Jagadguru Sri Shivarathreeshwara University

JSS College of Pharmacy

Sri Shivarathreeshwara Nagar, Mysuru-570015

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

Website: www.jssuni.edu.in

An ISO 9001:2008 Certified Institution

Accredited
'A' Grade by NAAC

Course Handout

2017-18

Class: II Pharm.D.

Name : _____

Roll No. : _____

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VISION

To be a leader in pharmaceutical sciences & pharmacy practice education, training, research and continuous professional development for pharmacists and Pharmaceutical Scientists providing competent patient care and nurturing drug discovery and development.

MISSION

- To impart knowledge, develop skills and competencies in students in pharmaceutical sciences and pharmacy practice.
- Develop and advance the knowledge, attitude and skills of pharmacists and faculty members who can provide comprehensive pharmaceutical care to patients, improve patient outcomes, and meet societal needs for safe and effective drug therapy.
- To develop, promote and nurture research activities in pharmaceutical sciences and pharmacy practice and translating research into healthcare

CORE VALUES

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

Academic Calendar 2017-18
(II Pharm.D.)

1. **Commencement of Classes**

   II Pharm.D. - 21st June, 2017

2. **Sessional Examination Schedule**

I	II	III
18, 20, 21, 22 & 23rd Sep 2017	18, 19, 20, 21 & 22nd Dec 2017	2, 3, 4, 5 & 6th April 2018

3. **Closure of Term** - 6th April, 2018
4. **Annual Examination** - 2nd May, 2018
5. **Midterm Vacation** - From 24th Dec' 2017 to 16th Jan' 2018
6. **Annual Vacation** - From 25th May' 2018 to 24th June 2018

Teacher's Incharge

Class	Class Teacher	Batch No.	Batch Teacher
II Pharm.D.	Mr. Justin Kurian	I	Vertical Mentorship
		II	Vertical Mentorship

ACTIVITIES AND COORDINATORS 2017-18

Curricular & Co curricular activities

Sl. No	Activities	Coordinators	Schedule
1.	Induction, learning skills and personality development programmes for fresher's	DHPG	First Week of Commencement of First year of each course
2.	Anti ragging cell	JS/AMM/JUS	June 17 - May 18
3.	Grievance and redressal cell	PKK	June 17 - May 18
4.	Industrial Visits, Training and placements	MNP/ABP	June 17 - May 18
5.	Guest lectures &Seminars/conferences/training/workshop • organized at college • delivered/attended by staff	HVG	June 17 - May 18
6.	Internal Assessment Committee Chairperson Members	 GVP KM/RSS/SNM/BMV	June 17 - May 18
7.	• Academic Council Board • Identification of Advanced/ Medium/ Slow learners	Class Teachers	June 17 - May 18
8.	Ethics committee Meeting • Animal • Human	 KLK MR	June 17 - May 18
9.	Time table	MSV/RSS/AKT/HKS/AMR/NPK	June 17 - May 18
10.	IQAC	MNP/VKG/VJ/AMM/JL	June 17 - May 18
11.	Women's cell (Prevention of Sexual Harassment Cell)	MNN	June 17 - May 18
12.	Scholarship Bureau	RSC	June 17 - May 18
13.	Compilation of publications (Research papers/books/chapters)	BMG	June 17 - May 18
14.	Research Review Committee -Compilation of Ph.D details and funded projects - Plagiarism - Review of publications	Chairperson – DVG Members – BMG/BRP/HVG/KU	June 17 - May 18
15.	Pharmacy Education Unit (CCLPE)	PKK/KU/AMR	June 17 - May 18
16.	Admission Facilitation Cell	TMP/BV/JS/HP	June 17 - May 18
17.	Annual result analysis List of merit students	Exam section/ Program committee	June 17 - May 18

18.	GPAT and other competitive exams (TOEFL, GRE etc.)	AMM	June 17 - May 18
19.	Innovative Pedagogy	Pharmacy Education Unit	June 17 - May 18
20.	Library orientation	NS	June 17 - May 18
21.	Soft Skills Training	VKG	June 17 - May 18

Program Committee

Sl. No.	Program	Chairperson	Member Secretary	Schedule
22.	D.Pharm	GP	BMV	June 17 - May 18
23.	B.Pharm	PKK	KM	June 17 - May 18
24.	Pharm.D	MR	RSS	June 17 - May 18
25.	M.Pharm	GP	SNM	June 17 - May 18

