the general model provided below.

7.2.2. Model question paper for practical course:

Course No.

Title of the course

Time: 6 hrs.

1. Synopsis	15 marks
2. Major experiment	35 marks
3. Minor experiment	20 marks
4. Viva voce	10 marks

**Total: 80 marks**

**The subjects of each specialization for M.Pharmacy course are as follows:**

**1. PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE**

**I/II I Semester**

Course No.	Name of the subject	No. of periods/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
1101	Biostatistics Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
1102	Advanced Pharmaceutical Analysis I Theory	5	--	20	80	100	5 out of 7
1103	Advanced Pharmaceutical Analysis I Practical	--	10	20	80	100	
1104	Validation of Instrumental Methods of Analysis I Theory	5		20	80	100	5 out of 7
1105	Validation of Instrumental Methods of Analysis I Practical	--	10	20	80	100	
1106	Comprehensive Viva	--	--	--	--	50	
	<b>Total</b>					<b>550</b>	

**I/II II Semester**

1207	Modern Analytical Techniques Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
1208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
1209	Bio analytical Methods Theory	5	--	20	80	100	5 out of 7
1210	Advanced Pharmaceutical Analysis II Theory	5	--	20	80	100	5 out of 7
1211	Advanced Pharmaceutical Analysis II Practical		10	20	80	100	
1212	Comprehensive Viva	--	--	--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

1313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
1314	Mid-term project review at the end of third semester			50
1315	Seminar on Selected Topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

1416	Thesis evaluation			100
1417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

## 2. PHARMACEUTICAL CHEMISTRY

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
2101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
2102	Pharmaceutical Chemistry - I Theory (Advanced Organic Chemistry)	5		20	80	100	5 out of 7
2103	Pharmaceutical Chemistry - I Practical	--	10	20	80	100	
2104	Pharmaceutical Chemistry-II Theory (Natural Products of Medicinal Interest)	5		20	80	100	5 out of 7
2105	Pharmaceutical Chemistry-II Practical(Natural Products of Medicinal Interest)		10	20	80	100	
2106	Comprehensive Viva	--		--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

2207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
2208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
2209	Advanced Medicinal Chemistry Theory	5		20	80	100	5 out of 7
2210	Pharmaceutical Chemistry-III Theory (Bulk Drugs and Synthetics)	5		20	80	100	5 out of 7
2211	Pharmaceutical Chemistry-III Practical(Bulk Drugs and Synthetics)		10	20	80	100	
2212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

2313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
2314	Mid-term project review at the end of third semester			50
2315	Seminar on Selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

2416	Thesis evaluation			100
2417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

### 3. PHARMACEUTICAL TECHNOLOGY

#### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
3101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
3102	Biopharmaceutics and Pharmacokinetics Theory	5	--	20	80	100	5 out of 7
3103	Biopharmaceutics and Pharmacokinetics Practical	--	10	20	80	100	
3104	Advanced Physical Pharmaceutics Theory	5	--	20	80	100	5 out of 7
3105	Advanced Physical Pharmaceutics Practical	--	10	20	80	100	
3106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

#### I/II II Semester

3207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
3208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
3209	Novel Drug Delivery Systems Theory	5	--	20	80	100	5 out of 7
3210	Product Formulation and Development Theory	5	--	20	80	100	5 out of 7
3211	Product Formulation and Development Practical	--	10	20	80	100	
3212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

#### II/II III Semester



3313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
3314	Mid-term project review at the end of third semester			50
3315	Seminar on Selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

3416	Thesis Evaluation			100
3417	Thesis Viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand total</b>			<b>1500</b>

#### 4. PHARMACEUTICAL BIOTECHNOLOGY

##### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
4101	Biostatistics Theory (Common paper for all Specializations)	5		20	80	100	5 out of 7
4102	Molecular Biotechnology & Genetics of Industrial Microorganisms Theory	5	--	20	80	100	5 out of 7
4103	Molecular Biotechnology & Genetics of Industrial Microorganisms Practical	--	10	20	80	100	
4104	Bioprocess Technology Theory	5	--	20	80	100	5 out of 7
4105	Bioprocess Technology Practical	--	10	20	80	100	
4106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

##### I/II II Semester

4207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
4208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
4209	Advanced Pharmaceutical Biotechnology Theory	5	--	20	80	100	5 out of 7
4210	Biochemical Engineering Theory	5	--	20	80	100	5 out of 7
4211	Biochemical Engineering Practical	--	10	20	80	100	
4212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

4313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
4314	Mid-term project review at the end of third semester			50
4315	Seminar on Selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

