JSS Academy of Higher Education and Research

JSS College of Pharmacy

Sri Shivarathreeshwara Nagara, Mysuru-570015

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An ISO 9001:2015 Certified Institution

IV Pharm. D.
Course Handout
2023-24

Academic Calendar 2023-24
(IV Pharm.D.)

Tentative Dates of Examinations

I Sessional Examinations for II to V Pharm D & I Pharm D	6th September 2023 & 23rd September 2023
II Sessional Examinations for I to V Pharm D	18th Dec 2023
III Sessional Examinations for I to V Pharm D	18th March 2024
University Examination	1st April 2024

Teacher's Incharge

Class	Class Teacher	Batch No.	Batch Teacher
IV Pharm.D.	Dr. Umesh M	I	Dr. Umesh M
		II	Dr. Osmani Mir Riyaz Ali MahafezAli

CURRICULAR & CO-CURRICULAR ACTIVITIES & COORDINATORS FORTHE ACADEMIC YEAR 2023-24

Sl. No	Activities	Coordinator/s	Tentative scheduleof 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	• 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	• As required
12.	Academic Council Board (ACB) • Student Progression (Advanced/ Medium/ Slow learners) • Mentors Diary- Student profile	Class teachers and Program Coordinators	• After each sessional exam • Regular monitoring of Mentee

13.	Ethics committee	• IAEC-SBC • IEC-CSH	• Twice a year
14.	Class Timetable committee	Coordinator: VJ Member: BRP, NPK, URR, DT	• Twice a year (June & Nov 2023)
15.	Women's cell/Prevention of Sexual Harassment Cell/Internal Complaints committee (ICC)	SNM & committee members	• 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	• Compendium- August 23 • Regular activity under each SDG
30.	Course handouts/ Teachers' diary/ Student Handbook/Faculty Handbook.	NPK & HYK	• July/ August 2023
31.	National Pharmacy Week (NPW) & Pharmacists Day	Coordinator: UM & IPA office bearers	• Nov-Dec 2023
32.	Alumni association	Coordinator: HVG Member: SM	• August/September 2023
33.	Herbal and College Garden	NPK	• Regular monitoring
34.	ISO 9001:2015	Coordinator: SNM Member: SM	• 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 Committee			
Sl. No.	**Program committees**	**Chairperson**	**Member Secretary**
61.	D. Pharm	GVP	MSS
62.	B. Pharm	GVP	MPV
63.	Pharm. D	TMP	CSH
64.	M. Pharm	TMP	RSC
65.	Diploma programs	GVP	RJ
Sl. No.	**M. Pharm Program**		**Coordinator**
66.	Pharmaceutics		RAO
67.	Industrial Pharmacy		ASP
68.	Pharmaceutical Regulatory Affairs		MPV
69.	Pharmaceutical Quality Assurance		HKS
70.	Pharmaceutical Chemistry		HYK
71.	Pharmaceutical Analysis		AKT
72.	Pharmacology		SM
73.	Pharmacognosy		NPK
74.	Pharmacy Practice		UM
75.	Pharmaceutical Biotechnology		RG
Sl. No.	**PG Diploma Program**		**Coordinator**
76.	Pharmacovigilance		CSH
77.	Medicine & Poison Information		UM
78.	Clinical Research		SP
79.	Pharmaceutical Quality Assurance		TS
80.	Pharmaceutical Regulatory Affairs		MPV
81.	Medical Devices		MGS
82.	Intellectual Property Rights		ARR/ HYK
83.	Computer-Aided Drug Design		SD
84.	Food and Drug Analysis		RJ
85.	Regulatory Toxicology		SBC
86.	Phytopharmaceutical and Industrial Applications		NPK
87.	Quality control		AKT
Sl. No.	**Certificate Course**		**Coordinator**
88.	Pharmaceutical Quality Assurance		HKS
89.	Herbal Drug Standardization		HP

90.	Medicine Information	BRJ
91.	Clinical Research	SP
92.	Global Regulatory Affairs	MPV
93.	Food & Nutraceuticals	RJ
94.	Telemedicine	BRJ

TEACHING STAFF LIST

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.I.A(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	Pharmalogy

PHARM.D

Program outcomes:

Outcome 1 - Development of patient centered knowledge and skills: The student should understand and possess the knowledge and skills required to demonstrate the ability to provide patient centered pharmaceutical care services.

Outcome 2 - Development of pharmaceutical care plan: The student should be able to formulate a pharmaceutical care plan by working in close relation with healthcare professionals, and patient/care taker in order to ensure the enhanced therapeutic outcome in the patient. Also, the pharmaceutical care plan includes maximization of therapeutic benefit by detecting, preventing and resolving drug related problems. The student should be able to recommend pharmaceutical care plan based on evidence, and follow-up and document the outcomes of the pharmaceutical care service.

Outcome 3 – Hospital and community pharmacy management: The student should be able to accurately interpret prescriptions, dispense medications and manage drug distribution system adhering to patient needs, in compliance with policies and guidelines of the hospital pharmacy, good community pharmacy practice and the recommendations of regulatory agencies. Also able to prepare inventory, procure, and use appropriate methods of drug storage and adopt appropriate techniques of drug distribution to ensure correct dispensing of medicines.

Outcome 4 – Promote public healthcare program: The student should be able to participate in various public health care programs of the nation including disease prevention initiatives to improve public health. Contribute to the development and promotion of national health policies including rational drug use program and essential drug policy.