Extracurricular activities

Sl. No.	Activities	Coordinators	Schedule
26.	• Selection of Class Representatives, Pharmaceutical society members • Annual planning and execution of Student centered and professional activities including inauguration of IPS	AKT	Within a month of Commencement of course June 17 - May 18
27.	JASPHARM	BMV	June 17 - May 18
28.	STUMAG	JUS	June 17 - May 18
29.	Sports coordinators	KLK/JK/NPK	June 17 - May 18
30.	NSS coordinators	BRJ/MPG	June 17 - May 18
31.	Cultural & Literary coordinators	MNN/SP/RSC	June 17 - May 18

Other Institutional activities

Sl. No.	Activities	Coordinators	Period
32.	Annual Day celebration	HVG/SM	March 2018
33.	Course handouts/ Teachers diary/ Student handbook/faculty handbook	MPV/RSC	June 2017
34.	National Pharmacy Week (NPW) & Pharmacists Day	UM + IPA team	Nov 2017
35.	Alumni association	PKK/HVG/SM/BS	June 17 - May 18
36.	Herbal and College Garden	JS	June 17 - May 18
37.	ISO	MSV/DHPG	June 17 - May 18
38.	Press and publicity	BMV	June 17 - May 18
39.	Foreign students cell	MPV	June 17 - May 18
40.	Governing council meeting	Principal's Office	June 17 - May 18

41.	Monthly/Annual report of college activities to JSSU and other agencies	HoDs/JL	June 17 - May 18
42.	College website	HKS/VKG	June 17 - May 18
43.	Research & Consultancy Co-ordinator • Collaboration with Industries/organizations • Interdepartment/Interdisciplinary research	SBC	June 17 - May 18
44.	Co-ordinator - JSSUonline.com	VKG/ABP	June 17 - May 18
45.	JSSU Newsletter	BMV	June 17 - May 18
46.	Annual group photo session	KM/Shivanna	June 17 - May 18
47.	Lab coat and Blazers	JS	June 17 - May 18
48.	Notice Board (SNB, LNB and IIPC), Departmental staff list	Nagaraju	June 17 - May 18
49.	Stock verification	Office staff/Librarian	June 17 - May 18
50.	Student Liaison	Ms. Divya S	June 17 - May 18
51.	Feedback	VJ/Class teachers/ Course Coordinators	June 17- May 18

PHARM.D

Expected Competencies and outcomes:

1. Development of knowledge and skills
2. Assessment of patient medical condition
3. Development of pharmaceutical care plan
4. Management of patient medication therapy
5. Pharmacotherapeutic decision-making skills
6. Hospital pharmacy management
7. Promote public health care program
8. Ethics and professionalism
9. Analytical thinking and interpretational skills
10. Communication skills
11. Management skills
12. Design and conduct of need based research projects
13. Life-long learning

COURSE HAND OUT 2017-18 Class: II Pharm. D

I .Course Details

S.No	Name of Subject	No. of hours of Theory	No. of hours of Practical	No. of hours of Tutorial
2.1	Pathophysiology	3	-	1
2.2	Pharmaceutical Microbiology	3	3	1
2.3	Pharmacognosy & Phytopharmaceuticals	3	3	1
2.4	Pharmacology-I	3	-	1
2.5	Community Pharmacy	2	-	1
2.6	Pharmacotherapeutics-I	3	3	1
	Total hours	**17**	**9**	**6**
	Grand Total	**32 hrs/ week**		

2. Evaluations:

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 are 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.

2.1 PATHOPHYSIOLOGY (THEORY)

Theory: 3 Hrs. /Week

Responsible Member/s of the academic staff: Ms. Jisha M Lucca (JML)

Scope and Objectives: This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge of its application in other subject of pharmacy.

At completion of the course it is expected that students will be able to:

(Student learning outcomes)

1. Discuss the general principles of pathophysiology of cell injury, inflammation, hypersensitivity and auto immune diseases.
2. Describe etiology and epidemiology of the selected diseases.
3. Discuss Pathophysiology of the selected disease.
4. List out clinical manifestation(s) and diagnostic methods of given disease.

Teaching/learning methodologies used:

1. Lecture
2. Discussion
3. Video

Course Materials

TEXT BOOKS

a. Pathologic basis of disease by- Cotran, Kumar, Robbins
b. Text Book of Pathology – Harsh Mohan
c. Text book of Pathology – Y M. Bhinde
d. https://www.khanacademy.org.Pathology

REFERENCE BOOKS

a. Clinical Pharmacy and Therapeutics; Second edition; Roger Walker; Churchill Livingstone publication
b. Pathology and Therapeutics for Pharmacists. A basis for clinical pharmacy practice; Third edition; Russell J Greene and Norman D Harris

Lecture wise Programme:

	Topic	Hrs
1	**Basic principles of cell injury and Adaptation**	**05**
	a) Causes, Pathogenesis and morphology of cell injury	
	b) Abnormalities in lipoproteinaemia, glycogen infiltration and glycogen infiltration and glycogen infiltration (Please remove it is repeating) and glycogen storage diseases	
2	**Inflammation**	**05**
	a) Pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation	
	b) Repairs of wounds in the skin, factors influencing healing of wounds	
3	**Diseases of Immunity**	
	a) Introduction to T and B cells	**02**
	b) MHC proteins or transplantation antigens	
	c) Immune tolerance	
	d) **Hypersensitivity**	**03**
	Hypersensitivity type I, II, III, IV, Biological significance, Allergy due to food, chemicals and drugs	
	e) **Autoimmunity**	**03**
	Criteria for autoimmunity, Classifications of autoimmune diseases in man, mechanism of autoimmunity, Transplantation and immunologic tolerance, allograft rejections, transplantation antigens, mechanism of rejection of allograft.	
	f) Acquired immune deficiency syndrome (AIDS)	**01**
	g) Amylodosis	**01**
4	**Cancer**	**05**
	Differences between benign and malignant tumors, Histological diagnosis of malignancy, invasions and metastasis, patterns of spread, disturbances of growth of cells, classification of tumors, general biology of tumors, spread of malignant tumors, etiology and pathogenesis of cancer.	
5	**Shock**	**03**
	Types of shock, mechanisms, stages and management	
6	**Biological effects of radiation**	**02**
7	**Environmental and nutritional diseases**	**04**
	i) Air pollution and smoking- SO_2,NO, NO_2, and CO	
	ii) Protein calorie malnutrition, vitamins, obesity, pathogenesis of starvation.	
8	**Pathophysiology of common diseases**	
	Parkinsonism	**01**
	Schizophrenia	**01**
	Depression and mania	**02**
	Hypertension	**02**
	Stroke (ischemic and hemorrhage)	**02**
	Angina, CCF, Atherosclerosis, Myocardial infarction	**08**
	Diabetes Mellitus	**02**
	Peptic ulcer and inflammatory bowel diseases	**04**

	Cirrhosis and Alcoholic liver diseases	**04**
	Acute and chronic renal failure	**02**
	Asthma and chronic obstructive airway diseases	**02**
9	**Infectious diseases :** Sexually transmitted diseases (HIV, Syphilis, Gonorrhea), Urinary tract infections, Pneumonia, Typhoid, Tuberculosis, Leprosy, Malaria, Dysentery (bacterial and amoebic), Hepatitis- infective hepatitis.	**11**

Sample Assignment Titles:

1. Chemical Mediators of inflammation
2. Drug Hypersensitivity
3. Cigarette smoking & its ill effects
4. Biological Effects of Radiation
5. Etiology and hazards of obesity
6. Complications of diabetes
7. Diagnosis of cancer
8. Disorders of vitamins
9. Methods in Pathology-Laboratory values of clinical significance
10. Pathophysiology of Dengue Hemorrhagic Fever (DHF)

Format of the assignment

1. Minimum of 6 & Maximum of 12 number of pages.
2. Reference(s) shall be included at the end.
3. Assignment can be a combined presentation at the end of the academic year
4. It shall be a computer draft copy.
5. The covering page must contain the title of assignment, name and signature of the student and the name of subject teacher
6. Time allocated for presentation may be 8+2 Min.

Theory Sessional Examination Syllabus

Sessional No.	Syllabus
I	Topics 1, 2, 3, & 4
II	Topics 5, 6, 7 & 8 - a, b, c, d, e, & f
III	Topics 8- g, h, i, j, & k and 9

2.2 PHARMACEUTICAL MICROBIOLOGY (THEORY)

Theory: 3 Hrs. /Week

Responsible member of the academic staff: Dr. M.N. Naganandini (MNN)

Scope & Objectives: Microbiology has always been an essential component of pharmacy curriculum. This is because of the relevance of microbiology to pharmaceutical sciences and more specifically to pharmaceutical industry. Pharmaceutical biotechnology is the logical extension of pharmaceutical microbiology, which is expected to change the complete drug product scenario in the future. This course deals with the various aspects of microorganisms, its classification, morphology, laboratory cultivation identification and maintenance. It's also discusses with sterilization of pharmaceutical products, equipment, media etc. The course further discusses the immunological preparations, diseases its transmission, diagnosis, control and immunological tests.

At completion of the course it is expected that students will be able to understand:

(Student learning outcomes)

Theory:

1. Explain the different concept of rational aspects of Micro organisms, design and their significance of various products.
2. Classify the various categories of microbiological assays based on their biochemical nature.
3. Correlate the pharmaceutical products and conventional properties with the structural feature.
4. Explain the biochemical basis of the pharmacological activities of the new microbial products.
5. Design the molecular aspects of fermentation.