4416	Thesis evaluation			100
4417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand total</b>			<b>1500</b>

## 5. PHARMACOLOGY

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
5101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
5102	Pharmacokinetics and Drug Metabolism Theory	5	--	20	80	100	5 out of 7
5103	Pharmacokinetics and Drug Metabolism Practical	--	10	20	80	100	
5104	Systemic Pharmacology Theory	5	--	20	80	100	5 out of 7
5105	Systemic Pharmacology Practical	--	10	20	80	100	
5106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

5207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
5208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
5209	Advanced Pharmacology Theory	5	--	20	80	100	5 out of 7
5210	Bioassays and Pharmacological Screening Methods Theory	5	--	20	80	100	5 out of 7
5211	Bioassays and Pharmacological Screening Methods Practical	--	10	20	80	100	
5212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

5313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
5314	Mid-term project review at the end of third semester			50
5315	Seminar on selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

5416	Thesis evaluation			100
5417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

## 6. PHARMACOGNOSY AND PHYTOCHEMISTRY

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
6101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
6102	Advanced Pharmacognosy and Phytochemistry Theory	5	--	20	80	100	5 out of 7
6103	Advanced Pharmacognosy and Phytochemistry Practical	--	10	20	80	100	
6104	Industrial Pharmacognosy Theory	5	--	20	80	100	5 out of 7
6105	Industrial Pharmacognosy Practical	--	10	20	80	100	
6106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

6207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
6208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
6209	Biological Evaluation of Natural Products Theory	5	--	20	80	100	5 out of 7
6210	Herbal Drug Technology and Formulations Development Theory	5	--	20	80	100	5 out of 7
6211	Herbal Drug Technology and Formulations Development Practical	--	10	20	80	100	
6212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

6313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
6314	Mid term project review at the end of third semester			50
6315	Seminar on selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

6416	Thesis evaluation			100
6417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

## 7. PHARMACEUTICAL MANAGEMENT AND REGULATORY AFFAIRS

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
7101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
7102	Pharmaceutical Organization and Production Management Theory	5	--	20	80	100	5 out of 7
7103	Pharmaceutical Organization and Production Management Practical	--	10	20	80	100	
7104	Indian Drug Regulatory Affairs Theory	5	--	20	80	100	5 out of 7
7105	Indian Drug Regulatory Affairs Practical	--	10	20	80	100	
7106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

7207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
7208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
7209	Pharmaceutical Management Science Theory	5	--	20	80	100	5 out of 7
7210	International Drug Regulatory Aspects Theory	5	--	20	80	100	5 out of 7
7211	International Drug Regulatory Aspects Practical	--	10	20	80	100	
7212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	



II/II III Semester

7313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
7314	Mid term project review at the end of third semester			50
7315	Seminar on Selected topic			100
	<b>Total</b>			<b>200</b>

II/II IV Semester

7416	Thesis evaluation			100
7417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

## 8. PHARMACEUTICAL ANALYSIS AND QUALITY CONTROL

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
8101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
8102	Advanced Pharmaceutical Analysis I Theory (Paper common with Pharmaceutical Analysis and Quality Assurance)	5	--	20	80	100	5 out of 7
8103	Advanced Pharmaceutical Analysis I Practical (Paper common with Pharmaceutical Analysis and Quality Assurance)	--	10	20	80	100	
8104	Quality Control of Pharmaceuticals Theory	5	--	20	80	100	5 out of 7
8105	Quality Control of Pharmaceuticals Practical	--	10	20	80	100	
8106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

8207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
8208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
8209	Validation of Instrumental Methods of Analysis Theory	5	--	20	80	100	5 out of 7
8210	Advanced Pharmaceutical Analysis II Theory (Paper common with Pharmaceutical Analysis and Quality Assurance)	5	--	20	80	100	5 out of 7
8211	Advanced Pharmaceutical Analysis II Practical (Paper common with Pharmaceutical Analysis and Quality Assurance)	--	10	20	80	100	
8212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	



## II/II III Semester

8313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project			50
8314	Mid term project review at the end of third semester			50
8315	Seminar on Selected Topic			100
	<b>Total</b>			<b>200</b>

## II/II IV Semester

8416	Thesis evaluation			100
8417	Thesis viva-voce			100
	<b>Total</b>			<b>200</b>
	<b>Grand Total</b>			<b>1500</b>

## 9. PHARMACEUTICS

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessiona 1	Semester end		
9101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
9102	Biopharmaceutics and Pharmacokinetics Theory (Paper common with Pharmaceutical Technology and Industrial Pharmacy)	5	--	20	80	100	5 out of 7
9103	Biopharmaceutics and Pharmacokinetics Practical (Paper common with Pharmaceutical Technology and Industrial Pharmacy)	--	10	20	80	100	
9104	Advanced Physical Pharmaceutics Theory (Paper common with Pharmaceutical Technology)	5	--	20	80	100	5 out of 7
9105	Advanced Physical Pharmaceutics Practical (Paper common with Pharmaceutical Technology)	--	10	20	80	100	
9106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