Outcome 5 – Ethics and professional integrity: The student should deliver the duties in accordance with legal, ethical, social, economic, and professional guidelines with integrity. Able to provide patient care services by making rational and ethical decisions that represent the best interest of the patient and the society, and respect the patient, healthcare professionals, and the privacy and confidentiality of health information.

Outcome 6 - Analytical, critical and decision making skills: The student should be able to retrieve,understand, interpret, apply, analyze, synthesize, and evaluate information. Able to apply critical thinking and interpretational skills to identify, manage, and prevent problems and make appropriate decisions.

Outcome 7 - Communication skills: The student should be able to communicate effectively withpatients/caretakers, healthcare professionals. Able to effectively counsel, provide medicines information, and educate patients, caretakers & healthcare professionals about

medication therapy and other health related issues. Effective communication includes use of both oral and written communications skills and various communication techniques.

Outcome 8 - Leadership and entrepreneurship skills: The student should be able to achieve leadership skills through team work and by involving in organizing various community outreach programs with sound decision making skills. Also the student should enhance the entrepreneurial skills by finding or creating new prospects in challenging professional environments.

Outcome 9 - Interprofessional collaborative practice: Student should be able to identify unique opportunities for professional collaboration towards patient-centered pharmaceutical care services and demonstrate the ability to interact and work with multidisciplinary healthcare teams.

Outcome 10 - Design and conduct of need based research: The student should be able to understand theresearch needs of the region/nation, and design and conduct the research that would add value to the healthcare requirements of the patients and community/ society.

Outcome 11 - Digital literacy: Students should be able to use computers and gadgets to search, retrieve, analyze, store, create, present and exchange information, and interact and participate in interactive networks through the Internet or through any other digital platform to enrich pharmaceutical care services.

Outcome 12 - Life-long learning: The student should be able to recognize knowledge and skill deficits that exist in the effective delivery of health care needs of the patient/society. As a life-long learner, student should be able to identify and analyze issues emerging in the advancing healthcare delivery, and set learning goals, locate, interpret appropriate resources, and assess progress toward meeting learning goals.

COURSE HAND OUT 2023-24 Class: IV Pharm. D

1. Course Details

S. No.	Name of Subject	No. of hours of Theory	No. of hours of Practical/ Hospital Posting	No. of hours of Tutorial
(1)	**(2)**	**(3)**	**(4)**	**(5)**
4.1	Pharmacotherapeutics-III	3	3	1
4.2	Hospital Pharmacy	2	3	1
4.3	Clinical Pharmacy	3	3	1
4.4	Biostatistics & Research Methodology	2	-	1
4.5	Biopharmaceutics & Pharmacokinetics	3	3	1
4.6	Clinical Toxicology	2	-	1
4.7	Pharmacotheraputics I & II*	3*	3*	1*
	Total hours	**15/18***	**12/15***	**6/7 = 33/40***

* Only for Post Baccalaureate Students

2. Evaluation:

Theory: Internal assessment Marks: 30.Three periodic theory sessional examinations will be conducted in theory for 30 marks (*duration 1.5 Hour*) and average of best two will be considered for evaluation.

Practical: Internal assessment Marks: 30. Three periodic practical sessional examinations will be conducted for 20 marks and average of best two will be considered for evaluation, plus 10 marks is awarded for regularity, promptness, viva-voce and record maintenance. JSS University will conduct annual examination for 70 marks in theory & practical at end of the academic session.

Classes will be awarded on the basis of total (sessional and annual examination) marks secured.

Class	Marks
Distinction	75% and above
First class	60% and above and less than 75%
Second class	50% and above and less than 60%
Pass class	Passed examination in more than one attempt.

3 Sessional Examination schedule: I, II and III sessional dates will be announced separately.

4 Attendance: Minimum of 80% attendance is necessary to appear for both Sessional and Annual examination.

5 Chamber consultation hours: Any time during College hours.

6 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.

4.1 PHARMACOTHERAPEUTICS -III (THEORY)

Theory: 3 Hrs /week

Responsible Member of the academic staff: Mrs. Shilpa Palaksha (SP)

Scope and Objective: This course is designed to impart knowledge and skills necessary for contribution to quality use of medicines. Chapters dealt covers brief pathophysiology and discussion on therapeutics of various diseases. This will enable the student to understand the concept o etiopathogenesis of various diseases and their management.

Course Outcomes:

1. Describe the etiopathogenesis of selected diseases and correlate them to clinical condition(s) of the respective disease.
2. Explain the general therapeutic approach to management of selected diseases.
3. Apply the knowledge to justify the clinical controversies and rationale in individualizing drug therapy plans in general and special populations
4. Assess drug safety monitoring, contraindications and treatment outcomes and modify treatment plan as needed.
5. Understand the methods of non-pharmacological management
6. Describe the principles of evidence- Course based medicine.

Teaching/learning methodologies used:

1. Lecture
2. Practical/Lab
3. Discussion
4. Case Study

Course Materials:

TEXT BOOKS

a. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication
b. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange

REFERENCE BOOKS

a. Pathologic basis of disease - Robbins SL, W.B.Saunders publication
b. Pathology and Therapeutics for Pharmacists - A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hall publication
c. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication
d. Applied Therapeutics: The clinical Use of Drugs. Lloyd Young and Koda-Kimble MA
e. Avery's Drug Treatment - 4th Edn, 1997, Adis International Limited.
f. Relevant review articles from recent medical and pharmaceutical literature.

