

JSS Academy of Higher Education & Research

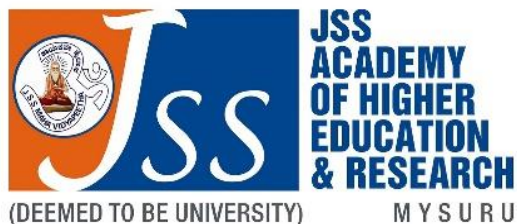
JSS College of Pharmacy

Sri Shivarathreshwara Nagara, Mysuru-570015

Ph: 0821-2548353, Fax: 0821-2548359, Email: jsscpsy@jssuni.edu.in

Website: www.jssuni.edu.in

An ISO 9001:2015 Certified Institution



Accredited 'A+' Grade by NAAC

Course Handout

2023-24

Class: B. Pharm – VII Semester

Name : _____

Roll No. : _____



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VISION

To be a leader in Pharmacy Education, Training and Research to Transform Individuals and Society.

MISSION

- To educate and inspire diverse group of future pharmacists and pharmaceutical scientists to be a leader in pharmaceutical sciences and pharmacy practice.
- To provide conducive environment and infrastructure that motivate and enable individuals to excel in research that benefits the society.
- To train and empower the individuals to advance the public health through quality pharmaceutical care services.
- To reach out the public through outreach programs to meet the changing needs of the society.
- To contribute to a sustainable future by adopting innovative technologies and advance pharmacy education and training.

CORE VALUES

- Innovation, Leadership, Excellence, Integrity, Respect, Professionalism

QUALITY POLICY

1. To provide accurate and unbiased assessment of Examinees/ Students.
2. To provide excellent work environment and to promote technical superiority.
3. To carry out work in such a way that student (customer) satisfaction, as well as confidence in college independence, competence, impartiality, and integrity are maintained.

MOBILE PHONE POLICY

- Staff members shall not keep their mobile phones switched on while conducting theory, practical classes and in library.
- Students' mobile phones should be put off in the college premises. If found ringing in the college premises the teachers are authorized to confiscate the mobiles and report to the principal.
- If found guilty, the confiscated mobile phones will not be returned to the student till completion of the course.

Academic Calendar 2023-24 (B. Pharm – VII Semester)

1. Commencement of Classes

B. Pharm – VII Semester - 10th July 2023

2. Sessional Examination Schedule

I	II
06 th September	15 th November

3. Closure of Term

- 21st November 2023

4. End semester Examination

- 18th December 2023

Teacher's In charge

Class	Class Teacher	Batch No.	Batch Teacher
II Year III semester	Dr. Rupshee Jain (RJ)	I	Dr. Rupshee Jain (RJ)
		II	Mr. Trideva Sastri K (TSK)
		III	Dr. Srikanth M S (MSS)
		IV	Dr. Meghana G S (MGS)

ACTIVITIES AND COORDINATORS 2023-24

Curricular & Co curricular activities

Sl. No	Activities	Coordinator/s	Tentative schedule of meeting/activity
1.	Induction, learning skills, and personality development programs for freshers' day	Coordinator: AKT Members: BRJ, DT	July/August 2023
2.	Anti-ragging cell	Coordinators: JS, KSN, & Committee members	July/August 2023
3.	Grievance and redressal cell	Coordinator: GVP & Committee members	Meetings - twice/year
4.	Gender Sensitization Committee	Coordinator: SNM & Committee members	Meetings - twice/year

5.	Industrial Visits, Training, and placements	Coordinator: ABP Members: MGS, SM, SD, LR, UM	September 2023- June 2024
6.	Internal Quality Assurance Cell (IQAC) Team	Chairman- GVP Coordinator- HVG Member Secretary: SP Members: RSC, MPV, KSN, CIA, HP	4 meetings/year
7.	Guest lecture & Seminar/ Conference/ Training / Workshop/Webinar organized at college / delivered/ attended by staff- Validation of college data.	IQAC Team	Throughout the academic year
8.	Governing council meeting	GVP + IQAC Team AAO & Asha B	July 2023 and Feb 2024
9.	Preparation of documents and submission for NIRF, NAAC, NBA, PCI or any other agency	Team IQAC	<ul style="list-style-type: none"> Throughout the academic year
10.	Internal Assessment Committee (IAC)	Coordinator: GVP Members: All program Coordinators (M Pharm, B. Pharm, D Pharm, Pharm D)	Meetings - twice/year Schedule as per the academic calendar
11.	ACPE committee- Interim report and others	Coordinator: MR /RSS Member: SP & UM	<ul style="list-style-type: none"> As required
12.	Academic Council Board (ACB) <ul style="list-style-type: none"> Student Progression (Advanced/ Medium/ Slow learners) Mentors Diary- Student profile 	Class teachers and Program Coordinators	<ul style="list-style-type: none"> After each sessional exam Regular monitoring of Mentee
13.	Ethics committee	<ul style="list-style-type: none"> IAEC-SBC IEC-CSH 	<ul style="list-style-type: none"> Twice a year
14.	Class Timetable committee	Coordinator: VJ Member: BRP, NPK, URR, DT	<ul style="list-style-type: none"> Twice a year (June & Nov 2023)
15.	Women's cell/Prevention of Sexual Harassment Cell/Internal Complaints committee (ICC)	SNM & committee members	<ul style="list-style-type: none"> Meetings twice a year (June & Nov 2023)
16.	Scholarship Bureau	Coordinator: RSC Member: SRD	Soon after the announcement of the Scholarships

