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THE TAMIL NADU
Dr. M.G.R. MEDICAL UNIVERSITY
CHENNAI - 600 032.

REGULATIONS FOR BACHELOR OF PHYSIOTHERAPY (B.P.T.) DEGREE COURSE

THE TAMIL NADU Dr.M.G.R. MEDICAL UNIVERSITY CHENNAI

Regulations of the University

In exercise of the powers conferred by Section 44 of the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Act, 1987 (Tamil Nadu Act 37 of 1987), the standing Academic Board of the Tamil Nadu Dr. M.G.R. Medical University, Chennai hereby makes the following regulations:-

SHORT TITLE AND COMMENCEMENT:-

These regulations shall be called "REGULATIONS FOR BACHELOR OF PHYSIOTHERAPY (B.P.T.) DEGREE COURSE OF THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI.

They shall come into force from the academic year session (1997-98) onwards.

The regulations framed is subject to modification from time to time by the Standing Academic Board.

REGULATIONS

1. OVERALL OBJECTIVES

An under graduate course in Physiotherapy is to impart in depth knowledge and skill to a student to become competent in the techniques and develop the proper attitude required for the practice of Physiotherapy and carry out treatment prescribed by the Physician.

2. OBJECTIVES

The graduate of Physiotherapy programme:

a) acquires adequate knowledge of the basic medical subjects in the practice of Physiotherapy;

b) develops skills and techniques of therapeutic massage and exercise for the management of various medical and surgical conditions;

c) development of proper attitude for compassion and concern for the individuals and welfare of the physically handicapped in the community;

d) demonstrates skills in teaching management research guidance and counselling;

e) practices moral and ethical values.

3. ELIGIBILITY

a. Candidates belonging to all categories for admission to the Bachelor of Physiotherapy course should have passed the Higher Secondary Course examination (Academic Stream) after a period of 12 years of study with the following subjects: Physics, Chemistry and Biology / Botany and Zoology.

b. Candidates who have studied abroad and have passed the equivalent qualification as determined by the Association of Indian Universities will form the guideline to determine the eligibility and must have passed in the subjects: Physics, Chemistry, Biology (Botany / Zoology) and English upto 12th Standard level.

c. Candidates who have passed the Senior Secondary School Examination of National Open School with a minimum of 5 subjects with any of the following group subjects.

a) English, Physics, Chemistry, Botany, Zoology.

b) English, Physics, Chemistry, Biology and any other language.

5. AGE LIMIT FOR ADMISSION

A candidate should have completed the age of 17 years at the time of admission or would complete the age on or before 31st December on the year of admission to the B.P.T. degree course

6. PHYSICAL FITNESS CERTIFICATE

Every candidate before admission to the course shall submit to the principal of the Institution a certificate of medical fitness from an authorised medical officer that the candidate is physically fit to undergo the academic course and does not suffer from any disability or contagious disease.

7. ELIGIBILITY CERTIFICATE

Candidates who have passed any qualifying examination other than Higher Secondary Course Examination conducted by Government of Tamil Nadu shall obtain an Eligibility Certificate from the University by remitting the prescribed fee along with the application form.

8. REGISTRATION

A candidate admitted to the course in any of the affiliated B.P.T. college shall register with this University by remitting the prescribed fee along with the application form for registration duly filled in and forwarded to this University through the Head of the Institution within the stipulated date.

9. DURATION OF THE COURSE

The duration of certified study for the Bachelor of Physiotherapy course shall extend over a period of four academic years comprising of 8 semesters and six months of compulsory internship.

10. MEDIUM OF INSTRUCTION

English shall be the Medium of Instruction for all the subjects of study and for examinations of the Bachelor of Physiotherapy Degree Course.

11. CURRICULUM

The curriculum and the syllabi for the course shall be as prescribed by the Standing Academic Board from time to time.

12. COMMENCEMENT OF THE COURSE

The course shall commence from 1st July of the Academic year.

13. COMMENCEMENT OF EXAMINATIONS

April 15th / November 15th.

If the date of commencement of Examination falls on Saturdays, Sundays or declared Public Holidays the examination shall begin on the next working day.