Lecture wise Programme

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases

Topic	Hrs
1. Gastrointestinal system: Peptic ulcer disease, Gastro Esophageal Reflux Disease, Inflammatory bowel disease, Liver disorders - Alcoholic liver disease, Viral hepatitis including jaundice, and Drug induced liver disorders.(3+4+3+4+3+3)	20
2. Hematological system: Anaemias, Venous thromboembolism, Drug induced blood disorders. (4+4+4)	12
3. Nervous system: Epilepsy, Parkinsonism, Stroke, Alzheimer's disease, (4+3+6+3)	16
4. Psychiatry disorders: Schizophrenia, Affective disorders, Anxiety disorders, Sleep disorders, Obsessive Compulsive disorders (4+3+3+2+2)	14
5. Pain management including Pain pathways, neuralgias, headaches. (4+2+2)	08
6. Evidence Based Medicine	05

Theory Sessional Examination Syllabus

Sessional No.	Syllabus
I	1,6
II	2, 3 (Except Alzheimer’s disease)
III	3 (Alzheimer’s disease), 4, 5

4.1 PHARMACOTHERAPEUTICS – III (PRACTICALS)

Practical: 75 Hours (3 Hrs/Week)

Responsible Member of the academic staff: Mrs. Shilpa Palaksha (SP)

Course Outcomes:

1) Gather and analyse patient medical records
2) Interpret and analyse the laboratory results of specific disease states
3) Develop individualized therapeutic plans based on the diagnosis.
4) Perform treatment chart review and identify medication related problems (MRPs).
5) Communicate and resolve MRPs to concerned health care professionals.
6) Perform the patient medication counselling as per the requirement of the patient and/or recommended by a clinician

Practicals:

Hospital postings for a period of at least 50 hours is required to understand the principles and practice involved in ward round participation and clinical discussion on selection of drug therapy. Students are required to maintain a record of 15 cases observed in the ward and the same should be submitted at the end of the course for evaluation. Each student should present at least two medical cases they have observed and followed in the wards.

Assignments:

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Format of the assignment:

1. Minimum & Maximum number of pages
2. Reference(s) shall be included at the end in Vancouver style.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be computer draft copy
5. Name and signature of the student is mandatory on the first page of assignment
6. Time allocated for presentation may be 8+2 Min.

Scheme of Practical Examination:

	Sessionals	**Annual**
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03 hrs**	**04 hrs**

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

4.2 HOSPITAL PHARMACY (THEORY)

Theory: 2 Hrs /week

Responsible Member of the academic staff: Dr. Umesh M (UM)

Scope and Objective: 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 dispensing, manufacturing of parenteral preparations, drug information, patient counseling, and therapeutic drug monitoring for improved patient care.

Course Outcomes:

1) Define the basic concepts in Hospital pharmacy
2) Critically interpret and apply Inventory control methods
3) Execute professional responsibilities of hospital pharmacist and identify drug related problems
4) Provide professional services like patient counseling and technical inputs for parenteral nutritional support
5) Execute the activities related to hospital formulary and pharmacy and therapeutics committee
6) Able to manufacture common pharmaceutical formulations within Hospital setup

Teaching/learning methodologies used:

1. Lecture
2. Practical/Lab
3. Discussion
4. Simulation

Course materials:

TEXT BOOKS:

a. Hospital pharmacy by William .E. Hassan
b. A text book of Hospital Pharmacy by S.H.Merchant & Dr.J.S.Qadry. Revised by R.K.Goyal & R.K. Parikh
c. Hospital pharmacy by M. C. Allwood, J. T. Fell.
d. Stockley's Drug Interactions (10th Edition).

REFERENCE BOOKS:

a. WHO consultative group report.
b. R.P.S. Vol.2. Part –B; Pharmacy Practice section.
c. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical press.

Lecture wise programme:

Topics	Hrs
Hospital - its Organization and functions	**01**

Hospital pharmacy-Organization and management **05**

a) Organizational structure-Staff, Infrastructure & work load statistics
b) Management of materials and finance
c) Roles & responsibilities of hospital pharmacist

The Budget – Preparation and implementation **01**

Hospital drug policy **11**

a) Pharmacy and Therapeutic Committee (PTC)
b) Hospital formulary
c) Hospital committees
- Infection committee
- Research and ethical committee

d) Development of therapeutic guidelines
e) Hospital pharmacy communication – Newsletter

Hospital pharmacy services

a) Procurement & warehousing of drugs and Pharmaceuticals **02**

b) Inventory control**:** Definition, various methods of Inventory Control **04**
ABC, VED, EOQ, Lead time and safety stock

c) Drug distribution in the hospital **04**
i) Individual prescription method
ii) Floor stock method
iii) Unit dose drug distribution method

d) Distribution of Narcotic and other controlled substances **02**

e) Central sterile supply services – Role of pharmacist **02**

Manufacture of Pharmaceutical preparations **11**

a) Sterile formulations – large and small volume parenterals **03**

b) Manufacture of Ointments, Liquids, and creams **03**

c) Manufacturing of Tablets, granules, capsules, and powders **03**

d) Total parenteral nutrition **02**

Continuing professional development programs **02**
Education and training

Radio Pharmaceuticals – Handling and packaging **03**

Professional Relations and practices of hospital pharmacist **02**

Theory Sessional Examination Syllabus

Sessional No.	Syllabus
I	1-4 (a, b, c)
II	4 (d, e) 5
III	6, 7, 8, 9

4.2 HOSPITAL PHARMACY (PRACTICALS)

Theory: 75 Hours (3 Hrs/Week)

Responsible Member of the academic staff: Dr. Umesh M (UM)