17.	Compilation of publications (Research papers/ books/chapters)	Coordinator: SRD	1st of Every month
18.	Research Coordination & Consultancy Committee Compilation of Ph.D. details and funded projects Review of publications Collaboration with Industries/organizations Interdepartmental/ Interdisciplinary research	Chairman-SBC Members-All HoDs	At least 3 meetings/year
19.	Department Academic Integrity Panel (DAIP) - Plagiarism Check for PhD & M Pharm thesis	Chairman-TMP Member Secretary: BRP Member-VJ	During the submission of thesis by the students
20.	Pharmacy Education Unit – for CCLPE activities	MSS	At least 5 activities/ year
21.	Annual result analysis and List of merit students	Class teachers and M Pharm Course Coordinators	Soon after the exam results
22.	GPAT and other competitive exams (TOEFL, GRE etc.)	Coordinator: SNM Members: RAO, RJ	Planning of coaching Throughout the academic year
23.	Library orientation	Librarian	July/August 2023
24.	Library staff coordinator	Coordinator: HYK Members: PP, AAR, RG, DT, and AAP	Two meetings/year Yearly textbook requirements
25.	Soft Skills Training	Coordinator: ABP Member: MGS	At least 3 activities/year
26.	International Student Rotation	CSH	As and when
27.	Hackathon	RAO	At least two events/ year
28.	Golden Jubilee-Souvenir, press and publicity	Chairman- TMP/ GVP Members-BS, KSN, RJ, RG, CIA	August 2022- August 2023
29.	SDG- Activities and Compendium	CIA, PP	<ul style="list-style-type: none"> • Compendium- August 23 • Regular activity under each SDG
30.	Course handouts/ Teachers' diary/ Student Handbook/Faculty Handbook.	NPK & HYK	<ul style="list-style-type: none"> • July/ August 2023

31.	National Pharmacy Week (NPW) & Pharmacists Day	Coordinator: UM & IPA office bearers	<ul style="list-style-type: none"> Nov-Dec 2023
32.	Alumni association	Coordinator: HVG Member: SM	<ul style="list-style-type: none"> August/September 2023
33.	Herbal and College Garden	NPK	<ul style="list-style-type: none"> Regular monitoring
34.	ISO 9001:2015	Coordinator: SNM Member: SM	<ul style="list-style-type: none"> 2 Internal audits (July and December) Surveillance/Recertification audit
35.	Press and publicity	Coordinator: BRP Member: TS	During the Conferences/workshop organized
36.	Foreign students' cell	MPV	At least 2 meetings
37.	Monthly/Annual report of college and JSSU Newsletter & Annual report of JSS AHER and other agencies	Coordinator: KM Members: PP, HP, AAP, DT, AAR	Monthly report
38.	College website updating	Coordinator: HKS Members: AKT, DT, RG, URR, MGS	Throughout the year
39.	JSSUonline.com Student promotion, Timetable, teacher allotment, and others	Coordinator - SRD	Throughout the year
40.	Annual group photo session	HP, RG	Feb 2024
41.	Lab coat and Blazers	JS and Ningaraju	August/Sep 2023
42.	Notice Board (SNB, LNB, and IIPC), Departmental staff list	Shadakshari	Throughout the year
43.	Stock verification	Ningaraju	April/May 2024
44.	Student Liaison	Coordinator: AAO Member: TS	Throughout the year
45.	Student ID Cards /Attendance entry	Shivanna & Kumar	Aug/Sep 2023
46.	Retreat for Pharmacy Students	AKT	Nov/Dec 2023
47.	Retreat for Teachers	JS	November 2023/May 2024
48.	Feedback	VJ & SA	April/May 2023
49.	Institute Innovation Cell	Coordinator: RAO Member: DT	Throughout the year
50.	Practice School	Coordinator: ST Member: KSN, PS, MSS, PP	Throughout the year

51.	MOUs-Collate College initiation activities	HP	June 2023 & Jan 2024
Extracurricular activities			
Sl. No.	Activities	Coordinator/s	Tentative schedule of meeting/activity
52.	Selection of Class Representatives, Pharmaceutical society members Annual planning and execution of Student-centered and professional activities including the inauguration of IPS	Coordinator: MPV Member: MSS	July 2023
53.	JASPHARM- College magazine	Coordinator: BS Member: AAP	July 2024
54.	STUMAG- College wall magazine	TSK, LR	At least 3 issues/year
55.	Sports coordinators	HYK, SND	Feb 2024
56.	NSS coordinators	Program Officer- URR Assistant PO - SND	Regular activities and special camp
57.	Cultural & Literary coordinators	PS, MGS, LR	Nov 2023
58.	Annual Day Celebration & Graduation Day	CIA, ASP	March 2024, July 2024
59.	Foreign languages	CIA, PP	Throughout the year
60.	College Calendar & Events	RSC, MPV	June / July 2023