Practical:

1. Identify the microbes, culturing and biochemical reactions of cultures.
2. Explain the principle involved in the Microbiological analysis of pathogenic organisms.
3. Prepare and purify the organisms by total and viable count by using appropriate procedure.
4. Carry out the microbiological assays and tests for the various drug substances using appropriate methodology.

Teaching/learning methodologies used:

1. Lecture
2. Pracatical /Lab
3. Disscussion

Course Materials:

TEXT BOOKS

a) Vanitha Kale and Kishor Bhusari "Applied Microbiology" Himalaya Publishing house Mumbai.
b) Mary Louis Turgeon "Immunology and Serology in Laboratory Medicines" 2nd edition, 1996 Mosby- Year book inc St. Louis Missouri.
c) Harsh Mohan, "Text book of Pathology" 3rd edition, 1998, B-3 Ansari road Daryaganj N. Delhi.

REFERENCE BOOKS

a) Prescot L.M., Jarley G.P Klein D.A "Microbiology" 2nd- edition Mc Graw Hill Company Inc.
b) Rawlins E.A. "Bentley's Text Book of Pharmaceutics" Bailliere Tindals 24-28, London 1988.
c) Forbisher "Fundamentals of Microbiology" Philadelphia W.B. Saunders.
d) Prescott L.M. Jarley G.P., Klein D.A. "Microbiology." 2nd edition WMC Brown Publishers, Oxford. 1993.
e) War Roitt, Jonathan Brostoff, David male, "Immunology"3rd edition 1996, Mosby-year book Europe Ltd, London.
f) Pharmacopoeia of India, Govt. of India, 1996.

Lecture wise Programme:

	Topic	Hrs
1	**Introduction to the science of microbiology**. Major divisions of microbial world and Relationship among them.	**03**
	Morphology & Physiology of Microorganisms	
2	Different methods of classification of microbes and study of Bacteria, Fungi, Virus, Rickettsiae, Spirochetes. Growth & Nutrition. Nutritional requirements. Growth and cultivation of bacteria and virus. Culture Media for aerobic and anaerobic bacteria & fungi.	**07**
3	**Maintenance of lab cultures.** Isolation and Identification of Bacteria Different methods-Staining reactions. Biochemical reactions.	**08**
4	**Counting of bacteria** -Total and Viable counting techniques.	**08**
	Sterilization	
5	Detailed study of different methods of sterilization with merits and demerits. Sterilization methods for all pharmaceutical products Detailed study of sterility testing of different pharmaceutical preparations. Validation of various sterilization techniques.	**08**
6	**Disinfectants**	**07**

	Study of disinfectants, antiseptics, fungicidal and Factors affecting their action and mechanism of action. Evaluation of bactericidal, bacteriostatic, virucidal and preservatives in pharmaceutical preparations.	
	Immunology	
7	Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity (active and passive). Antigens, chemical nature of antigens structure and formation of Antibodies, Antigen-Antibody reactions. Bacterial exotoxins and endotoxins. Significance of toxoids in active immunity, Immunization programme, and importance of booster dose.	**12**
8	**Diagnostic tests** Schick's Test, Elisa test, Western Blot test, Southern Blot PCR, Widal, QBC, Mantaux Peripheral smear. Study of malarial parasite.	**07**
9	**Microbiological Assays** Microbial culture sensitivity Testing: Interpretation of results Principles and methods of different microbiological assays. Microbiological assay of Penicillin, Streptomycin and vitamin B_2 and B_{12}. Standardization of vaccines and sera.	**05**
	Study of infectious diseases	
10	Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV	**10**

Theory Sessional examination syllabus

Sessional No.	Syllabus Chapters no.
I	1-4
II	5, 6 & 10
III	7-9

2.2 PHARMACEUTICAL MICROBIOLOGY (PRACTICALS)

Practical: 75 Hours (3 Hrs/Week)

Responsible member of the academic staff: Dr. M.N.Naganandini (MNN)

Title of the Experiment:

1 Study of apparatus used in experimental microbiology*.
2 Sterilisation of glass ware's. Preparation and sterilisation of media*
3 Staining techniques – Simple staining; Gram's staining; Negative staining**
4 Study of motility characters*.
5 Enumeration of micro-organisms (Total and Viable)*
6 Study of the methods of isolation of pure culture.*
7 Bio chemical testing for the identification of micro*-organisms.
8 Cultural sensitivity testing for some micro-organisms.*
9 Sterility testing for powders and liquids.*
10 Determination of minimum inhibitory concentration.*
11 Microbiological assay of antibiotics by cup plate method.*
12 Microbiological assay of vitamins by Turbidometric method**
13 Determination of RWC.**

* Indicate minor experiment & ** indicate major experiment

Assignments:

1 Visit to some pathological laboratories & study the activities and equipment/instruments used and reporting the same.
2. Visit to milk dairies (Pasteurization) and microbial laboratories (other sterilization methods) & study the activities and equipment/instruments used and reporting the same.
3. Library assignments
a. Report of recent microbial techniques developed in diagnosing some common diseases.
b. Latest advancement developed in identifying, cultivating & handling of microorganisms.