14. CUT-OFF DATES FOR ADMISSION TO EXAMINATIONS

a) The Candidates admitted from 1st July to 15th July of the Academic year shall be registered to take their first semester examination, after fulfillment of the regulations only in November of the year of admission.

b) The candidates admitted from 16th July to 30th November of the academic year shall be registered to take up their first semester examination, after fulfillment of the regulations in the month of April of the ensuing year.

c) Candidates admitted from December 1st to 31st March of the academic year shall be registered for the academic year of admission but they have to undergo the course to take up their first semester examination along with the subsequent year batch of students in November of the ensuing year.

15. WORKING DAYS DURING A SEMESTER

Each semester shall consist of not less than 100 working days.

16. ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATIONS

a) No candidate shall be permitted to appear in any one of the parts of B.P.T. Degree Course unless he / she has attended the course in the subject for the prescribed period in an affiliated Institution recognised by this University produces the necessary certificate of study, attendance, satisfactory conduct, progress from the Head of the Institution.

b) A candidate is required to put in minimum 80% of attendance in both theory and practical separately in each subject before admission to the examination.

c) A candidate lacking in the prescribed attendance and progress in any one subject in theory and practical in the first appearance shall not be permitted for admission to the entire examination.

17. CONDONATION OF LACK OF ATTENDANCE

Condonation of shortage of attendance upto a maximum of 10% in the prescribed eligible attendance for admission to an examination rests with the discretionary powers of the Vice - Chancellor. A candidate lacking in attendance should submit an application in the prescribed form and remit the stipulated fee 15 days prior to the commencement of theory examination.

Participation in NCC/NSS and other co-curricular activities represent the Institution or University. (The Head of the Institution shall instruct the concerned officers in-charge of the student activities in their Institution to endorse the leave).

18. (i) INTERNAL ASSESSMENT MARKS: REFER SCHEME OF EXAMS

a) A minimum of three written examinations shall be conducted in each subject during a semester and the average marks of the three performances shall be taken into consideration for the award of sessional marks.

b) A minimum of two practical examinations shall be conducted in each subject (wherever practicals have been included in the curriculum) during a semester and an average of the two performances shall be taken into consideration for award of sessional marks.

c) A failed candidate in any subject shall be provided an opportunity to improve his sessional marks by conducting a minimum of two examinations in theory and practicals separately.

d) If a failed candidate does not appear for an "Improvement Mark Examinations" in the failed subject(s) the internal marks awarded for the previous examination shall be carried over for his subsequent appearance(s).

e) The internal assessment marks should be submitted to the University endorsed by the Head of the Institution 15 days prior to the commencement of the theory examination.

(ii) MARKS QUALIFYING FOR PASS

A candidate shall be declared to have passed the examination if he/she obtains the following qualifying marks:

A) a) 40% of marks in theory in the subjects where University examinations are conducted and aggregate of 50% marks in University theory examination and internal evaluation taken together in the subject.

b) 40% of marks in the University theory examinations and 50% marks in University theory, oral and internal evaluation marks taken together

c) 40% of marks in the University theory examinations; 50% marks in University practical examination and 50% aggregate in theory, practical and internal evaluation marks taken together.

B) 50% of marks in theory and practical separately for the students admitted from 1998-99 onwards.*

19. EXEMPTION FROM RE-EXAMINATION IN A SUBJECT

Candidate who have failed in the examination but obtained pass marks in any subject shall be exempted from re-examination in that subject.

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* Spl. S.A.B. meeting held on 10.3.99

20. CARRY-OVER OF FAILED SUBJECTS

A candidate is not permitted to go to the third semester unless he/she clears first and second semester subjects. He/she is not permitted to go the fifth semester unless he/she clears third and fourth semester subjects. A candidate is not permitted to go to final! semester unless he/she clears all the previous semester subjects.

21. REVIEW OF ANSWER PAPERS OF FAILED CANDIDATES

As per the regulations prescribed for review of answer papers by the university.

22. RE-ADMISSION AFTER BREAK OF STUDY

a. Candidates having a break of study of 5 years and above from the date of first discontinuance and more than two spells of break will not be generally considered for re-admission.

b. The five years period of break of study shall be calculated \ from the date of first discontinuance of the candidate to the course for the subsequent spells of break of study.

c. Candidates having break of study shall be considered for re-admission provided that they are not subjected to any disciplinary action and no charges are pending or contemplated against them.

d. All re-admissions of candidates are subject to the approval of the Vice-Chancellor.

e. The candidates having a break of study upto 5 years shall apply for re-admission to the Academic Officer of this University. The candidates may be re-admitted in the corresponding year of course of study at the commencement of the session and shall undergo a minimum period of study of 3 months and after fulfillment of the regulations of this

University be admitted for the examinations. The candidates shall be granted exemption in the subjects they have already passed.