Program committees			
Sl. No.	Programs	Chairperson	Member Secretary
1.	D. Pharm	GVP	MSS
2.	B. Pharm	GVP	MPV
3.	Pharm. D	TMP	CSH
4.	M. Pharm	TMP	KRSCM
5.	Diploma programs	GVP	RJ
Sl. No	M. Pharm Program		Coordinator
6.	Pharmaceutics		RAO
7.	Industrial Pharmacy		ASP
8.	Pharmaceutical Regulatory Affairs		MPV
9.	Pharmaceutical Quality Assurance		HKS
10.	Pharmaceutical Chemistry		HYK
11.	Pharmaceutical Analysis		AKT
12.	Pharmacology		SM
13.	Pharmacognosy		NPK
14.	Pharmacy Practice		UM
15.	Pharmaceutical Biotechnology		RG
Sl. No	PG Diploma Program	Coordinator	
16.	Pharmacovigilance		CSH
17.	Medicine & Poison Information		UM
18.	Clinical Research		SP
19.	Pharmaceutical Quality Assurance		ST
20.	Pharmaceutical Regulatory Affairs		MPV
21.	Medical Devices		MGS

22.	Intellectual Property Rights	ARR/HYK
23.	Computer Aided Drug Design	SD
24.	Food and Drug Analysis	RJ
25.	Regulatory Toxicology	SBC
26.	Phytopharmaceutical and Industrial Applications	NPK
27.	Quality Control	AKT
Sl. No	Certificate Course	Coordinator
28.	Pharmaceutical Quality Assurance	HKS
29.	Herbal Drug Standardization	HP
30.	Medicine Information	BRJ
31.	Clinical Research	SP
32.	Global Regulatory Affairs	MPV
33.	Food & Nutraceuticals	RJ
34.	Telemedicine	BRJ

Class and Batch Teachers-2022-23

Class	Class Teacher	Batch Teacher I	Batch Teacher II	Batch Teacher III	Batch Teacher IV
I B. Pharm	HKS	HKS	SD	CIA	SM
II B. Pharm	PP	PS	RG	PP	ST
III B. Pharm	LR	LR	KSN	AKT	SNM

IV B. Pharm	RJ	RJ	TSK	MSS	MGS
I Pharm. D	BRP	BRP	TSK	-	-
II Pharm. D	CSH	CSH	HP	-	-
III Pharm. D	HYK	HYK	ASP	-	-
IV Pharm. D	UM	UM	RAO	-	-
V Pharm. D	BRJ	BRJ	RSS	-	-
I D. Pharm	ARR	ARR	BS	PP	MSS
II D. Pharm	URR	URR	SND	DT	-

Note:

- All coordinators are informed to adhere the number of meetings to be scheduled for activities.
- Maintain the file for each activity and furnish to the office or regulatory bodies as and when required.
- Updating the minutes of meetings/activities coordinated in the google forms and college website.

List of Holidays

July 29	Sat	Last Day of Muharam	Nov 30	Thu	Kanakadasa Jayanthi
Aug 15	Tue	Independence Day	Dec 25	Mon	Christmas
Sep 18	Mon	Varasiddhi Vinayaka Vratha	Jan 15	Mon	Makar Sankranti
Sep 28	Thu	Id Milad	Jan 26	Fri	Republic Day
Oct 2	Mon	Gandhi Jayanthi	Mar 8	Fri	Maha Shivaratri
Oct 23	Mon	Ayudha Pooja	Mar 29	Fri	Good Friday
Oct 24	Tue	Vijaya Dashami	Apr 9	Tue	Ugadi
Oct 28	Sat	Maharshi Valmiki Jayanthi	Apr 11	Thu	Ramzan
Nov 1	Wed	Kannada Rajyotsava	Apr 17	Wed	Ramanavami
Nov 14	Tue	Bali Padyami			