Format of the assignment:

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
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).

2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Dr. J. Suresh (JS)

Scope and Objectives: This subject has been introduced for the pharmacy course in order to make the student aware of medicinal uses of various naturally occurring drugs their history, sources, distribution, method of cultivation, active constituents, medicinal uses, identification tests, preservation methods, substitutes and adulterants.

At completion of this course it is expected that students will be able to:
(Student learning outcomes)
Theory:

1. Explain the different concept of rational aspects of Micro organisms, design and their significance of various products.
2. Classify the various categories of microbilogical assays based on their biochemical nature.
3. Correlate the pharmaceutical products and conventional properties with the structural feature.
4. Explain the biochemical basis of the pharmacological activities of the new microbial products.
5. Design the molecular aspects of fermentation.

Practical:

1. identify the crude drugs by macroscopical and microscopical characters
2. perform the chemical tests for the identification of unorganized drugs.

Teaching/learning methodologies used

1. Lecture
2. Practical/Lab
3. Discussion

Course materials

TEXT BOOKS

a. Pharmacognosy by G.E. Trease & W.C. Evans.
b. Pharmacognosy by C.K. Kokate, S.B. Gokhale & A.C. Purohit.

REFERENCE BOOKS

a. Pharmacognosy by R. Brady & V.E. Tyler.
b. Pharmacognosy by T.E. Wallis.
c. Pharmacognosy by C.S. Shah & J.S. Quadry.
d. Pharmacognosy by M.A. Iyengar.

Lecture wise programme:

No.	Topic	Hrs
1.	Introduction.	01
2.	Definition, history and scope of Pharmacognosy.	02
3.	Classification of crude drugs viz. alphabetical, morphological, chemical, pharmacological, taxonomical methods. General methods of chemotaxonomy.	05
4.	Cultivation, collection, processing and storage of crude drugs. Conservation of medicinal plants.	05
5.	Detailed method of cultivation of crude drugs. a) Senna b) Cinchona c) Cardamom d) Opium e) Isapgol f) Ergot h) Ginger	06
6.	Study of cell wall constituents and cell inclusions.	04
7.	**Study of morphology and microscopy of different plants parts.** i. Leaf: Datura, Senna ii. Bark: Cinnamon (Cassia), Cinchaona iii. Wood: Quassia iv. Stem: Ephedra v. Root: Rauwolfia, Liquorice vi. Rhizome: Ginger, Podophyllum. vii. Flower buds: Clove. viii. Fruits: Coriander, Fennel ix . Seeds: Isapgol, Nux Vomica.	10
8.	**Study of natural pesticides**. Pyrethrum, Neem, Tobacco	03
9.	**Detailed study of various plant constituents.** a) Detailed study of Carbohydrates and related products. b) Biological source, method of production, chemical constituents, tests, uses and adulterants of i) Honey ii) Acacia iii) Agar iv) Sterculia v) Tragacanth vi) Cellulose and its products vii) Pectin viii) Guar gum ix) Sodium alginate.	10
10.	Definition, sources, method extraction, chemistry and method of analysis of Lipids. Study of method of production, chemical constituents, tests, uses and adulterants of the following drugs. i) Castor oil ii) Shark liver oil iii) Chaulmoogra oil iv) Wool fat v) Bees wax vi) Spermaceti vii) Cocoa butter viii) Olive oil	07
11.	Therapeutic application of herbal drugs, poisonous plants, herbal-drug interaction, edible vaccines, marine Pharmacognosy.	04
12.	Introduction, definition, classification, general properties, chemical tests and general method of isolation of Alkaloids, Glycosides, Essential Oils, Flavonoids, Resins and Tannins.	12
13.	Study of plants fibers used in surgical dressings and related products.	04
14.	Different methods of adulteration of crude drugs and general methods of detection of adulterants.	02

Theory Sessional examination syllabus

Sessional No.	Syllabus
	Chapters no.
I	1-7
II	8, 9, 10,11
III	11,12,13,14

2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (PRACTICALS)

Practical: 75 Hours (3 Hrs./Week)

Responsible member/s of the academic staff: Dr. J. Suresh (JS)

General Requirements: Laboratory Napkin, Observation Book (150 pages), Zero brush, Needle, Blade, Match box.

