

**BACHELOR OF PHYSIOTHERAPY-
PAPER CODE- 03060401
PHARMACOLOGY**

Periods/Week Credits
HOURS: 64
T: 3 T: 1 4

TEACHING

MAX. MARKS: 100
INTERNAL: 40
EXTERNAL: 60
TIME: 3 Hrs

Course Description:

This course is designed to develop a basic knowledge of Pharmacology. It also emphasizes on reaction of various drugs at different

Course Objectives:

Introduce the students to basic pharmacology of various common medication used and its effects on patients in physical therapy

Course Outcomes:

1. To understand the various routes of drugs administration, pharmacodynamics and pharmacokinetics of drugs.
2. To understand the various drugs used for the treatment of ANS, PNS and CNS conditions with their mechanism of action and adverse effects.
3. To understand the various drugs used for the treatment of endocrine system with their mechanism of action and adverse effects.
4. To understand the various drugs used for the treatment of GIT problems with their mechanism of action and adverse effects.
5. To understand the various antibiotic drugs with their mechanism of action and adverse effects.
6. To understand the various drugs used for the treatment of ailment of cardio vascular system with their mechanism of action and adverse effects.
7. To understand the various drugs used for the treatment of Bronchial Asthma, Skin lesions and heavy metal poisoning.
8. To understand the protocol of immunization, drugs banned in sports and role of

Vitamins.

Date	Theme/ Topic	Duration Hrs	Learning Experiences & Learning Resources	Learning Objectives
	General Pharmacology	6	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe pharmacology, its division Explain the commonly used routes of administration Discuss the factors affecting dose of a drug and various mechanism of action of a drug. Identify various Adverse drug reactions including drug allergy idiosyncrasy. Understand Drug interactions synergism antagonism etc
	Autonomic Nervous System	8	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe the various drugs including their mechanism of action ,uses ,therapeutic uses and adverse effects on Autonomic Nervous System
	Peripheral Nervous System & Autocoids	5	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe the various drugs including their mechanism ,uses ,therapeutic uses and adverse effects on Peripheral Nervous System with special emphasis on muscle relaxants
	Central nervous system	12	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe the various drugs including their mechanism ,uses ,therapeutic uses and adverse effects on Central Nervous System With special emphasis on anti parkinsonian drugs and NSAIDS Explain the Sedative & hypnotics & Treatment of Insomnia Discuss the Antiepileptic drug & Treatment of epileptics Explain the Ethyl alcohol drug of addiction treatment of Methyl alcohol poisoning Discuss the Drug used in common psychiatric disorders
	Endocrines	6	SIS Essential of Pharmacology: KD Tripathi	Describe the various drugs including their mechanism ,uses ,therapeutic uses

			Pharmacology for Physiotherapist: Uday Kumar: JP Publications	and adverse effects on Endocrine System For examples: Anti diabetes drug, Gluco corticoids, Anabolic steroids. Discuss the Treatment of osteoporosis etc. Thyroid and anti thyroid drugs
	GIT	4	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe the various drugs including their mechanism ,uses ,therapeutic uses and adverse effects on Gastrointestinal System For Examples: Laxative & purgative, Anti diarrhoeal drugs, Drug for gastric and peptic ulcer, Anti-emetics
	Chemo-Therapy	12	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe the various drugs used in chemotherapy and their indications
	CVS & Blood	5	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe drugs used for cardiovascular disorders and heamatological diseases
	Misc. Topic	6	SIS Essential of Pharmacology: KD Tripathi Pharmacology for Physiotherapist: Uday Kumar: JP Publications	Describe drugs acting on skin and their mechanism Describe drugs used bronichial asthma Describe general principles of treatment of poisoning Describe various drugs banned in sports Describe various vaccinations

**BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060402
BIOMECHANICS-II (THEORY)**

Periods/Week Credits

T: 4 4

TEACHING HOURS: 64

MAX. MARKS: 100

INTERNAL: 40

EXTERNAL: 60

TIME: 3 Hrs

**BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060402
BIOMECHANICS-II (PRACTICAL)**

Periods/Week Credits

P: 4 2

TEACHING HOURS: 64

MAX. MARKS: 50

INTERNAL: 20

EXTERNAL: 30

Course Description

This Course Supplements the Knowledge of anatomy and enables the student to have a better understanding of the principles of biomechanics and their application in musculoskeletal and various other dysfunctions.