CONTACT DETAILS OF TEACHING FACULTY

Sl. No	NAME	QUALIFICATION	DESIGNATION	DEPARTMENT
1.	Dr. T.M. Pramod Kumar (TMP)	M.Pharm., Ph.D.	Professor & Principal	Pharmaceutics
2.	Dr. Gurubasavaraj V Pujar (GVP)	M.Pharm., Ph.D.	Professor & Vice Principal	Pharma. Chemistry
3.	Dr. Balamuralidhara V. (BMV)	M.Pharm., Ph.D.	Assoc. Professor & Head	Pharmaceutics
4.	Dr.K. Bangarurajan (KBR)	M.Pharm., Ph.D.	Professor	Pharmaceutics
5.	Dr. Gangadharappa H.V. (HVG)	M.Pharm., Ph.D.	Assoc. Professor	Pharmaceutics
6.	Dr. M.P. Venkatesh (MPV)	M.Pharm., Ph.D.	Assoc. Professor	Pharmaceutics
7.	Dr. Vikas Jain (VJ)	M.Pharm., Ph.D.	Assoc. Professor	Pharmaceutics
8.	Dr. Amit B Patil (ABP)	M.Pharm., Ph.D.	Assoc. Professor	Pharmaceutics
9.	Dr. Hemanth Kumar S (HKS)	M.Pharm., Ph.D.	Asst. Professor	Pharmaceutics
10.	Dr. Osmani Mir Riyaz Ali MahafezAli (RAO)	M.Pharm., Ph.D.	Asst. Professor	Pharmaceutics
11.	Dr. Asha Spandana K M (ASP)	M.Pharm., Ph.D.	Lecturer	Pharmaceutics
12.	Dr. Shailesh T(TS)	M.Pharm., Ph.D.	Lecturer	Pharmaceutics
13.	Ms. Preethi S (PS)	M.Pharm	Lecturer	Pharmaceutics
14.	Ms. Akhila AR (AAR)	M.Pharm	Lecturer	Pharmaceutics
15.	Mr. Trideva Sastri K (TSK)	M.Pharm	Lecturer	Pharmaceutics
16.	Dr.Meghana G S (MGS)	M.Pharm., Ph.D.	Lecturer	Pharmaceutics
17.	Dr. Savitha R S (RSS)	M.Pharm.	Assoc. Professor & Head	Pharmacy Practice
18.	Dr. M. Ramesh (MR)	M.Pharm., Ph.D.	Professor	Pharmacy Practice
19.	Ms. Shilpa Palaksha (SP)	M.Pharm.	Assoc. Professor	Pharmacy Practice
20.	Mr. D.H. P. Gowda (DHP)	M.Sc., PGDCA.	Asst. Professor	Pharmacy Practice
21.	Dr. M Umesh (UM)	Pharm D.	Asst. Professor	Pharmacy Practice
22.	Dr. Sri Harsha Chalasani (CSH)	M.Pharm., Ph.D.	Asst. Professor	Pharmacy Practice
23.	Dr. Jaidev Kumar B R (BRJ)	M.Pharm.	Lecturer	Pharmacy Practice
24.	Dr. Srikanth M S (MSS)	M.Pharm., Ph.D.	Lecturer	Pharmacy Practice
25.	Mr Balaji S (BS)	M.Pharm	Lecturer	Pharmacy Practice
26.	Dr. U R Rakshith (URR)	Pharm D	Lecturer	Pharmacy Practice
27.	Dr. Acsah Annie Paul (AAP)	Pharm D	Lecturer	Pharmacy Practice
28.	Dr Siddartha N Durappanavar (SND)	Pharm D	Resident	Pharmacy Practice
29.	Dr. B.M. Gurupadayya (BMG)	M.Pharm., Ph.D.	Professor & Head	Pharma. Chemistry
30.	Dr. R. S. Chandan (RSC)	M.Pharm., Ph.D.	Assoc. Professor	Pharma. Chemistry
31.	Dr. Prashantha Kumar B R (BRP)	M.Pharm., Ph.D.	Assoc. Professor	Pharma. Chemistry
32.	Dr. Anand Kumar Tengli (AKT)	M.Pharm., Ph.D.	Assoc. Professor	Pharma. Chemistry

33.	Dr. H. Yogish Kumar (HYK)	M.Pharm., Ph.D.	Lecturer	Pharma. Chemistry
34.	Dr. Sheshagiri Dixit (SD)	M.Pharm., Ph.D.	Lecturer	Pharma. Chemistry
35.	Dr Rupshee Jain (RJ)	M.Pharm., Ph.D.	Lecturer	Pharma. Chemistry
36.	Mr. Chetan.IA(CIA)	M.Pharm	Lecturer	Pharma. Chemistry
37.	Dr. Prabitha P (PP)	M.Pharm., Ph.D.	Lecturer	Pharma. Chemistry
38.	Dr. J. Suresh (JS)	M.Pharm., Ph.D.	Professor & Head	Pharmacognosy
39.	Dr. K Mruthunjaya (KM)	M.Pharm., Ph.D.	Professor	Pharmacognosy
40.	Dr. N Paramakrishnan (NPK)	M.Pharm., Ph.D.	Asst. Professor	Pharmacognosy
41.	Ms. Haripriya G (HG)	M Pharm	Lecturer	Pharmacognosy
42.	Dr. Logesh R (LR)	M.Pharm., Ph.D.	Lecturer	Pharmacognosy
43.	Mr. Rajaguru A (RG)	M.Pharm	Lecturer	Pharmaceutical Biotechnology
44.	Mr. Siva Armugam (SA)	M.Pharm	Lecturer	Pharmaceutical Biotechnology
45.	Dr. K L Krishna (KLK)	M.Pharm., Ph.D.	Assoc. Professor& Head	Pharmacology
46.	Dr. S. N. Manjula (SNM)	M.Pharm., Ph.D.	Professor	Pharmacology
47.	Dr. Saravana Babu C (SB)	M.Pharm., Ph.D.	Professor	Pharmacology
48.	Dr. Seema Mehdi (SM)	M.Pharm., Ph.D.	Lecturer	Pharmacology
49.	Dr. Nagashree K S (KSN)	M.Pharm., Ph.D.	Lecturer	Pharmacology
50.	Dr. Dithu Thekkekkara (DT)	M.Pharm., Ph.D.	Lecturer	Pharmacology