1. Assessment of drug interactions in the given prescriptions
2. Manufacture of parenteral formulations and powders.
3. Drug information queries.
4. Inventory control

Course Outcomes:

1) Define the basic concepts in Hospital pharmacy
2) Assess drug-drug interactions and provide recommendations
3) Able to manufacture common pharmaceutical formulations within Hospital setup.
4) Able to manufacture sterile pharmaceutical formulations within Hospital setup.
5) Provide critically evaluated and appropriate answers to drug information queries.
6) Apply appropriate inventory control methods for the maintenance of stock in pharmacy

List of Assignments:

1. Design and Management of Hospital pharmacy department for a 300 bedded hospital.
2. Pharmacy and Therapeutics committee – Organization, functions, and limitations.
3. Development of a hospital formulary for 300 bedded teaching hospital
4. Preparation of ABC analysis of drugs sold in one month from the pharmacy.
5. Different phases of clinical trials with elements to be evaluated.
6. Various sources of drug information and systematic approach to provide unbiased drug information.
7. Evaluation of prescriptions generated in hospital for drug interactions and find out the suitable management.

Special requirements:

1. Each college should sign MoU with nearby local hospital having minimum 150 beds for providing necessary training to the students' on hospital pharmacy activities.
2. Well equipped with various resources of drug information.

Scheme of Practical Examination:

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15

Max Marks	**20**	**70**
Duration	**03 hrs**	**04 hrs**

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

4.3 CLINICAL PHARMACY (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Mr B. R. Jaidev Kumar (BRJ)

Scope and Objectives: This course is designed to impart the basic knowledge and skills that required for practice of pharmacy including provision of various clinical pharmacy services to patients and healthcare professionals in clinical settings.

Course Outcomes:

1. Define the role of clinical pharmacist in various healthcare settings
2. Monitor the drug therapy of the patient through medication chart review and clinical review
3. Conduct the medication history interview and counsel the patients
4. Detect, assess, and monitor adverse drug reactions (ADR)
5. Interpret selected laboratory results (as monitoring parameters) of specific disease states
6. Provide drug/poison information services by retrieving, analyzing, interpreting and formulate drug and medicine information by utilizing various databases and softwares

Teaching/learning methodologies used:

1. Lecture
2. Practical/Lab
3. Discussion

Course Materials

TEXT BOOKS

a. Practice Standards and Definitions, The Society of Hospital Pharmacists of Australia.
b. Basic skills in interpreting laboratory data, Scott LT, American Society of Health System Pharmacists Inc.
c. Biopharmaceutics and Applied Pharmacokinetics, Leon Shargel, Prentice Hall Publication

d. Textbook of Clinical Pharmacy Practice; Essential concepts and skills, Dr. G.Parthasarathi, Karin Nyfort-Hansen, Milap Nahata, Orient Longman Pvt. Ltd.

REFERENCE BOOKS

a. Australian drug information -Procedure manual. The Society of Hospital Pharmacists of Australia.
b. Clinical Pharmacokinetics - Rowland and Tozer, Williams and Wilkins Publication.
c. Pharmaceutical statistics. Practical and clinical applications. Sanford Bolton, Marcel Dekker, Inc.

Lecture wise programme:

No.	Topic	Hrs
1	**Definitions, development and scope of clinical pharmacy**	03
2	**Introduction to daily activities of a clinical pharmacist** a. Drug therapy monitoring (medication chart review, clinical review, pharmacist interventions) b. Ward round participation c. Adverse drug reaction management d. Drug information and poisons information e. Medication history f. Patient counselling g. Drug utilisation evaluation (DUE) and review (DUR) h. Quality assurance of clinical pharmacy services	13
3	**Patient data analysis** The patient's case history, its structure and use in evaluation of drug therapy & understanding common medical abbreviations and terminologies used in clinical practices.	03
4	**Clinical laboratory tests used in the evaluation of disease states, and interpretation of test results** • Haematological, Liver function, Renal function, thyroid function tests • Tests associated with cardiac disorders • Fluid and electrolyte balance • Microbiological culture sensitivity tests • Pulmonary Function Tests	15
5	**Drug & Poison information** • Introduction to drug information resources available • Systematic approach in answering DI queries • Critical evaluation of drug information and literature • Preparation of written and verbal reports	08

	• Establishing a Drug Information Centre • Poisons information- organization & information resources	
6	• **Pharmacovigilance** • Scope, definition and aims of pharmacovigilance • Adverse drug reactions - Classification, mechanism, predisposing factors, causality assessment [different scales used], • Reporting, evaluation, monitoring, preventing & management of ADRs • Role of pharmacist in management of ADR.	**10**
7	• Communication skills, including patient counseling techniques, medication history interview, presentation of cases.	**10**
8	• Pharmaceutical care concepts	**04**
9	• Critical evaluation of biomedical literature	**06**
10	• Medication errors	**03**

Theory Sessional examination syllabus

Sessional No	Chapters no
I	1, 2, 9, 10
II	4, 6
III	3, 5, 7, 8

4.3 CLINICAL PHARMACY (PRACTICALS)

Theory: 75 Hours (3 Hrs/Week)

Responsible member/s of the academic staff: Mr. B. R. Jaidev Kumar (BRJ)

Course Outcomes:

1. Define the role of clinical pharmacist at various healthcare settings
2. Monitor drug therapy of the patient through medication chart review and clinical review
3. Conduct the medication history interview and counsel the patients
4. Detect, assess and monitor adverse drug reactions (ADR)
5. Interpret selected laboratory results (as monitoring parameters) of specific disease states
6. Provide drug / poison information services by retrieving, analyzing, interpreting and formulate drug and medicine information by utilizing various databases and software's

Students are expected to perform 15 practical in the following areas covering the topics dealt in theory class.