23. MIGRATION / TRANSFER OF CANDIDATES

a. Migration / Transfer of candidates from one recognised institution to another Institution of this University or from another University will not be generally considered.

b. However, under extraordinary circumstances, the Vice-Chancellor shall have the power to place any migration / transfer that he deems fit in the Governing Council and get approval for grant of permission for migration / transfer to candidates undergoing course of study in affiliated institution of this University.

24. VACATION

The Heads of Institutions shall declare 6 weeks vacation in an academic year to the students. The period(s) of vacation can be decided by the Head of the Institution.

25. SCHEME OF EXAMINATIONS

BACHELOR OF PHYSIOTHERAPY - FOUR YEARS AND SIX MONTHS INTERNSHIP

			MARKS			
			Univ.	Sessional Marks	Theory	Oral	Practical
I Semester	1. Sociology/Psychology	E	50		100	--	--
	2. Nursing & First Aid	NE					
II Semester	1. Anatomy	E	50		100	50	--
	2. Physiology	E	50		100	50	--
III Semester	1. Microbiology/Pathology	E	50		100	--	--
	2. General Medicine/ General Surgery/ Paediatrics	E	50		100	--	--
	3. Elements of Biochemistry/ Pharmacology	NE			--	--	--
IV Semester	1. Exercise Therapy	E	50		100	25	75
	2. Massage	E	25		50	25	25
	3. Bio-Mechanics	E	50		100	--	--
	4. Physiotherapy in Veterinary Sciences	NE			--	--	--
V Semester	1. Electrotherapy (Low & Medium Frequency)	E.	50		100	25	75
	2. Electrotherapy (High Frequency)	E	50		100	25	75
	3. EMG/Bio-Feed Back	NE			--	--	--
	4. Basics of Physics Including Radiology	NE			--	--	--

			MARKS			
			Univ. Sessional Marks	Theory	Oral	Practical
VI Semester	1. Project work/ Case Record	To be submitted in the final semester for Maximum of 100 Marks.				
	2. Community Medicine	E	50	100	--	--
	3. Yoga	NE		--	--	--
	4. Basics of Acupuncture	NE		--	--	--
	5. Sports Physiotherapy	NE		--	--	--
VII Semester	1. Orthopaedics for Physiotherapists	E	50	100	50	--
	2. Neurology for Physiotherapists	E	50	100	50	--
	3. Cardio Respiratory for Physiotherapists	E	50	100	50	--
VIII Semester	1. Physiotherapy for Orthopaedic conditions	E	50	100	25	75
	2. Physiotherapy for Neurology conditions	E	50	100	25	75
	3. Physiotherapy for Cardio Respiratory Conditions	E	50	100	25	75
	4. Rehabilitation Medicine including Geriatric Rehabilitation	E	50	100	50	--

26. RECOMMENDED CLOCK HOURS OF INSTRUCTION FOR EACH SUBJECT

Orientation & Introduction to treatment	- 70 hrs.
Sociology 50} Hours Psychology 50} Hours	- 100 hrs.
Anatomy	- 200 hrs
Biomechanics & Applied Anatomy	- 80 hrs.
Physiology	- 100 hrs.
Applied Physiology	- 30 hrs.
Basic Nursing & First Aid	- 40 hrs.
General Medicine, General Surgery, Paediatrics, ENT, Opthalmology, etc.	- 135 hrs.
Pathology & Microbiology	- 50 hrs.
Elements of Biochemistry & Pharmacology	- 25 hrs.
Physiotherapy in Veterinary Sciences	- 10 hrs.
Basics of Physics including Radiology	- 10 hrs.
Yoga	- 10 hrs.
Basics of Acupuncture & Accupressure	- 5 hrs.
Sports Physiotherapy	- 20 hrs.
Orthopaedics for Physiotherapists	- 55 hrs.
	940 Hrs.