B. PHARM

Program Educational Objectives (PEOs):

PEO 1: To acquire the theoretical knowledge of pharmaceutical sciences

PEO 2: To acquire practical skills in

- isolation of medicinal compounds from natural sources
- synthesis and analysis of medicinal compounds
- screening medicinal compounds for pharmacological activities
- formulation of pharmaceutical dosage forms and their evaluation

PEO 3: To develop competent Pharmacists with ethical attitude, research intuition, leadership qualities, to participate in public health programs and engage in life-long learning

Program Outcomes (POs):

1. Ability to acquire knowledge of pharmaceutical sciences
2. Ability to design and conduct experiments, to analyze and interpret data
3. Ability to demonstrate effective planning, develop and implement plans within time frame.

4. Ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a task.
5. Ability to understand and appreciate the role of pharmacist in healthcare services.
6. Understanding of professional, ethical, legal, security and social issues and responsibilities.
7. Ability to understand contemporary issues relating to pharmacy profession and challenges ahead.
8. Awareness of ethical and professional responsibilities.
9. Possess the necessary interpersonal and communication skills to be a productive member of the team in work environment.
10. Ability to use current techniques, skills, and modern tools.
11. A strong background and motivation to pursue life-long learning

COURSE HAND OUT 2023-24

Class: B. Pharm – VII Semester

1. Course Details

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP701T	Instrumental Methods of Analysis– Theory	3	1	4
BP702T	Industrial Pharmacy – I (Theory)	3	1	4
BP703T	Pharmacology-II (Theory)	3	1	4
BP704T	Pharmacognosy and Phytochemistry II – Theory	3	1	4
BP705T	Pharmaceutical Jurisprudence -Theory	3	1	4
BP706P	Industrial Pharmacy – I (Practical)	4	-	2
Total		27	5	26

2. Evaluation:

a. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment, as per the scheme given below.

Table 1: Scheme for awarding internal assessment: Continuous mode

THEORY		
Criteria	Maximum Marks	
Attendance	4	2
Academic activities (Average of any 3 activities e.g., quiz, assignment, open book test, field work, group discussion and seminar)	3	1.5

Student – Teacher interaction	3	1.5
<i>Total</i>	10	5
PRACTICALS		
Attendance	2	
Based on Practical Records, Regular viva voce, etc.	3	
<i>Total</i>	5	

Table 2: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	4	2
90 – 94	3	1.5
85 – 89	2	1
80 – 84	1	0.5
Less than 80	0	0

b. Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical Sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment as per the requirements.

Sessional exam shall be conducted for 30 marks for theory and shall be computed for 15 marks. Similarly Sessional exam for practical shall be conducted for 40 marks and shall be computed for 10 marks.

Question paper pattern for theory Sessional examinations

For subjects having University examination

I. Multiple Choice Questions (MCQs) (Answer all the questions)	= 10 x 1 = 10
I. Long Answers (Answer 1 out of 2)	= 1 x 10 = 10
II. Short Answers (Answer 2 out of 3)	= 2 x 5 = 10

Total	= 30 marks

For subjects having Non-University Examination

I. Long Answers (Answer 1 out of 2)	= 1 x 10 = 10
II. Short Answers (Answer 4 out of 6)	= 4 x 5 = 20

Total	= 30 marks

Question paper pattern for practical sessional examinations

I. Synopsis	= 10
II. Experiments	= 25

III. Viva voce	=	05	
	Total =	40 marks	

3. End semester examinations

The End Semester Examinations for each theory and practical course through semesters I to VIII shall be conducted by the university except for the subjects notified as non-university examinations.

Table 3: Scheme for internal assessments and University examination - Semester-VII

Course code	Name of the course	Internal Assessment				University Exam		Total Marks	Credit points
		Continuous Mode	Sessional Exams		Total	Marks	Duration		
			Marks	Duration					
BP701T	Instrumental Methods of Analysis – Theory	10	15	1 Hour	25	75	3 Hours	100	4
BP702T	Industrial Pharmacy II – Theory	10	15	1 Hour	25	75	3 Hours	100	4
BP703T	Pharmacy Practice – Theory	10	15	1 Hour	25	75	3 Hours	100	4
BP704T	Novel Drug Delivery System – Theory	10	15	1 Hour	25	75	3 Hours	100	4
BP705T	Instrumental Methods of Analysis – Practical	10	15	1 Hours	15	35	4 Hours	50	2
BP706P	Practice School*	25	-	-	25	125	5 Hours	150	2
Total		70	70	08 Hrs.	140	460	21 Hrs.	600	202

* The subject experts at college level shall conduct examinations

4. Promotion and award of grades

A student shall be declared PASS and eligible for getting grade in a course of B. Pharm programme if he/she secures at least 50% marks in that course including internal assessment. For example, to be declared as PASS and to get grade, the student must secure a minimum of 50 marks for the total of 100 including continuous mode of assessment and end semester theory examination and has to secure a minimum of 25 marks for the total 50 including internal assessment and end semester practical examination.