- Answering drug information questions (4 Nos)
- Patient medication counselling (4 Nos)
- Case studies related to laboratory investigations (4 Nos)
- Patient medication history interview (3 Nos)

ASSIGNMENT

Students are expected to submit THREE written assignments (1500 – 2000 words) on the topics given to them covering the following areas dealt in theory class.

Drug information, Patient medication history interview, Patient medication counseling, Problem solving in Clinical Pharmacokinetics, Therapeutic drug monitoring and Critical appraisal of recently published articles in the biomedical literature which deals with a drug or therapeutic issue.

Format of the assignment

- Minimum & Maximum number of pages.
- Reference(s) shall be included at the end.
- Assignment can be a combined presentation at the end of the academic year.
- It shall be computer draft copy
- Name and signature of the student
- Time allocated for presentation may be 8+2 min

Scheme of Practical Examination

	Sessionals	**Annual**
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20#**	**70**
Duration	**03 hrs**	**04 hrs**

#**Note:** Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).

4.4 BIOSTATISTICS AND RESEARCH METHODOLOGY (THEORY)

Theory: 2 hrs /week

Responsible Member of the academic staff: Mr. D.H.Panchaksharappa Gowda (DHP)

Scope and Objective: This is an introductory course in statistics, research methodology and Computer application in hospital and community Pharmacy. This subject deals with Research methodology, Biostatics, epidemiology and Computer application and clinical studies.

Research methodology deal about types of clinical study, designing, sample size determination and power of study Statistics deals about frequency distribution, graphics, averages, measures of dispersion, Correlation, regression, Parametric and non-parametric tests. Incidence and prevalence, relative risk, attributable risk. Computer Application deals with application of Computer System in Hospital Pharmacy and Community Pharmacy

Course Outcomes:

1. Choose the appropriate research design and develop appropriate research hypothesis for a project
2. Develop a appropriate framework for research studies
3. Know the various statistical methods to solve different types of problems
4. Operate various statistical software packages
5. Appreciate the importance of Computer in hospital and Community Pharmacy
6. Appreciate the statistical technique in solving the pharmaceutical problems

Teaching / learning methodologies used:

1. Lecture
2. Discussion

Course material:

REFERENCE BOOKS:

a. Pharmaceutical statistics- Practical and clinical applications, Sanford Bolton 3rd and 4th edition, publisher Marcel Dekker Inc. NewYork.
b. Drug Information- A Guide for Pharmacists, Patrick M Malone, Karen L Kier, John E Stanovich , 3rd edition, McGraw Hill Publications 2006
c. Computer Application in Pharmacy – William E. Fassett, publisher – Lea & Febiger. Philadelphia

Lecture wise Programme :

Note: To emphasis also on definition, examples and application in Pharmacy

Topic	Hrs
Research Methodology	
a) Types of clinical study designs: Case studies, observational studies, interventional studies,	**10**
b) Designing the methodology	
c) Sample size determination and Power of a study, Determination of sample size for simple comparative experiments, determination of	

sample size to obtain a confidence interval of specified width, power of a study

d) Report writing and presentation of data

Biostatistics

a) Introduction **10**

b) Types of data distribution

c) Measures describing the central tendency distributions- average, median, mode

d) Measurement of the spread of data-range, mean deviation, standard deviation, variance, coefficient of variation, standard error of mean.

Data graphics : Construction and labeling of graphs, histogram, Pie charts, scatter plots, semi-logarithmic graphs **02**

Basics of testing hypothesis : **15**

a) Null hypothesis, level of significance, power of test, P value, statistical estimation of confidence intervals.

b) Level of significance (Parametric data)- students t test (paired and unpaired), Analysis of Variance (one-way and two-way)

c) Level of significance (Non-parametric data)- Chi Square test, Sign test, Wilcoxan's signed rank test, Wilcoxan rank sum test, Mann Whitney U test, Kruskal-Wall's test (one way ANOVA)

d) Linear regression and correlation- Introduction, Pearson's and Spearman's correlation and correlation co-efficient.

e) Introduction to statistical software: SPSS, Epi Info, SAS.

Statistical methods in epidemiology **05**

Incidence and prevalence, relative risk, attributable risk

Computer applications in pharmacy **08**

Computer System in Hospital Pharmacy:

Patterns of Computer use in Hospital Pharmacy – Patient record database management, Medication order entry – Drug labels and list – Intravenous solution and admixture, patient medication profiles, Inventory control, Management report & Statistics.

Computer In Community Pharmacy

Computerizing the Prescription Dispensing process

Use of Computers for Pharmaceutical Care in community pharmacy

Accounting and General ledger system

Drug Information Retrieval & Storage :

Introduction – Advantages of Computerized Literature Retrieval,

Use of Computerized Retrieval

Theory Sessional Examination Syllabus

Sessional No.	Syllabus
I	Topics 2.1,2.2 & 2.4
II	Topics 1 & 3
III	Topic 2.3

1.5 BIOPHARMACEUTICS AND PHARMACOKINETICS (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Dr. Osmani Mir Riyaz Ali MahafezAli(RAO) & Mrs. Akhila AR (AAR)

Scope and Objectives: This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

Course Outcomes:

1. Explain the process of drug absorption from gastrointestinal tract and various factors influencing the same.
2. Describe the disposition of drugs in biological system and various factors influencing the same.
3. Derive the equations for the various pharmacokinetic parameters based on one compartment open models of drugs administered through various routes, using blood and urine data.
4. Describe the multiple dosage regimen and concept of steady state concentration.
5. Explain the non-linear behavior of drugs and factors causing non-linearity and non-compartmental pharmacokinetics of drugs.
6. Describe the concepts of bioavailability and bioequivalence studies.