	940 Hrs.
Neurology for Physiotherapists	- 55 hrs.
Cardio - Respiratory disorders for Physiotherapists	- 55 hrs.
Principles of Rehabilitation Medicine	- 55 hrs.
Geriatric Rehabilitation	- 10 hrs.
Community Medicine	- 55 hrs.
Exercise Therapy	- 270 hrs.
Massage	- 80 hrs.
Electrotherapy (LF & HF)	- 350 hrs.
P.T. in Neurological Conditions	- 120 hrs.
P.T. in Orthopeadic Conditions	- 120 hrs.
P.T. in Cardio-respiratory Conditions	- 120 hrs.
Administration, Supervision, & Ethics	- 60 hrs.
Physical Education	- 45 hrs.
Visits & Special Lectures	- 75 hrs.
Clinicals (Course teaching)	-1220 hrs.
Clinicals (Internship training)	-1150 hrs.
27. COMPULSORY INTERNSHIP TRAINING	4780 Hrs.

All Candidates admitted to Bachelor of Physiotherapy Degree Course shall under go Six (6) months of compulsory rotatory internship in the Institution he has studied after successful completion of the final examination in the following clinical areas.

1. Locomotor handicapped Training at Department of Physical Medicine and Orthopaedics - 4 Months
2. Cardio Thoracic Rehabilitation - 15 Days
3. Neurological Rehabilitation - 15 Days
4. Plastic Surgery, Hand Rehabilitation, Burns, etc. - 2 Weeks*
5. Rheumatology - 1 Week
6. Leprosy Rehabilitation - 1 Week

* This period shall include training in burn cases. (As per Spl SAB meeting held on 23.5.97)

28. AWARD OF DEGREE

The Degree shall be awarded by the University only after the completion of the compulsory Internship training for a period of not less than six months.

29. AUTHORITY FOR ISSUE OF INTERNSHIP COMPLETION CERTIFICATE

The Head of Institutions shall issue a certificate of successful completion of internship to each candidate after satisfying that the candidate has completed the training programme and has acquired the skills to function independently.

30. AUTHORITY TO ISSUE TRANSCRIPT

The University shall be the Authority for issuing Transcript after remitting the prescribed fee of Rs. 500/- (Rupees five Hundred only.).

PROFORMA

Format for furnishing details of candidates in whose cases Condonation of shorage of attendance has been granted for appearing for THEORY EXAMINATIONS

Name of the College: .....

Academic Year for which Condonation has been granted for: .....

Sl. No.	Name of the Candidate (s)	Name of the Course and Branch	Total No. of working days/ hours for the year/ Semester	Minimum No. of days required for attendance certificate [80%]	No. of days attended by the candidate	Actual Shortage of attendance
1	2	3	4	5	6	7
1.						
2.						
3.						
4.						
5.						

1. Requested Condontation of attendance in respect of the above candidate/s as the shortage of attendance is within the Condonation limit.
2. The Demand Draft for Rs. ..... being the Condonation fee of shortage of attendance, drawn in favour of the Register, The Tamil Nadu Dr. M.G.R. Medical University, Madras is / are enclosed.

Date:

Signature of the Principal with College Seal

Place:

Signature of the Head of the Universtiy Departments with seal

Note:
1. The fee prescribed for Condonation of shortage of attendance is Rs. 500/- per student.
2. The forms should reach the University at least 15 days before the commencement of respective University Examinations.
3. A separate list (Three copies Degreewise) showing candidates who have not earned the required attendance and are not eligible for Condonation should also be sent at least 15 days before the commencement of Examinations

SYLLABUS

ELEMENTARY SOCIOLOGY

Examination at the end of: I Semester Instruction hours: 50

COURSE DESCRIPTION

This course will introduce to the students the basic sociological concepts, principles and social process. Social Institutions (In relation to the Individual, family and community) and the various social factors affecting the family in rural and urban communities in India will be studied.

COURSE OBJECTIVES

The objective of this course is that after 50 hours of lectures, demonstrations, Practicals and clinics the student will be able to demonstrate and understanding of the role of socio - cultural factors as determinants of health and behaviour in health and sickness. They will be able to relate this to therapeutic situations in the practice of physiotherapy and occupational therapy.