5. Carry forward of marks

In case a student fails to secure the minimum 50% in any Theory or Practical course as specified (in promotion and award of grades), then he/she shall reappear for the university 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.

6. Improvement of internal assessment

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 should be completed before the commencement of next semester theory examinations.

7. Re-examination of end semester examinations

Reexamination of end semester examination shall be conducted as per the schedule given in table 3. The exact dates of examinations will be notified from time to time.

Table 4: Tentative schedule of university examinations and supplementary examinations

Semester	Regular examinations	Supplementary examinations
I, III, V and VII	September November	May / June

Question pattern for university theory examinations for 75 marks paper

I. Multiple Choice Questions (MCQs)

(Answer all the questions) = 20 x 01 = 20

I. Long Answers (2 out of 3) = 2 x 10 = 20

II. Short Answers (7 out of 9) = 7 x 05 = 35

Total = 75 marks

Question pattern for university theory examinations for 50 marks paper

I. Long Answers (2 out of 3) = 2 x 10 = 20

II. Short Answers (6 out of 8) = 6 x 05 = 30

Total = 50 marks

8. Grading of performances

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.

Table 5: Letter grades and grade points equivalent to percentage of marks and performances

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	A+	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 learner who remains absent in any form of evaluation/examination, letter grade allocated to him/her should 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.

9. Declaration of class

The class shall be awarded based on CGPA as follows:

First Class with Distinction	= CGPA of. 7.50 and above
First Class	= CGPA of 6.00 to 7.49
Second Class	= CGPA of 5.00 to 5.99

10. Attendance: The marks are allotted based on the attendance percentage (Table 2)

11. Chamber consultation hours: Any time during college hours.

12. Tutorial Class: Objective of the tutorial is to enhance the learning ability and help students in better understanding of the subject. This provides a best opportunity for the students to clarify their subject doubts. This involves discussions, presentations on specified topics, assignments and evaluation.

BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)

Teacher/s: Dr. Rupshee Jain (RJ)

45 Hours (3 Hrs/ week)

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

Theory

1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments

Practical

1. To understand the basic knowledge on instrumentation of various instruments.
2. To perform practical work on real samples to get acquainted with instrumentation.

Course Content

This course covers the design, operational principles and practical application of modern instrumental methods used in chemical analysis. These methods are used in the separation, identification and quantification of the chemical components of natural and synthetic sources.

Chapter No.	Title	No. of Hours
1	UV Visible spectroscopy Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations. Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors-Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode. Applications - Spectrophotometric titrations, Single component and multi component analysis	5

2	Fluorimetry Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications	5
3	IR spectroscopy Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications	5
4	Flame Photometry -Principle, interferences, instrumentation and applications Atomic absorption spectroscopy - Principle, interferences, instrumentation and applications Nepheloturbidometry - Principle, instrumentation and applications	5
5	Introduction to chromatography Adsorption and partition column chromatography -Methodology, advantages, disadvantages and applications. Thin layer chromatography - Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.	5
6	Paper chromatography -Introduction, methodology, development techniques, advantages, disadvantages and applications Electrophoresis – Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications	5
7	Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages and applications High performance liquid chromatography (HPLC) -Introduction, theory, instrumentation, advantages and applications.	8
8	Ion exchange chromatography - Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications	4
9	Gel chromatography - Introduction, theory, instrumentation and applications Affinity chromatography - Introduction, theory, instrumentation and applications	3

Theory Sessional examination syllabus

Sessional No.	Syllabus
	Chapters no.

I	5 to 9
II	1 to 4

BP705P. INSTRUMENTAL METHODS OF ANALYSIS (Practical)

Teacher/s: Dr. Rupshee Jain (RJ) & Dr. Anand Kumar Tengli (AKT)

4 Hours/week

1	Determination of absorption maxima and effect of solvents on absorption maxima of organic compounds
2	Estimation of dextrose by colorimetry
3	Estimation of sulfanilamide by colorimetry
4	Simultaneous estimation of ibuprofen and paracetamol by UV spectroscopy
5	Assay of paracetamol by UV- Spectrophotometry
6	Estimation of quinine sulfate by fluorimetry
7	Study of quenching of fluorescence
8	Determination of sodium by flame photometry
9	Determination of potassium by flame photometry
10	Determination of chlorides and sulphates by nephelo turbidometry
11	Separation of amino acids by paper chromatography
12	Separation of sugars by thin layer chromatography
13	Separation of plant pigments by column chromatography
14	Demonstration experiment on HPLC
15	Demonstration experiment on Gas Chromatography