Course Outcomes:

Describe the joint structure, function and dysfunction of the vertebral column

Describe the Peripheral joints joint structure, function and dysfunction

Course Outcomes:

On successful completion of this programme, students should be able to describe the mechanics of shoulder, elbow, wrist, hip, knee and ankle and foot and understand normal mechanics and patho-mechanics of different conditions. Normal mechanics of spine and patho mechanics in abnormal posture

Date	Theme/ Topic	Duratio n	Learning Experiences & Learning Resources	Learning Objectives
	Biomechanics of the vertebral column	30	Student Interactive session Explanation through charts models, videos Joint Structure & Function- Cynthia Norkins Biomechanics- Nordins The Physiology of the Joints: I.A. Kapandji, Vol.3	Describe the biomechanics of structure and function of vertebral column Discuss the Muscles of the vertebral column Explain the General effects of injury and aging Describe the Kinetics and kinematics during different activities such as squatting, sitting, standing waking, bending
	Biomechanics of the peripheral joints	96	Student Interactive session Explanation through charts models, videos Students Seminars Group Discussions Problem based learning Joint Structure & Function- Cynthia Norkins The Physiology of the Joints: I.A. Kapandji, Vol.1 & 2	Describe the biomechanics of the peripheral joints such as shoulder complex, elbow complex, wrist complex, hip complex, knee complex and ankle, foot complex

**BACHELOR OF PHYSIOTHERAPY-
PAPER CODE – 03060403
EXERCISE THERAPY-II (THEORY)**

	Periods/Week	Credits
T: 4	4	

TEACHING HOURS: 64

MAX. MARKS: 100

INTERNAL: 40

EXTERNAL: 60

TIME: 3 Hrs

**BACHELOR OF PHYSIOTHERAPY-
PAPER CODE – 03060403
EXERCISE THERAPY-II (PRACTICAL)**

	Periods/Week	Credits
P: 4	2	

TEACHING HOURS: 64

MAX.

MARKS: 50

INTERNAL: 20

EXTERNAL: 30

TIME: 3 Hrs

Course Description:

At the end of the course, the candidate will have a better understanding of the principles of exercise therapy both basic and advanced as well as assessment techniques. The student's skill will be enhanced through hands on training provided during the practical hours.

Course Objectives:

Acquire knowledge of Neuromuscular coordination and inco-ordination
Describe principles, techniques and clinical application of hydrotherapy

Describe types of normal and abnormal Posture and gait and techniques to correct them
 Acquire knowledge & skill of soft tissue manipulation
 Describe & acquire the skill of use of various special techniques like Yoga Therapy, Breathing exercises etc.
 Describe types, indications contraindications precautions of therapeutic exercises
 Be able to demonstrate Swiss ball exercises, Pilates concept, Core Stabilization, Thera band exercises, Plyometrics, McGill exercises

Course Outcomes:

At the completion of course the student shall be able to describe the basics of neuromuscular co-ordination involved in exercise therapy, describe and demonstrate functional reeducation, aerobics exercises, describe and demonstrate soft tissue manipulations, describe the skills involved and benefits of hydrotherapy, demonstrate and apply different techniques to correct posture & gait and able to perform various assessment techniques needed during patient assessment.