List of experiments:

1. Introduction.
2. Tissue and tissue system
3. Macro, powder and microscopic study of Datura.
4. Macro, powder and microscopic study of Senna.
5. Macro, powder and microscopic study of Cassia Cinnamon.
6. Macro, powder and microscopic study of Cinchona
7. Macro, powder and microscopic study of Ephedra.
8. Macro, powder and microscopic study of Quassia.
9. Macro, powder and microscopic study of Clove
10. Macro, powder and microscopic study of Fennel.
11. Macro, powder and microscopic study of Coriander.
12. Macro, powder and microscopic study of Isapgol.
13. Macro, powder and microscopic study of Nux vomica.
14. Macro, powder and microscopic study of Ginger
15. Macro, powder and microscopic study of Podophyllum.
16. Determination of acid value.
17 Determination of Saponification value
18. Chemical tests for Acacia and Tragacanth
19. Chemical tests for Agar and Starch
20. Chemical tests for Gelatin & Castor Oil
21. Determination of moisture content of crude drug.
22. Isolation of Volatile oil.

Scheme of Practical Examination

	Sessionals	Annual
Synopsis	04	10
Identification	04	10
Major Experiment	07	20
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).

2.4 PHARMACOLOGY –I (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Ms. Nagashree (NKS)

Scope and Objectives: The main purpose of the subject is to understand what drugs do to living organism and how their effects can be applied to therapeutics and thus to improve the outcome of therapeutic intervention by the doctors. The subject covers the complete information about the drugs like, sources, physico-chemical properties, mechanism of action, physiological and biochemical effects (Pharmacodynamics) as well as absorption, distribution, metabolism and excretion (Pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

At completion of this course it is expected that students will be able to:
(Student learning outcomes)
Theory:

1. Explain the principles of Pharmacodynamics and Pharmacokinetics
2. Describe the basics concepts of drug toxicity, preclinical evaluation and drug interactions
3. Name the different classes of drugs for the treatment of various diseases
4. Describe the mechanisms of action and Pharmacological actions of different class of drugs
5. Describe the clinical uses and adverse effects of different class of drugs

Teaching/learning methodologies used:

1. Lecture

Course materials

TEXT BOOKS

a. Tripathi, K. D. Essentials of medical pharmacology. 6th edition, 2008. Publisher: Jaypee, Delhi.
b. Satoskar, R.S. and Bhadarkar, S.D. Pharmacology and pharmacotherapeutics. 20th edition, 2008. Publisher: Popular, Mumbai.
c. Rang, H.P. & Dale, M.M. Pharmacology. 5h edition, 2003. Publisher: Churchill Living stone.

REFERENCE BOOKS

a. Goodman Gilman, A., Rall, T.W., Nies, A.I.S. and Taylor, P. Goodman and Gilman's The pharmacological basis of therapeutics. 11th edition, 2006. Publisher McGraw Hill, Pergamon Press.
b. Craig, C.R. & Stitzel, R.E. Modern Pharmacology. 5th edition, 1997. Publisher: Little Brown Co.
c. Katzung, B.G. Basic and clinical pharmacology. 9th edition, 2004. Publisher: Prentice Hall, Int.

d. Shargel and Leon. Applied Biopharmaceutics and Pharmacokinetics. Latest edition 2002. Publisher: Prentice Hall, London.

Lecture wise Programme:

Topics	Hrs
1. General Pharmacology	**16**
Introduction, definitions and scope of pharmacology Routes of administration of drugs Pharmacokinetics (absorption, distribution, metabolism and excretion) Pharmacodynamics Factors modifying drug effects Drug toxicity – Basic concepts, acute, sub-acute and chronic toxicity Pre-clinical evaluation Drug interactions *Note*: The term Pharmacology used here refers to the classification, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, therapeutic uses, interactions and dose and route of administration.	
2.Pharmacology of drugs acting on ANS	**09**
Introduction to neurotransmission Adrenergic and antiadrenergic drugs Cholinergic and anticholinergic drugs Mydriatics and miotics Drugs used in myasthenia gravis Neuromuscular blockers	
3.Pharmacology of drugs acting on cardiovascular system	**09**
Antihypertensives Anti-anginal drugs Anti-arrhythmic drugs Drugs used for therapy of Congestive Heart Failure Drugs used for hyperlipidaemias	
4.Pharmacology of drugs acting on Central Nervous System	**20**
a) Excitatory and inhibitory neurotransmitters of CNS b) General anesthetics c) Sedatives and hypnotics d) Anticonvulsants e) Analgesic and anti-inflammatory agents f) Psychotropic drugs g) Antiparkonsinism drugs h) Alcohol and methyl alcohol i) CNS stimulants and cognition enhancers j) Centrally acting skeletal muscle relaxants k) Drug dependence, abuse and tolerance. List of drugs causing such problems	