In addition the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

A. Understand the role of family and community in the development of human behaviour.

B. Develop a holistic outlook toward the structure of the society and community resources.

C. Identify the subtle influence of culture in the development of human personality, the role of beliefs and value as determinants of individual and group behaviour.

D. Understand the social and economic aspect of community that influence the health of the people.

E. Learn to asses the social problem and participate in social planning.

F. Identify social Institution and resources.

G. Understand the significance of social interaction in the process of rehabilitation.

H. Appreciate the role of therapist as a member of society, and the interdependence of individuals and society.

COURSE OUTLINE

A. INTRODUCTION

Definitions of sociology, Sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.

B. SOCIOLOGY AND HEALTH

Social factors affecting health status, Social consciousness and perception of illness. Social consciousness and meaning of illness, Decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people.

C. SOCIALIZATION

Meaning of socialization, influence of social factor on personality, socialization in hospitals, socialization in the rehabilitation of patients.

D. SOCIAL GROUPS

Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospital and rehabilitation settings.

E. FAMILY

Influence of family on human personality, discussion of changes in the functions of a family. Influence of the family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease.

F. COMMUNITY

Concept of community, role of rural and urban communities in public health, role of community in determining beliefs, practices and home remedies in treatment.

G. CULTURE

Components of culture, impact of culture on human behaviour, Cultural meaning of sickness, Response of sickness & choice of treatment (role of culture as social consciousness to moulding the perception of reality), Culture induced symptoms and disease, Sub-culture of medical workers.

H. CASTE SYSTEM

Features of the modern caste system and its trends

I. SOCIAL CHANGE

Meaning of social change, Factors of social change, human adoption and social change. Social change and stress. Social change and deviance. Social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.

J. SOCIAL CONTROL

Meaning of social control, role of norms, folkways, customs, morals, religion law and other means of social control in the regulation on human behaviour, Social deviance and disease.

K. SOCIAL PROBLEMS OF THE DISABLED

Consequences of the following social problems in relation to sickness and disability; remedies to prevent these problems:

Population explosion.

Poverty and unemployment

Beggary

Juvenile delinquency

Prostitution

Alcoholism

Problems of women in employment

L. SOCIAL SECURITY

Social security and social legislation in relation to the disabled.

M. SOCIAL WORKER

1. SACHDEVA, D.R. AND BHUSHAN. V. An introduction to Sociology - Allahabad; Kitab Mahal Limited, 1974.

2. MADAN. G.R. Indian Social Problems, Vol. I Chennai Applied Publications, 1973.

Elementary General And Health Psychology

Part A - General psychology
Examination at the end of: I Semester Instruction hours: 50
Part B - Health Psychology
Not for University Examination

Instruction hours: 50

COURSE DESCRIPTION

This course will enable the student to understand specific psychological factors and effects in physical illness and thus help them to have a holistic approach in their dealings with patients during admission, rehabilitation and discharge.

COURSE OBJECTIVES

The objective of this course is that after 90 hours of lectures, demonstrations, practicals and clinics the student will be able to recognise and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical - surgical patients / conditions. They should also understand the elementary principles of behaviour for applying in the therapeutic environment.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

1. Psychosocial assessment of patients in various developmental stages.

2. Explain the concept of stress and its relationship to health, sickness and one's profession.

3. Identify ego defence mechanisms and learn counselling techniques to help those in need.

4. Help them to understand the reason of non-compliance among patients and improve compliance behaviour.

COURSE OUTLINE

The course will be divided into Parts A & B. Part A will be a pre-clinical subject devoted to the elementary principles of behaviour and will be examined separately at the end of the first semester. Part B will be taught as an applied subject after the student has been exposed to clinical work. There will be a separate examination in Part B for the B.O.T. course students only.

PART A - GENERAL PSYCHOLOGY

A. DEFINITION OF PSYCHOLOGY

1. Definition of psychology, basic information in relation to following schools methods and branches.

a. Schools : Structuralism, functionalism, behaviourism psychoanalysis, gestalt psychology.

b. Methods : Introspection, observation, inventory and experimental method.

c. Branches : General, child, social, abnormal, industrial, clinical, counselling, educational.

B. HEREDITY AND ENVIRONMENT

Twins, Relative importance of heredity and environment, their role in relation to physical characteristics, intelligence and personality, nature - nature controversy.