Date	Theme/ Topic	Duration Hrs	Learning Experiences & Learning Resources	Learning Objectives
	Neuromuscular coordination	8	Student Interactive session Practical demonstration Hands on training Principle of exercise therapy Gardiner CBS Delhi.	Acquire knowledge of neural control and methods of training co-ordination & Balance
	Soft tissue manipulations	30	Student Interactive session Practical Demonstration Hands on training Therapeutic Massage- AGK Sinha	Acquire the skill of application of various soft tissue manipulations (Therapeutic massages) & Describe Principles, Physiological effects, Therapeutic use, Merits & Demerits. Identify the indication & contraindication of various soft tissue manipulation techniques Acquire knowledge and skill of various stretching exercises
	Neuro-muscular Incoordination	6	Student Interactive session Explain using PPTs and videos Practical Demonstration Hands on training Principle of exercise therapy Gardiner CBS Delhi.	Describe mechanism of neuro muscular coordination, etiology of incoordination and treatment techniques
	Functional Reeducation	6	Student Interactive session Explain using PPTs and videos Practical Demonstration	Describe and demonstrate principles of reeducation and its importance in rehabilitation of patient

			Hands on training Problem based learning Principle of exercise therapy Gardiner CBS Delhi.	Describe the General therapeutic techniques to reeducate ADL function(Functional Re-education)
Aerobic exercises	6	SIS Explain using PPTs and videos Practical Demonstration Visit to Hydrotherapy deptt		Discuss the Physiological response to Aerobic Exercise Explain the Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise Acquire knowledge & skill of Aerobic exercises
Posture	12	SIS and videos Practical Demonstration Hands on training Therapeutic exercises foundations and techniques kisner& Colby La Davis.		Describe normal posture & mechanism of normal posture Explain the abnormal posture, its assessment, types, aetiopathogenesis and management including therapeutic Exercise
Balance	8	Practical Demonstration Hands on training Therapeutic exercises foundations and techniques kisner& Colby La Davis. Physical Rehabilitation- O' Sullivan		Discuss the Static and dynamic balance Explain its assessment & management including therapeutic exercise.
Gait and Gait training	24	Student Interactive session Practical demonstration Hands on training Physical Rehabilitation- O' Sullivan		Discuss the normal gait & its components Explain Gait-deviations-its assessment, types, aetio genesis, management including therapeutic exercise Discuss the Types of walking aid Identify the indications effects & various gait training techniques
Hydrotherapy	10	Student Interactive session Practical Demonstration Hands on training Therapeutic exercises foundations and techniques kisner& Colby La Davis. Hydrotherapy: principles and practice - camp ion Butterworth Heinemann.		Describe Basic principles of fluid mechanic as they relate to hydrotherapy Explain the Physiological & therapeutic effects of hydrotherapy including joint mobility, muscle strengthening & wound care etc Explain the types of hydrotherapy equipment Identify the indications &

				<p>contraindications of Hydrotherapy</p> <p>Develop operational skills involved in hydro therapy</p>
	Traction	6	<p>Student Interactive session</p> <p>Explain using PPTs and videos</p> <p>Practical Demonstration</p> <p>Hands on training</p> <p>Therapeutic exercises foundations and techniques kisner& Colby La Davis.</p> <p>Practical exercise therapy - Hollis Blackwell scientific publication.</p>	<p>Discuss the principles of traction</p> <p>Explain the physiological & therapeutic effects & types of traction</p> <p>Identify the indications & contraindications of traction</p> <p>Develop the techniques of application operational skill & precautions of traction</p> <p>Describe and demonstrate principles , indications and application of techniques such as Traction, breathing exercises, group therapy etc</p>
	Breathing Exercises	4	<p>Student Interactive session</p> <p>Explain using PPTs and videos</p> <p>Practical Demonstration</p> <p>Hands on training</p> <p>Problem based learning</p> <p>Therapeutic exercises foundations and techniques kisner& Colby La Davis.</p>	<p>Discuss the review of normal breathing mechanism & its types</p> <p>Discuss the therapeutic effects & precautions of breathing exercise.</p> <p>Demonstrate the different types of breathing exercises</p>
	Group Therapy	4	<p>SIS</p> <p>Explain using PPTs and videos</p> <p>Practical Demonstration</p> <p>Visit to Hydrotherapy deptt</p> <p>Principle of exercise therapy</p> <p>Gardiner CBS Delhi</p>	<p>Describe the skill & significance of Group & Recreational Exercises</p> <p>Explain the advantages & disadvantages of Group therapy</p>
	Yoga Therapy	6	<p>SIS and videos</p> <p>Practical Demonstration</p> <p>Hands on training</p>	<p>Describe the Principles of Yoga</p> <p>Explain its types, its physiological & psychosomatic effects</p> <p>Demonstrate standard yoga postures used by the beginners</p>
	Miscellaneous Topics	12 Hrs	<p>SIS</p> <p>Practical Demonstration</p> <p>Hands on training</p> <p>Practical exercise therapy - Hollis Blackwell scientific publication.</p> <p>Therapeutic exercises basmajian William & Wilkins</p>	<p>Acquire basic concepts of Swiss ball exercises, Pilates concept, Core Stabilization</p> <p>Thera band exercises, Plyometrics, Mcgill exercises,</p> <p>Develop the skills of application of different exercise techniques used in the rehab of patients.</p>

**BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060404
MANUAL THERAPY (THEORY)**

Periods/Week	Credits
T: 4	4

***TEACHING HOURS: 64
MAX. MARKS: 100
INTERNAL: 40
EXTERNAL: 60
TIME: 3 Hrs***

**BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060404
MANUAL THERAPY (PRACTICAL)**

Periods/Week	Credits
P: 4	2

TEACHING HOURS: 64

MAX. MARKS: 50

***INTERNAL: 20
EXTERNAL: 30***

Course Description:

This Course Supplements the Knowledge of various manual therapy techniques both basic and advanced need for treatment of neurological conditions, musculoskeletal pain and disability. after lectures, demonstrations and Practical the student will be able to evaluate/assess conditions

of patient and plan and execute specific treatment according to the patient condition.

Course Objectives:

- Describe and Demonstrate different techniques of Manual Therapy
- Describe the motor Learning and Motor Control
- Identify and application of different theories of Motor control
- Describe the Physical Assessment of Movement Dysfunction
- Identify the different causes of Movement Dysfunction.
- Describe and interpret various routine investigations, eg; X-Rays, biochemical and electro diagnostic test

Course Outcomes:

At the completion of course the student shall be able to demonstrate various manual therapy techniques and also shall be able to use clinical judgment and decision-making skills while assessing and treating patient so as to provide best quality health care to patients that avoids adverse events and harm them. The student shall also be able to interpret results of various investigative techniques like X ray etc.

Date	Theme/ Topic	Duration	Learning Experiences & Learning Resources	Learning Objectives
	Basics in Manual Therapy and application with clinical reasoning:	68 Hrs.	Student Interactive Session Practical Demonstration Hands on training Horizontal Inteegrated teaching Therapeutic exercises foundations and techniques kisner& Colby La Davis. Proprioceptive neuromuscular facilitation - Voss et.al- Williams and Wilkins. Positional Release Technique: Leon Chaitow Peripheral Mobilization: G D Maitland Vertebral Mobilization: G D Maitland Orthopedic Medicine: James Cyriax	Describe and Demonstrate different techniques of Manual Therapy Demonstrate the Examination of joint Explain the Basic Principles of mobilization skills for joints and soft tissues-(Maitland, Kaltenborn, Mulligan’s, Mckenzie, Muscle energy technique, myofascial stretching, Cyriax, trigger points, PNF neural tissue mobilization i.e. slump, butler, and ULTT). Indication, contraindication, Principles of Manipulative therapy, basic skills of mobilization (Kaltenborn, Mulligan’s, Maitland and Cyriax friction massage only, PRT), Develop the operational skills of techniques of application of different mobilization techniques Discuss the Basics of Therapy that can be used adjunct to Physiotherapy- dry needling, cupping therapy, acupuncture, naturopathy etc