5. Pharmacology of Local anaesthetics **02**

6. Pharmacology of Drugs acting on Respiratory tract

Bronchodilators **05**
Mucolytics
Expectorants
Antitussives
Nasal Decongestants

7. Pharmacology of Hormones and Hormone antagonists **08**

Thyroid and Antithyroid drugs
Insulin, Insulin analogues and oral hypoglycemic agents
Sex hormones and oral contraceptives
Oxytocin and other stimulants and relaxants

8. Pharmacology of autocoids and their antagonists **06**

Histamines and Antihistaminics
5-Hydroxytryptamine and its antagonists
Lipid derived autocoids and platelet activating factor

Theory Sessional examination syllabus

Sessional No.	Syllabus Chapters no.
I	1 – 2
II	3 – 4f
III	4g - 8

2.5 COMMUNITY PHARMACY (THEORY)

Theory: 2 Hrs. /Week

Responsible member/s of the academic staff: Mr. Balaji S. (BS)

Scope and Objectives: This course is designed to ensure that students are skilled and knowledgeable to provide various pharmaceutical care services to patients and general practitioners in the community setup.

At completion of this course it is expected that students will be able to:
(Student learning outcomes)
Theory:

1. Describe basic roles and responsibilities of community pharmacist and management of community pharmacies.
2. Discuss the process of pharmaceutical care in community settings.
3. Conduct patient counselling, medication adherence monitoring, health screening services and health promotion in community settings.
4. Summarize pathophysiology and management of minor ailments and communicable diseases.

Teaching/learning methodologies used:

1. Lecture
2. Discussion

Course Materials:
TEXT BOOKS:

a. Health Education and Community Pharmacy by N.S.Parmar.
b. WHO consultative group report.
c. Drug store & Business management by Mohammed Ali & Jyoti.

REFERENCE BOOKS:

a. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical Press.
b. Comprehensive Pharmacy Review – Edt. Leon Shargel. Lippincott Williams & Wilkins.

Special requirements:
The college is having model community pharmacy (meeting the schedule N requirement) which helps for training the students on dispensing and counseling activities.Special equipments like Sphygmomanometer, Glucometer is used for health screening services like HTN and DM.

Lecture wise programme :

Topic	Hrs
1. Definition and scope of community pharmacy	**2**
Roles and responsibilities of Community pharmacist	
2. Community Pharmacy Management	**4**

a) Selection of site, Space layout, and design
b) Staff, Materials- coding, stocking
c) Legal requirements
d) Maintenance of various registers
e) Use of Computers: Business and health care soft wares

3. Prescriptions – parts of prescription, legality & identification of medication related problems like drug interactions. **2**

4. Inventory control in community pharmacy
Definition, various methods of Inventory Control **3**
ABC, VED, EOQ, Lead time and safety stock

5. Pharmaceutical care
Definition and Principles of Pharmaceutical care. **2**

6. Patient counseling
Definition, outcomes, various stages, barriers, strategies to overcome barriers **4**
Patient information leaflets- content, design, layouts & advisory labels

7. Patient medication adherence
Definition, Factors affecting medication adherence and role of pharmacist in improving the adherence **2**

8. Health screening services
Definition, importance, methods for screening blood pressure/ blood sugar/ lung function and Cholesterol testing **3**

9. OTC Medication - Definition, OTC medication list & Counselling **3**

10.Health Education
WHO Definition of health and health promotion, care for children, pregnant & breast feeding women and geriatric patients. **2**

11. Commonly occurring communicable diseases, causative agents,
Clinical presentations and prevention of communicable diseases – Tuberculosis, Hepatitis, Typhoid, Amoebiasis, Malaria, Leprosy, Syphilis, Gonorrhea and AIDS **9**

12. Balance diet, treatment & prevention of deficiency disorders **2**

13. Family planning – role of pharmacist **1**

14. Responding to symptoms of minor ailments
Relevant pathophysiology and common drug therapy to Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Pyrexia, Opthalmic symptoms and worms infestations. **8**

15. Essential Drugs concept and Rational Drug Therapy
Role of community pharmacist **2**

16. Code of ethics for community pharmacists **1**

Theory Sessional examination syllabus

Sessional	Chapter No
I	1, 5, 9, 10,11
II	2, 3, 4, 6, 8, 16
III	7, 12, 13, 14, 15

2.6 PHARMACOTHERAPEUTICS-I (THEORY)

Theory: 3 Hrs. /Week

Responsible member/s of the academic staff: Dr Justin Kurian (JK)

Scope and Objectives: Imparts knowledge and skills necessary for contribution to quality use of medicines and management of various disease conditions.