C. DEVELOPMENT AND GROWTH BEHAVIOUR

Infancy, childhood, adolescence, adulthood, middle age, old age.

D. INTELLIGENCE

Definitions - IQ, Mental Age, List of various intelligence testes - WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.

E. MOTIVATION

Definitions: motive, drive, incentive and reinforcement, Basic information about primary needs: hunger, thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex.

Psychological needs: Information, security, self - esteem, competence, love and hope.

F. EMOTIONS

Definition, Differentiate from feelings, physiological changes of emotion, Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.

G. PERSONALITY

1. Definition, List the components: Physical characteristics, character abilities, temperament interest and attitudes.

2. Discuss briefly the role of heredity, nervous system, physical characteristics, abilities, family and culture on personality development.

3. Basic concepts of Freud; Unconscious, conscious, Id, ego and surperego List and define the oral, anal and phallic genital

latency stages of personality development. List and define the 8 stages as proposed by Erickson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.

4. Personality assessment; interview, standardised non-standardised, Exhaustive and stress interviews, List and define inventories BAI, CPI and MMPI. Projective tests: Rorschach, TAT and sentence completion test.

H. LEARNING

Definition, List the laws of learning as proposed by Thorndike. Types of learning: Briefly describe classical conditioning, operant conditioning, insight, observation and Trial and Error type. List the effective ways to learn: Massed Vs. Spaced, Wole Vs. Part, Recitation Vs. Reading, Serial Vs. Free recall, knowledge of results, Association, Organization, Mnemonic methods, Incidental Vs. International learning, role of language.

I. THINKING

Definition, concepts, creativity, steps in creative thinking, list the traits of creative people, delusions.

J. FRUSTRATION

Definition, sources, solution. Conflict; Approach - approach, avoidance - avoidance, and approach - avoidance, solution.

K. SENSATION, ATTENTION AND PERCEPTION

1. List the senses: Vision, hearing, Olfactory, Gustatory and cutaneous sensation, movement, equilibrium and viscera sense. Define attention and list factors that determine attention: nature of stimulus intensity, colour, change extensity, repetition, movement size curiosity, primary motives

2. Define perception and list the principles of perception: Figure ground, constancy, similarity, proximity, closure, continuity, values and interests, past experience context, needs, moods, religion, sex and age, perceived susceptibility, perceived seriousness, perceived benefits, and socioeconomic status.

3. Define illusion and hallucination.

4. List visual, auditory, cutaneous, gustatory and olfactory hallucination.

L. DEMOCRATIC AND AUTHORITARIAN LEADERSHIP

Qualities of leadership: Physical factors, intelligence, self-confidence, sociability, will and dominance. Define attitude, change of attitude by: Additional information, changes in group, affiliation, enforced modification by law and procedures that affect personality Psychotherapy, Counselling and religious conversion.

M. DEFENCE MECHANISMS OF THE EGO

Denial, rationalization, projection, reaction formation, Identification, repression, emotional insulation, undoing, introjection, acting out, depersonalization.

PART B - HEALTH PSYCHOLOGY

A. PSYCHOLOGICAL REACTIONS OF A PATIENT

Psychological reactions of a patient during admission and treatment; anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion,

disorientation, hallucinations, delusions, illusions, anger, hostility loss of hope.

B. REACTIONS TO LOSS

Reactions to loss, death and bereavement: shock and disbelief, development of awareness, restitution resolution. Stages of acceptance as proposed by Kubler - Ross.

C. STRESS

Physiological and psychological changes, Relation to health and sickness: Psychosomatics, professional stress, burnout.

D. COMMUNICATIONS

1. Types - verbal, non - verbal, elements in communication, barriers to good communication, developing effective communication, specific communication techniques.

2. Counselling: Definition, Aim, differentiate from guidance, principles in counselling and personality qualities of counsellors.

E. COMPLIANCE

Nature, factors, contributing to non compliance, improving compliance.

F. EMOTIONAL NEEDS

Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed-ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, parkinsonism, leprosy, incontinence and mental illness.

G. GERIATRIC PSYCHOLOGY

Specific psychological reactions and needs of geriatric patients.

H. PAEDIATRIC PSYCHOLOGY

Specific psychological reactions and needs of paediatric patients.