Teaching/Learning methodologies used:

1. Lecture
2. Practicals/Lab

Course materials

TEXT BOOKS

a. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi.
b. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
c. Applied biopharmaceutics and pharmacokinetics, Leon Shargel and Andrew BC. 4th edition, Prentice-Hall Inernationaledition.USA
d. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmankar and Sunil B.Jaiswal, VallabhPrakashanPitampura, Delhi

REFERENCE BOOKS

a. Pharmacokinetics: By Milo Glbaldi Donald, R. Mercel Dekker Inc.
b. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS

c. Health Science Press.
d. Biopharmaceutics; By Swarbrick
e. Cilincal Pharmacokinetics, Concepts and Applications: By Malcolm Rowland and Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
f. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company, Pennsylvania 1989.
g. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Robort F Notari Marcel Dekker Inn, New York and Basel, 1987.
h. Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvnia

Lecture-wise programme

Topic	Hrs
Biopharmaceutics	**01**
Introduction to biopharmaceutics	
Absorption	**08**
Mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT, absorption of drug from Non *per OS* extra-vascular routes	
Distribution of drugs	**08**
Tissue permeability of drugs, binding of drugs, apparent volume of drug distribution, protein binding of drugs, factors affecting protein –drug binding. Kinetics of protein binding, Clinical significance of protein bin-drug binding	
Drug Elimination	**06**
Biotransformation of drugs, renal excretion of drugs , factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs	
Bioavailability and Bioequivalence	**10**
Objectives of bioavailability studies, absolute and relative bioavailability, measurement of bioavailability, *in-vitro* drug dissolution models, *in-vitro in-vivo* correlations, bioequivalence studies, methods to enhance the bioavailability	
Pharmacokinetics	**05**
Introduction to Pharmacokinetics. Mathematical model. Drug levels in blood Pharmacokinetic models, Compartment models, Non-compartment models, Physiological models	
One compartment open model	**15**
Intravenous Injection (Bolus), Intravenous infusion, Extra vascular administrations, calculations of Ka, KE. From plasma and urinary excretion data	
Multi compartment models	**08**
Two compartment open model. IV bolus, IV infusion and oral administration	
Multiple – Dosage Regimens:	**10**
Repititive Intravenous injections – One Compartment Open Model, Repetitive Extravascular dosing – One Compartment Open model, Multiple Dose Regimen – Two Compartment Open Model	
Nonlinear Pharmacokinetics	**05**
Introduction, Factors causing Non-linearity, Michaelis- menton method of estimating parameters	
Non-compartmental Pharmacokinetics.	**04**
Statistical Moment Theory, MRT for various compartment models ,Physiological Pharmacokinetic model	

Theory Sessional examination syllabus

Sessional No.	Syllabus Chapters no.
I	1, 2, 3 and 4
II	5, 6 and 7
III	7, 8, 9, 10 and 11

4.5 BIOPHARMACEUTICS AND PHARMACOKINETICS (PRACTICALS)

Practical: 75 Hours (3 Hrs/Week)

Responsible member/s of the academic staff: Dr. Osmani Mir Riyaz Ali MahafezAli(RAO) & Mrs. Akhila AR (AAR)
Course Outcomes:

1. Perform solubility enhancement of poorly soluble drugs via different approaches.
2. To demonstrate the concepts of protein binding of drugs.
3. Estimate pharmacokinetic parameters of drugs administered through various routes, using compartment models approach, with blood and urine data.
4. Perform the dissolution studies of various formulations available in the market and interpret such results.
5. Interpret the blood/urine data on bioavailability/bioequivalence studies.
6. Estimate pharmacokinetic parameters of drugs following non-linear kinetics.

List of experiments

1. Improvement of dissolution characteristics of slightly soluble drugs by co-solvency
2. Improvement of dissolution characteristics of slightly soluble drugs by solid dispersion
3. Improvement of dissolution characteristics of slightly soluble drugs by use of surfactant
4. Comparison of dissolution studies of two different marketed products of same drug.
5. Influence of polymorphism on solubility and dissolution
6. Protein binding studies of a drug.
7. Calculation of bioavailability
8. Calculation of Ka, Ke, $t_1/2$, Cmax, AUC, AUMC, MRT etc. from blood profile data.
9. Calculation of bioavailability from urinary excretion data for two drugs.
10. Calculation of elimination half-life for different drugs by using urinary elimination data and blood level data
11. Calculation of AUC and bioequivalence from the given data for two drugs
12. Absorption studies in animal inverted intestine using various drugs.
13. Studying metabolic pathways for different drugs based on elimination kinetics data
14. Calculation of renal clearance

. Scheme of Practical Examination

	Sessionals	Annual
Synopsis	04	15
Major Experiment	08	25

Minor Experiment	04	15
Viva	04	15
Max Marks	**20***	**70**
Duration	**03 hrs**	**04 hrs**

***Note:** Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance)

4.6 CLINICAL TOXICOLOGY (THEORY)

Theory: 2 Hrs. /Week

Responsible member/s of the academic staff: Dr. U.R. Rakshith (URR)

Scope and Objectives: This course is designed to impart a thorough knowledge in the management of various poisoning cases thereby enabling the students to assist healthcare professionals / toxicologists in handling and managing the emergency cases.