At completion of this course it is expected that students will be able to understand: (Student learning outcomes)

Theory:

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.
4. Distinguish the management strategies of selected diseases in special populations.
5. Assess drug safety monitoring, contraindications and treatment outcomes and modify treatment plan as needed.

Practical:

1. Gather and analyse patient medical records and prepare pharmaceutical care plan.
2. Perform treatment chart review and identify medication related problems (MRPs).
3. Communicate and resolve MRPs to concerned health care professionals.
4. Perform the patient medication counselling as per the requirement of the patient and/or recommended by a clinician.

Teaching/learning methodologies used:

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

Course materials

TEXT BOOKS

a. Clinical Pharmacy and Therapeutics – Walker and Whittlesea, Churchill Livingstone
b. publication
c. Pharmacotherapy: A Pathophysiology 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, Williams and Wilkins Publication
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	**30**
a. Hypertension, Congestive cardiac failure, Angina Pectoris, Myocardial infarction, Hyperlipidemia	
b. Electrophysiology of heart and Arrhythmias.	
2. Respiratory system	**15**
Introduction to Pulmonary function test, Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases .	
3. Endocrine system	**19**
Diabetes, Thyroid diseases, Oral contraceptives, Hormone replacement therapy, Osteoporosis .	
4. General prescribing guidelines for	**04**
Paediatric patients	
Geriatric patients	
Pregnancy and breast feeding .	
5. Ophthalmology	**04**
Glaucoma, Conjunctivitis- viral & bacterial.	
6. Introduction to rational drug use	**03**
Definition, Role of pharmacist in promoting rational drug use and essential drug concept.	

Theory Sessional examination syllabus

Sessional No.	Syllabus Chapters no.
I	1a.
II	1b, 2 & 5
III	3, 4 & 6

2.6 PHARMACOTHERAPEUTICS-I (PRACTICALS)

Practical: 75 Hours (3 Hrs /Week)

Responsible member/s of the academic staff: Dr. Justin Kurian (JK)

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.

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

- Minimum & Maximum number of pages.
- Reference(s) shall be included at the end.
- Assignment can be a combined presentation at bethe end of the academic year
- It shall be computer draft copy
- Name and signature of the student
- Time allocated for presentation may 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 hours**	**04 hours**

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

JSS University

JSSCollege of Pharmacy

Sri ShivarathreeshwaraNagara, Mysore-570015

CLASS TIME TABLE – 2017-18*

Class: PHARM. D –SECOND 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 – 9.50 AM	9.50-10.40AM		11.10-12.05PM	12.05–1.00PM		2.00-2.55PM	2.55-3.50PM		4.05-5.00PM
Monday		Pharmacology I **KSN**		Pharmacology I (Tu) **KSN**	----------		----------	Community Pharmacy **BS**		Community Pharmacy (Tu) **BS**
Tuesday		←BI------JS-------- ←BII -----MNN----		Pharmacognosy&Phytopharmaceuticals→ ----Pharmaceutical microbiology-------→			Pathophysiology **JML**	Pharmaceutical microbiology **MNN**		Pathophysiology **JML**
Wednesday	Pharmaco-Therapeutics-I **JK**	←BII------JK--- ←BI -----MNN----		-------Pharmaco- Therapeutics-I-----→ ------Pharmaceutical microbiology------→			Pharmaceutical Microbiology **MNN**	Pharmacognosy& Phytopharmaceuticals **JS**		Pharmaco-Therapeutics-I **JK**
Thursday		Pharmaco-Therapeutics-I **JK**		Pharmacognosy& Phytopharmaceuticals **JS**	Pharmaco-Therapeutics-I (Tu) **JK**		Pathophysiology **JML**	Pharmaceutical microbiology **MNN**		Pathophysiology (Tu) **JML**
Friday		Pharmacognosy& Phytopharmaceuticals **JS**		Pharmacology I **KSN**	Pharmaceutical microbiology (Tu) **MNN**		←BI --- Pharmaco- Therapeutics-I---- ←BII Pharmaceutical microbiology----			------JK-→ -----JS----→
Saturday	Pharmacology I **KSN**	Pharmacognosy& Phytopharmaceuticals (Tu) **JS**		Community Pharmacy **BS**	----------					

***Effective from: 21st June 2017**

Note: 1. No tea break for practicals 2. Forenoon practical starts from 10.00AM

Time table Coordinator

Copy: SNB/LNB/SCF/SCC-Teachers/OC/TTF-MSV/PP Dept./Extra-MSV.

Principal

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