I. BEHAVIOUR MODIFICATION

Application of various conditioning and learning principles to modify patient behaviour.

K. SUBSTANCE ABUSE

Psychological aspects of substance abuse: smoking, alcoholism and drug addiction.

L. PERSONALITY STYLES

Different personality styles of patients.

EVALUATION

Reference Reading:

1. CLIFORD T.MORGAN - introduction to psychology
2. MORGAN & KING - introduction to psychology
3. HILGARD & ATKINSON - introduction to psychology

BASIC NURSING

INTRODUCTORY CLASS

What is nursing? Nursing Principles. Inter personal relationship, Bandaging, Basic turns, Bandaging extremities, Triangular Bandages and their application.

NURSING POSITION

Environment safety, Bed making, Prone, lateral, dorsal, dorsal recumbent, Fowlers's positions, comfort measures, Aids to rest and sleep.

LIFTING AND TRANSPORTING PATIENTS

Lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

PROVIDING FOR PATIENTS ELEVATION

Giving and taking Bed pan, Urinal, Observation of stools, urine observation of sputum, understand use and care of catheters, enema giving.

METHODS OF GIVING NOURISHMENT.

Feeding, Tube feeding, Drips, Transfusion

CARE OF RUBBER GOODS

Observation, reporting and recording Temperature, Respiration and Pulse, Simple Aseptic Technique, Sterilization and Disinfection.

SURGICAL DRESSING

Parental Administration of Medicine,

Course, Orientation I (Orientation/Physiotherapy)

INSTRUCTION STAFF

I. Patterns of Health Care Delivery

a) National trends and resource
b) Local trends and resources
c) Overview of Health Science Professions (Paramedicals)

II. Components of Physiotherapy Profession.

a) History of Medical Therapeutics
b) History of Physiotherapy, International, National Local
c) Professional and governmental licensing accreditation and education standards.

III. Role of Physiotherapy in meeting health care needs of India

a) Needs versus Demands
b) Physiotherapist as "Educator"
c) Common problems and solutions

40 hrs.

FIRST AID

Syllabus as for Certificate of Red Cross Society of St. John's Ambulance Brigade.

ANATOMY

Examination at the end of: II Semester Instruction hrs: 200

COURSE DESCRIPTION

The study of Anatomy will include identification of all gross anatomical structures. Particular emphasis will be placed on description of bones, joints, muscles, the brain, Cardio pulmonary and nervous systems, as these are related to the application of physiotherapy and occupational therapy in patients.

COURSE OBJECTIVES

The objective of this course is that after 200 hours of lectures, **demonstrations, and practicals,** the student will be able to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy and occupational therapy.

In addition, the student will be able to fulfil with 75% accuracy (as measured written & oral internal evaluation) the following objectives of the course.

A. INTRODUCTION

1. Define Anatomy and mention its subdivisions.
2. Name regions, cavities and systems of the body.
3. Define anatomical positions and anatomical terms.

B. CELL

1. Define a cell.
2. Mention the shape, size and parts of a cell.

3. Name and give functions of organs. Names of cell bodies.

4. Define chromosomes, genes.

5. Review mitosis and meiosis. Mention the main events, but stages not necessary.

C. TISSUES

1. Classify tissues.

2. Classify and mention the microscopic structure, types of tissues such as epithelial, connective, muscular and nervous tissue. Gives examples for each type of tissue.

D. CARDIO - VASCULAR SYSTEM

1. a. Comprehend the external and internal features of heart and their implications.

   b. Mention position of the heart.

   c. Identify and name the chamber of the heart, surface and border of the heart.

   d. Identify the venae cavae, pulmonary trunk and aorta.

   e. Mention the internal features of the chambers of the heart.

2. a. State the basic features of the blood supply & nerve supply of the heart.

   b. State the basic arrangement of the pericardium.

   c. Identify the coronary artery and coronary sinus.

   d. Name the parts of the conductive system of heart.

3. a. Mention the position and general distribution of major arteries and major veins, and name their main branches.

   b. Name the types of arteries and veins; give examples and indicate a basic microscopic structure of type of blood vessels.