Course Outcomes:

1. To Recall the general principles involved in the management of poison substances.
2. To identify various toxicokinetic parameters involved in the management of poison substances.
3. To explain the sign, symptoms and management of acute poisoning with substances such as Organophosphorus, carbamates, organochlorines, pyrethroids.
4. To describe the clinical manifestations and management of chronic poisoning with substances such as Arsenic, lead, mercury, iron, copper Compounds
5. To classify the families of venomous snakes, signs, symptoms, complications, and general & first aid management of snake bites.
6. To recognize the signs and symptoms and describe the management of substance abuse cases due to compounds such as Amphetamines, opioids, CNS depressant's, Hallucinogens, Cannabis group and Tobacco

Teaching/learning methodologies used:

1. Lecture
2. Discussion
3. Case study

Course materials:

REFERENCE BOOKS

a. Matthew J Ellenhorn. Ellenhorns Medical Toxicology – Diagnosis and Treatment of Poisoning. Second edition. Williams and Willkins publication, London
b. Modern medical toxicology, Author V. V. Pillay, Publisher: JP Brothers
c. Pediatric toxicology diagnosis and management of the poisoned child, Timothy B, Erickson, William R. Athrens, Steven.E. AK, Cart K.Baun,Louis J.Ling. Mcgraw-Hill; 2005.
d. Lindsay Murray, Frank Dary, Mark little, Mikes Cadogan, editors. Toxicology handbook. Australia: Churchil Livingstone, Elsevier; 2007

Lecture-wise program

	Topic	Hrs
I	General principles involved in the management of poisoning	**02**
II	Antidotes and the clinical applications	**01**
III	Supportive care in clinical Toxicology	**02**
IV	Gut Decontamination	**02**
V	Elimination Enhancement	**01**
VI	Toxicokinetics.	**02**
VII	Clinical symptoms and management of acute poisoning with the following agents	
	a) Pesticide poisoning: organophosphorous compounds, carbamates, organochlorines, pyrethroids	**05**
	b) Opiates overdose.	**01**
	c) Antidepressants	**03**
	d) Barbiturates and benzodiazepines	**03**
	e) Alcohol: ethanol, methanol	**02**
	f) Paracetamol and salicylates	**02**
	g) Non-steroidal anti-inflammatory drugs	**02**
	h) Hydrocarbons: Petroleum products and PEG.	**01**
	i) Caustics: inorganic acids and alkali	**01**
	j) Radiation poisoning	**01**
VIII	Clinical symptoms and management of chronic poisoning with the following agents - Heavy metals: Arsenic, lead, mercury, iron, copper	**05**
IX	Venomous snake bites: Families of venomous snakes, clinical effects of venoms, general management as first aid, early manifestations, complications and snakebite injuries	**02**
X	Plants poisoning. Mushrooms, Mycotoxins	**02**
XI	Food poisonings	**01**
XII	Envenomations – Arthropod bites and stings	**01**
XIII	**Substance abuse:**	
	Signs and symptoms of substance abuse and treatment of dependence	
	a) CNS stimulants : Amphetamine	**01**
	b) Opioids	**01**
	c) CNS depressants	**02**
	d) Hallucinogens: LSD	**01**
	e) Cannabis group	**02**
	f) Tobacco	**01**

Theory Sessional examination syllabus

Sessional No.	Syllabus Chapters No.
I	1 to 7 a
II	7b-7J
III	8 to 13

4.7 PHARMACOTHERAPEUTICS I & II (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Dr. Acsah Annie Paul (AAP)

Scope and Objectives: This course is designed to impart knowledge and skills necessary for contribution to quality use of medicines. Chapters dealt cover briefly pathophysiology and mostly therapeutics of various diseases. This will enable the student to understand the pathophysiology of common diseases and their management

Course Outcomes:

1. Describe the pathophysiology and management of various disease conditions.
2. Identify and analyse various factors that influence medication therapy in general and special populations.
3. Interpret laboratory data, diagnostic test results and other clinical data to optimize drug therapy.
4. Apply critical thinking and problem-solving skills to resolve drug-related problems.
5. Communicate effectively with health care professionals and patients.
6. Promote rational and quality use of medications.
7. Develop an individualized therapeutic care plan for the optimum management of diseases.

Teaching/learning methodologies used:

1. Lecture
2. Practical/Lab
3. Discussion
4. Case Study

Course materials

TEXT BOOKS

a. Clinical Pharmacy and Therapeutics – Roger Walker and Cate Whittlesea, Churchill Livingstone Publication.
b. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange.

REFERENCE BOOKS

a. Pathologic basis of disease - Robins SL, *et al.* W.B.Saunders Publication.
b. Pathology and Therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hall publication.
c. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication.
d. Applied Therapeutics: The clinical Use of Drugs. Lloyd Young and Koda-Kimble MA.
e. Avery's Drug Treatment, 4th Edn, 1997, Adis International Limited.
f. Relevant review articles from recent medical and pharmaceutical literature.