## I/II II Semester

9207	Modern Analytical Techniques Theory (Common paper for all specializations)	5				100	5 out of 7
9208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--			100	5 out of 7
9209	Industrial Pharmacy II Theory (Paper common with Industrial Pharmacy)	5	--			100	5 out of 7
9210	Novel Drug Delivery Systems Theory (Paper common with Pharmaceutical Technology and Industrial Pharmacy)	5	--			100	5 out of 7
9211	Novel Drug Delivery Systems Practical (Paper common with Pharmaceutical Technology and Industrial Pharmacy)	--	10			100	
9212	Comprehensive Viva					50	
	<b>Total</b>					<b>550</b>	

## II/II III Semester

9313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project						50
9314	Mid term project review at the end of third semester						50
9315	Seminar on selected topic						100
	<b>Total</b>						<b>200</b>

## II/II IV Semester

9416	Thesis evaluation						100
9417	Thesis viva-voce						100
	<b>Total</b>						<b>200</b>
	<b>Grand Total</b>						<b>1500</b>

## 10.INDUSTRIAL PHARMACY

I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
10101	Biostatistics Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
10102	Biopharmaceutics and Pharmacokinetics Theory (Paper common with Pharmaceutical Technology and Pharmaceutics)	5	--	20	80	100	5 out of 7
10103	Biopharmaceutics and Pharmacokinetics Practical (Paper common with Pharmaceutical Technology and Pharmaceutics)	--	10	20	80	100	
10104	Industrial Pharmacy I Theory	5	--	20	80	100	5 out of 7
10105	Industrial Pharmacy I Practical	--	10	20	80	100	
10106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

## I/II II Semester

10207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
10208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
10209	Industrial Pharmacy II Theory	5	--	20	80	100	5 out of 7
10210	Novel Drug Delivery Systems Theory (Paper common with Pharmaceutical Technology and Pharmaceutics)	5	--	20	80	100	5 out of 7
10211	Novel Drug Delivery Systems Practical (Paper common with Pharmaceutical Technology and Pharmaceutics)	--	10	20	80	100	
10212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

## II/II III Semester

10313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project						50
10314	Mid term project review at the end of third semester						50
10315	Seminar on selected topic						100
	<b>Total</b>						<b>200</b>

## II/II IV Semester

10416	Thesis evaluation						100
10417	Thesis viva-voce						100
	<b>Total</b>						<b>200</b>
	<b>Grand Total</b>						<b>1500</b>



## 11. PHARMACY PRACTICE

### I/II I Semester

Course No.		No. of hours/week		Maximum Marks		Total	Questions to be answered in the semester end examination
		Theory	Practical	Sessional	Semester end		
11101	Biostatistics Theory (Common paper for all specializations)	5		20	80		5 out of 7
11102	Pharmaco Therapeutics I Theory	5	--	20	80	100	5 out of 7
11103	Pharmaco Therapeutics I Practical	--	10	20	80	100	
11104	Clinical Pharmacy Theory	5	--	20	80	100	5 out of 7
11105	Clinical Pharmacy Practical	--	10	20	80	100	
11106	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

### I/II II Semester

11207	Modern Analytical Techniques Theory (Common paper for all specializations)	5		20	80	100	5 out of 7
11208	Quality Assurance and Drug Regulatory Affairs Theory (Common paper for all specializations)	5	--	20	80	100	5 out of 7
11209	Pharmaco Therapeutics II Theory	5	--	20	80	100	5 out of 7
11210	Hospital and Community Pharmacy Theory	5	--	20	80	100	5 out of 7
11211	Pharmaco Therapeutics and Hospital	--	10	20	80	100	

	and Community Pharmacy Practical						
11212	Comprehensive Viva			--	--	50	
	<b>Total</b>					<b>550</b>	

II/II III Semester

11313	Seminar on the objectives and work plan of the proposed project to be completed within one month from the commencement of the project					50	
11314	Mid term project review at the end of third semester					50	
11315	Seminar on selected topic					100	
	<b>Total</b>					<b>200</b>	

II/II IV Semester

11416	Thesis evaluation					100	
11417	Thesis viva-voce					100	
	<b>Total</b>					<b>200</b>	
	<b>Grand total</b>					<b>1500</b>	