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

BP 702 T. INDUSTRIAL PHARMACYII (Theory)

Teacher: Dr. Asha Spandana (AS) & Dr. Amit B Patil (ABP) **45 Hours (3 Hours/week)**

Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market

Objectives: Upon completion of the course, the student shall be able to:

Theory:

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different Laws and Acts that regulate pharmaceutical industry
4. Understand the approval process and regulatory requirements for drug products

Course Content:

Chapter No.	Title	No. of Hours
1	Pilot plant scale up techniques: General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology.	10
2	Technology development and transfer: WHO guidelines for Technology Transfer(TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legal issues.	10

3	<p>Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals.</p> <p>Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator’s Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.</p>	5
4	<p>Quality management systems: Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL, GLP.</p>	8
5	<p>Indian Regulatory Requirements: Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.</p>	7

Theory Internal assessment syllabus

Internal assessment No.	Syllabus Chapters no.
I	1 - 3a
II	3b - 5

Recommended Books: (Latest Editions)

1. Regulatory Affairs from Wikipedia, the free encyclopedia modified on 7th April available at http://en.wikipedia.org/wiki/Regulatory_Affairs.
2. International Regulatory Affairs Updates, 2005. available at <http://www.iraup.com/about.php>
3. Douglas J Pisano and David S. Mantus. Textbook of FDA Regulatory Affairs A Guide for Prescription Drugs, Medical Devices, and Biologics’ Second Edition.
4. Regulatory Affairs brought by learning plus, inc. available at <http://www.cgmp.com/ra.htm>.

BP 703T. PHARMACY PRACTICE (Theory)

Teacher/s: Dr. Srikanth M S (MSS)

45 Hours (3 Hours/ week)

Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.

Objectives: Upon completion of the course, the student shall be able to

1. know various drug distribution methods in a hospital
2. appreciate the pharmacy stores management and inventory control
3. monitor drug therapy of patient through medication chart review and clinical review
4. obtain medication history interview and counsel the patients
5. identify drug related problems
6. detect and assess adverse drug reactions
7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. know pharmaceutical care services
9. do patient counseling in community pharmacy;
10. appreciate the concept of Rational drug therapy.

Course Content:

Chapter No.	Title	No. of Hours
1	a) Hospital and it's organization Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.	2

2	<p>b) Hospital pharmacy and its organization Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.</p>	2
3	<p>c) Adverse drug reaction Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.</p>	3
4	<p>d) Community Pharmacy Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.</p>	3
5	<p>a) Drug distribution system in a hospital Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs. b) Hospital formulary Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary. c) Therapeutic drug monitoring Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.</p>	5
6	<p>d) Medication adherence Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence. e) Patient medication history interview Need for the patient medication history interview, medication interview forms. f) Community pharmacy management Financial, materials, staff, and infrastructure requirements.</p>	5
7	<p>a) Pharmacy and therapeutic committee Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation. b) Drug information services Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information. c) Patient counseling Definition of patient counseling; steps involved in patient counseling,</p>	5

	and Special cases that require the pharmacist	
8	<p>d) Education and training program in the hospital Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.</p> <p>e) Prescribed medication order and communication skills Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.</p>	5
9	<p>a) Budget preparation and implementation Budget preparation and implementation</p> <p>b) Clinical Pharmacy Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care. Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.</p> <p>c) Over the counter (OTC) sales Introduction and sale of over the counter, and Rational use of common over the counter medications.</p>	8
10.	<p>Drug store management and inventory control Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure</p> <p>b) Investigational use of drugs Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.</p> <p>c) Interpretation of Clinical Laboratory Tests Blood chemistry, hematology, and urinalysis</p>	7

Theory Internal assessment syllabus

Internal assessment No.	Syllabus
	Chapters no.
I	1 to 3a
II	3b to 5

Recommended Books (Latest Edition):

1. Merchant S.H. and Dr. J.S.Quadry. *A textbook of hospital pharmacy*, 4th ed. Ahmadabad: B.S. Shah Prakakshan; 2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata. *A textbook of Clinical Pharmacy Practice- essential concepts and skills*, 1st ed. Chennai: Orient Longman Private Limited; 2004.
3. William E. Hassan. *Hospital pharmacy*, 5th ed. Philadelphia: Lea & Febiger; 1986.
4. Tipnis Bajaj. *Hospital Pharmacy*, 1st ed. Maharashtra: Career Publications; 2008.
5. Scott LT. *Basic skills in interpreting laboratory data*, 4th ed. American Society of Health System Pharmacists Inc; 2009.
6. Parmar N.S. *Health Education and Community Pharmacy*, 18th ed. India: CBS Publishers & Distributers; 2008.