			Principle of Joint Mobilization: Edward P Mulligan	
Motor Learning and Motor Control	20 Hrs.	Student Interactive session Practical Demonstration Students Seminar Hands on training Horizontal Integrated teaching Physical Rehabilitation: O' Sullivan	Describe the concept of motor Learning and Motor Control Classify the motor skills Evaluate the motor performance. Identify and application of different theories of Motor control	
Assessment of movement dysfunction	20 Hrs.	Student Interactive session Practical Demonstration Case Discussion Hands on training Movement Impairment Syndrome: Shirley A. Sahrman	Describe the Physical Assessment of Movement Dysfunction Identify the different causes of Movement Dysfunction. Analyze the altered posture and gait, as per I.C.I.D.H. norms	
Interpretation of various investigations	20 Hrs.	Student Interactive Session Practical Demonstration Case Discussion Physical Rehabilitation: O' Sullivan	Describe and interpret various routine investigations, eg; X-Rays, biochemical and electro diagnostic test	

BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060405
BASICS OF RADIO PHYSICS-THEORY

Periods/Week **Credits**
T: 4 **4**

TEACHING HOURS: 64
MAX. MARKS: 100

INTERNAL: 40
EXTERNAL: 60

BACHELOR OF PHYSIOTHERAPY
PAPER CODE – 03060405
BASICS OF RADIO PHYSICS-PRACTICAL

Periods/Week **Credits**

P: 4 **2**

TEACHING HOURS: 64

MAX.

MARKS: 50

INTERNAL: 20
EXTERNAL: 30

Course Description:

To provide a broader understanding of the principles of Radiology and a familiarity with the many diagnostic techniques available, their values and limitations, and how they may be best used in the management of the patient.

Course Objectives:

- To understand basics of Radiography.
- Interpretation of different techniques of Radiography
- To learn to recognize basic anatomic structures as they appear on imaging studies in the normal patient and in common disease states.
- To become aware of and understand the nature of all currently available imaging procedures.
- To gain a firm knowledge of the indications, contraindications, risks and costs of commonly used imaging procedures.

Course Outcomes:

- Student will be able to interpret of plain radiographs as well as of Cross-Sectional imaging studies, such as CT, MR and Ultrasound.
- Compare and contrast the benefits and limitations of different radiologic modalities including: Plain film, CT, Ultrasound, MR, Nuclear medicine. List risks associated with radiation exposure
- Recognize normal anatomic structures of the chest on imaging exams and become familiar with the range of normal appearances
- Recognize abdominal organs on cross sectional imaging studies
- Use a systematic search pattern for interpreting an plain film
- Define terms commonly used in radiology reports including: lucency, opacity, attenuation, Hounsfield units (HU), signal
- Categorize different tissues from most to least opaque on x-ray including: bone, soft tissue, air, metal, and fat
- Have a GLOBAL understanding about Medical Imaging and radiology.
- Understand how to prepare patients for radiology studies (dealing with allergies, contrast reactions, MRI safety, radiation exposure, etc.)

Date	Theme/ Topic	Duration	Learning Experiences & Learning Resources	Learning Objectives
	Regional Radiography	40	SIS Explain using charts, models, X-ray films and interpretation of reports. Radiographic positioning-Clark	Learn about various views and interpretations used in Radiography of Upper limb, Lower Limb, Skull, Vertebral column, Chest and Abdomen
	Basics Of Mammography	04	SIS Explain using charts models, mammography films. Radiographic positioning-Clark	Learn about the basics of Mammography and its technique. Identify the indications of mammography
	Ultrasound	20	SIS Explain using charts models,	Learn Basics of Sonography, and Identify their clinical applications.