Lecture wise Programme

Etiopathogenesis and pharmacotherapy of diseases associated with following systems/ diseases

	Topic	Hrs
1.	**Cardiovascular system** Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, , Hyperlipidemia , Electrophysiology of heart and Arrhythmias.	**13**
2.	**Respiratory system** Introduction to Pulmonary function test, Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases.	**06**
3.	**Endocrine system** Diabetes, Thyroid diseases, Oral contraceptives, Hormone replacement therapy, Osteoporosis	**08**
4.	**General prescribing guidelines for** a. Paediatric patients b. Geriatric patients c. Pregnancy and breast feeding	**04**
5.	**Ophthalmology:** Glaucoma, Conjunctivitis- viral & bacterial.	**03**
6.	**Introduction to rational drug use** Definition, Role of pharmacist Essential drug concept Rational drug formulations.	**02**
7.	**Infectious disease:** Guidelines for the rational use of antibiotics and surgical Prophylaxis, Tuberculosis, Meningitis, Respiratory tract infections, Gastroenteritis, Endocarditis, Septicemia, Urinary tract infections, Protozoal infection- Malaria, HIV & Opportunistic infections, Fungal infections, Viral infections, Gonarrhoea and Syphillis.	**18**
8.	**Musculoskeletal disorders** Rheumatoid arthritis, Osteoarthritis, Gout, Spondylitis, Systemic lupus erythematosus.	**06**
9.	**Renal system** Acute Renal Failure, Chronic Renal Failure, Renal Dialysis, Drug induced renal disorders.	**05**
10.	**Oncology:** Basic principles of Cancer therapy, General introduction to cancer chemotherapeutic agents, Chemotherapy of breast cancer, leukemia. Management of chemotherapy nausea and emesis.	**06**
11.	**Dermatology:** Psoriasis, Scabies, Eczema, Impetigo.	**04**

Theory Sessional Examination Syllabus

Sessional No.	Syllabus
I	Topics 1, 2 & 3
II	Topics 4, 5, 6, & 7
III	Topics 8, 9,10, & 11

4.7 PHARMACOTHERAPEUTICS I & II (PRACTICALS)

Theory: 75 Hours (3 Hrs/Week)

Responsible member/s of the academic staff: Dr. Acsah Annie Paul (AAP)

Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge. Students are required to maintain a record of cases presented and the same should be submitted at the end of the course for evaluation. A minimum of 15 cases should be presented and recorded covering most common diseases.

Course Outcomes:

1. Gather and analyse patient medical records
2. Interpret and analyse the laboratory results of specific disease states
3. Develop individualized therapeutic plans based on the diagnosis.
4. Perform treatment chart review and identify medication related problems (MRPs).
5. Communicate and resolve MRPs to concerned health care professionals.
6. Perform the medication history interview and patient medication counselling as per the requirement of the patient and/or recommended by a clinician

ASSIGNMENTS

Students are required to submit written assignments on the topics given to them. Topics allotted should cover recent developments in drug therapy of various diseases. A minimum of THREE assignments [1500 – 2000 words] should be submitted for evaluation.

Assignments
Format of the assignment

- Minimum & Maximum number of pages
- It shall be computer draft copy
- Reference(s) shall be included at the end in Vancouver style
- It should be in the 'Times New Roman' word format with a word size of '12'
- Name and signature of the student
- Assignment can be a combined presentation at the end of the academic year
- Time allocated for presentation may be 8+2 Min

Scheme of Practical Examination

	Sessional	**Annual**
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	**20**	**70**
Duration	**03 hrs**	**04 hrs**

**** Total sessional marks are 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance)***

JSS Academy of Higher Education & Research
JSS College of Pharmacy
Sri Shivarathreeshwara Nagara, Mysore-570015
CLASS TIME TABLE- 2023-24

Class: PHARM. D –FOURTH YEAR

Lunch Break: 1.00 to 2.00 PM
Tea Break: 10.40 to 11.10 AM
3.50 PM to 4.05 PM

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	5.00-5.55 PM
Monday		Hospital Pharmacy (Tu) UM		Pharm. Thera-III SP	Hospital Pharmacy UM		←BI------ UM --------- Hospital ←BII---------- SP ---- Pharmaco			Pharmacy ---→ Ther-III --- --→	---------
Tuesday	Biopharm & Pharmacokinet RAO	←--BI------ BRJ ←BII ---RAO --		---------- Clinical Pharmacy-------→ Biopharm & P.Kinetics-----→			Clinical Pharmacy BRJ	Pharmaco Therapeutics-I & II AAP		Biopharmaceutics & Pharmacokinetics RAO	Clinical Pharmacy BRJ
Wednesday	Pharmaco Therapeutics-I & II AAP	←--BI-----AS ←BII ---AAP----		Biopharmaceutics& P.kinetics-----→ Pharmaco Therapeutics-I & II -----→			Pharmaco Therapeutics-II & II AAP	Biostatistics & Res Method (Tu) DHP		Pharmaco Therapeutics-I & II AAP	---------
Thursday	Biostatistics & Research Methodology DHP	←BII-- -- UM-		---------- Hospital Pharmacy-----→			Hospital Pharmacy UM	Clinical Pharmacy BRJ		Pharmaco Therapeutics-III SP	Clinical Toxicology (Tu) URR
Friday	Biopharm & Pharmacokinet RAO	Pharmaco Therapeutics-III SP		Biostatistics & Research Methodology DHP	Pharmaco Therapeutics-III (Tu) SP		Clinical Toxicology URR	Clinical Toxicology URR		Biopharm & Pharmacokinetics (Tu) AS	---------
Saturday	Clinical Pharma BRJ	←BI -----SP --- ←BII------ BRJ		Pharmaco Therapeutics-III ------→ --------Clinical Pharmacy-------→			----------				

***Effective from: 19th June 2023**

Note: 1. No tea break for practicals

Time table Coordinator

Principal