Journals:

1. Therapeutic drug monitoring. ISSN: 0163-4356
2. Journal of pharmacy practice. ISSN : 0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900 (online)
4. Pharmacy times (Monthly magazine)

BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)**Teacher: Dr. Vikas Jain (VJ) & Dr. T Shailesh (TS)****45 Hours (3 Hours/ week)**

Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

Objectives: Upon completion of the course student shall be able

1. To understand various approaches for development of novel drug delivery systems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

Course content

Chapter No.	Title	No. of Hours
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1	<p>Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates. Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations.</p> <p>Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.</p>	10
2	<p>Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications</p> <p>Mucosal Drug Delivery system: Introduction, Principles of bioadhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems</p> <p>Implantable Drug Delivery Systems:Introduction, advantages and disadvantages, concept of implantsand osmotic pump</p>	10
3	<p>Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches</p> <p>Gastroretentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastroadhesive systems and their applications</p> <p>Nasopulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers</p>	10
4	<p>Targeted drug Delivery: Concepts and approaches advantages and disadvantages,introduction to liposomes, niosomes, nanoparticles, monoclonal antibodies and their Applications</p>	8

5	<p>Ocular Drug Delivery Systems: Introduction, intra ocular barriers and methods to overcome –Preliminary study, ocular formulations and ocuserts.</p> <p>Intrauterine Drug Delivery Systems: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications</p>	7
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Theory Internal assessment syllabus

Internal assessment No.	Syllabus Chapters no.
I	1 - 6
II	7 - 11

Recommended Books: (Latest Editions)

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York, 1992.
3. Encyclopedia of Controlled Delivery. Edith Mathiowitz, Published by Wiley Interscience Publication, John Wiley and Sons, Inc, New York. Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P. Vyas and R.K. Khar, Controlled Drug Delivery -concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.

Journals

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian Drugs (IDMA)
3. Journal of Controlled Release (Elsevier Sciences)
4. Drug Development and Industrial Pharmacy (Marcel & Decker)
5. International Journal of Pharmaceutics (Elsevier Sciences)

JSS Academy of Higher Education & Research

JSS College of Pharmacy

Sri ShivarathreshwaraNagara, Mysore-570015

*CLASS TIME TABLE – 2023-24

Lunch Break: 1.00 to 2.00 PM

Tea Break: 10.40 to 11.10 AM

3.50 PM to 4.05 PM

Class: B. PHARM (Semester- VII)


Time Day	9.00-9.50AM	9.50-10.40AM	TEA BREAK	11.10-12.05PM	12.05-1.00PM	LUNCH BREAK	2.00-2.55PM	2.55-3.50PM	TEA BREAK	4.05-5.00PM	5.00-5.55PM
Monday	← Instu.Method Analysis --- ← Practice School--- ← Practice School--- CAP ← Practice School---			---RJ---Batch-I-----→ ---P.Chem. Dept -Batch-II -BRP--→ ---P.Col. Dept -Batch-III -KSN---→ ---PP.- Dept -IV- URR-----→			←----- Instu.Method Analysis - ←-----Practice School---- ←-----Practice School---- ←-----Practice School----			-----AKT--Batch-II-----→ ---P.Cog. Dept -Batch-III -Logesh-→ ---P.Cet. Dept -Batch-IV -ST---→ ---PP Dept -Batch-I- BS-----→	
Tuesday	PP MSS ←----- Instu.Meth.----- PP MSS ←-----Practice School--- PP MSS ←-----Practice School--- PP MSS ←-----Practice School---			Analysis --Aparajita-Batch-III---→			Novel Drug Delivery System TS Industrial Pharmacy -II AS			Instu, Method Analysis RJ Novel Drug Delivery System (Tu) TS	
Wednesday	←----- Instu.Meth ----- ←-----Practice School--- ←-----Practice School--- ←-----Practice School---			Analysis---RJ--Batch-IV----→			Industrial Pharmacy - II (TU) ABP Instu, Method Analysis RJ				
Thursday	Industrial Pharmacy-II AS ←--Practice School--- ←--Practice School--- ←--Practice School---			--P.Cet. Dept -Batch-III -TS---→ --P.COI Dept -Batch-II DT--→ --P.Chem Dept -Batch-IV- RSC→			Industrial Pharmacy - II ABP Instu, Method Analysis RJ			Novel Drug Delivery System TS -----	
Friday	Pharmacy Practice MSS ←--Practice School--- ←--Practice School--- ←--Practice School---			---P.Cog. Dept -Batch-I -HP--→ --P.Col. Dept -Batch-IV -KSN---→ --P.Chem Dept -Batch-III- AKT--→			Instu, Method Analysis (TU) RJ Pharmacy Practice MSS			Novel Drug Delivery System VJ -----	
Saturday	Pharm.Pract MSS ←--Practice School--- ←--Practice School---			--P.Chem Dept-Batch-I- SRD---→ ---P.Cog. Dept -Batch-II -NPK--→							

Effective from: 10th July - 2023 (Practice School Class will be completed by end November)

Note: 1. No tea break for practicals

Time table Coordinator

Copy: SNB/LNB/SCF/e-copy-Teachers/ Office incharge-Time table / Time table Coordinator


Principal
JSS COLLEGE OF PHARMACY

(Dr. T. M. Pramod Kumar)
Principal
JSS CP, Mysuru