			practical demonstration., interpretation of various reports. Radiographic positioning- Clark	
	Echocardiography	10	SIS Explain using charts and models, practical demonstration, interpretation of various reports. Radiographic positioning- Clark	To learn about basics of echocardiography and Identify their clinical interpretation.
	CT Scan	20	SIS Explain using charts and models and films of CT Scans. Radiographic positioning- Clark	To learn basics of CT Scan of Brain , face, sinus, neck, mastoid, temporal bone, thorax, abdomen, pelvis, extremities Describe its principle and interpretation. Identify its advantages & disadvantages Explain the contrast used in CT
	MRI	20	SIS Explain using charts and models, films of MRI. Radiographic positioning- Clark	To learn basics of MRI): brain, face, sinus, neck, mastoid, pituitary, salivary gland, thorax, abdomen, pelvis, whole spine, extremities & spine Explain principle and its interpretation.
	Advancement In CT	14	SIS Explain using charts and models and films of CT. Radiographic positioning- Clark	To learn about basics of advancement in CT. Explain CT fluoroscopy, CT Angiography, CT guided Biopsy

**OPEN ELECTIVE-
PAPER CODE- BPT- PHY- OE-04
ERGONOMICS**

Periods/Week Credits
T: 4 4

TEACHING HOURS: 64

MAX. MARKS: 100

INTERNAL: 40

EXTERNAL: 60

TIME: 3 Hrs

Course Description:

This course presents fundamental concepts from multiple disciplines that are essential to practicing ergonomics. The course begins with core topics from anatomy, kinesiology and the physiology of work as applied to human abilities and limitations. The class continues with an exploration of biomechanics, anthropometry, physical and psychosocial ergonomic risk factors and analytic methods to mitigate risk exposure. Finally, cognitive and macro ergonomics models are introduced along with considerations for the professional ergonomist. Pulling these pieces together ensures a comprehensive approach to Human Factors and Ergonomics to both minimize injury and optimize worker performance. Students will evaluate different environments based on the concepts introduced in this course.

Course Objectives:

- To increase awareness of the need for and role of ergonomics in occupational health
- To obtain basic knowledge in the application of ergonomic principles to design of industrial workplaces and the prevention of occupational injuries
- To understand the breadth and scope of occupational ergonomics

Course Outcomes:

- Define ergonomics and the various disciplines that contribute to the field
- Apply knowledge of basic human anatomy, biomechanics, physiology and kinesiology to a human's capacity to do work

- Identify and quantify the demands of work in terms of primary physical risk factors associated with work-related musculoskeletal disorders (MSDs)
- Summarize other factors that are associated with work related MSDs such as personal and work psychosocial factors
- Compare the physical demands of a task to human capacity and ergonomics guidelines and identify mismatches that indicate risk
- Perform a basic risk analysis of the design of existing controls and displays
- Perform a root cause analysis of observed ergonomic risk factors
- Demonstrate knowledge of ergonomic approaches to the redesign of work by developing controls that reduce hazards and mitigate risk
- Plan a path to certification or employment in the field of ergonomics
- Demonstrate a fundamental knowledge of the science of human factors and ergonomics and ethical responsibility in practice

Date	Theme/ Topic	Duration	Learning Experiences & Learning Resources	Learning Objectives
	Introduction to Ergonomics & Factors affecting	3	Student Interactive Session Student Seminar	Explain the Concept of ergonomics Explain Factors affecting Ergonomics (floor plan, color, acoustics, ventilation, furniture and equipment)
	Job Design	12	Student Interactive Session Students Seminar	Identify Various benefits of ergonomics at work place, Explain Ergonomics and design for aging, Discuss Ergonomics for Disabled, diseased and injured Discuss JOB DESIGN features of good job design
	Ergonomics risk factors	8	Student Interactive Session Student Seminar	Assessment of task, equipment evaluation, Observation of work site, Identify Various ergonomic risk factors Explain WRMSD'S causes, prevention
	Work related Musculoskeletal disorders	9	Student Interactive Session Student Seminar	Explain Various Work related musculoskeletal disorders, Discuss the Causes and ergonomics specific to different professions- Physiotherapist, dentist, teacher, computer

				operator, house wife, farmers, driver
--	--	--	--	--