E. LYMPHATIC SYSTEM

1. Comprehend the general and regional arrangements of the lymphatic system.

2. Name the lymphatic organ and mention their location.

3. Illustrate the basic structural features of lymphatic vessels, lymphnodes, thymus, spleen and tonsils.

4. Assign functional role to the lymphatic system.

5. State the position and immediate relations of spleen.

F. RESPIRATORY SYSTEM

1. a. List the parts of the respiratory system.

   b. Comprehend the functional anatomy of the parts of the respiratory system.

   c. Mention the basic features of innervation of bronchi and lungs.

2. a. State the position, extent, and gross and microscopic structure of the parietal pleura.

   b. Comprehend the arrangement of pleura. Mention the parts, and position of the parietal pleura.

c. Name the recesses of pleura.

d. Identify the trachea and bronchi.

e. Identify the right lung and left lung.

f. Name the components of the hilum of lung.

g. Name the bronchopulmonary segments.

h. Illustrate the main features of the microscopic structure of lung.

i. Identify the borders and surfaces of the lung on the specimen.

G. DIGESTIVE SYSTEM (n. b. no details are required)

1. a. List the parts of the digestive system.

b. Mention the boundaries and features of the mouth.

c. Classify teeth.

d. Mention position, extent, subdivision, communications, internal features and muscles of pharynx.

e. Name the tonsils and define fauces.

f. Identify internal features of the mouth and pharynx of the specimen.

2. a. State the position, course and extent of oesophagus.

b. Identify oesophagus of the specimen.

c. State the basic nerve supply.

3. a. Mention the position and gross structure of the stomach.

   b. Identify the stomach and its borders, the surfaces and subdivisions.

   c. Enumerate the immediate relations of the stomach.

   d. State the basic nerve supply of the stomach.

4. a. Name the subdivision of the intestine and mention their positions.

   b. Mention the difference between small and large intestine.

5. a. Name the arteries arising from the abdominal aorta. Name the organs supplied by these branches.

   b. Awareness of the name and position of the principal autonomic visceral nerve plexus in the abdomen and pelvis, and the organs supplied by them.

6. Mention the position and gross features of the liver and biliary system.

7. Name the position and subdivision of the pancreas.

8. a. Name the major salivary gland.

   b. Indicate their positions.

   c. Mention the site of opening of their ducts.

H. GENITO - URINARY SYSTEM (n. b. no details are required)

1. a. Comprehend the basic functional implication and the basic structure of the kidney and ureter.

b. Mention the position, size and shape of kidney.

c. Name the immediate relations of the kidney.

d. Indicate the cortex, medulla, pyramids, sinus, calyces, and pelvis of ureter in a macro section of the kidney.

e. Illustrate the structure of a nephron.

f. Identify the ureter and indicate the position of the ureter.

2. a. State the anatomy of the bladder and urethra.

b. Mention the position, shape and size and surface of the bladder.

c. Indicate the immediate relations of the bladder.

d. Mention the basic innervation of the bladder.

e. Name and identify the subdivision the male urethra.

f. Mention the position, extent and immediate relations of male urethra.

g. Locate and identify the female urethra.

h. Mention the position, extent and immediate relations of the female urethra.

i. Name the sphincters of the urethra.

3. a. List and locate the parts of the male reproductive system. State the anatomy and functional considerations of the testis, male accessory organs of reproduction and external organs.

b. Name the constituent structures of the spermatic cord.

c. Mention the position of the inguinal canal.

d. Name the component structures and parts of the penis.

4. a. List and locate the parts of female reproductive system. State the anatomy and functional considerations of ovary, uterine tubes, uterus, vagina and female external genitalia.

b. Mention the basic features of parts of the female external genitalia.

c. Enumerate the factors responsible for the maintenance of the position of the uterus and anatomy of its prolapse.

d. Mention the position, extent and gross structure of the female breast.

5. Name the common, internal, and external iliac arteries.

NERVOUS SYSTEM

1. a. Define the subdivisions of the nervous sytem. Define central, peripheral and autonomic nervous systems and name their subdivisions.

Comprehend the position and form of the spinal cord, its structure and function in terms of neuronal connections

b. Indicate the position and extent of the spinal cord.

c. Illustrate the principal features shown in a transverse section of the spinal cord.

d. Specify the basic features of a mono and multisynaptic spinal reflex pathway.

e. Illustrate the white and gray matter, and anterior, lateral and posterior columns of the spinal cord.

f. Mention the origin, termination and position of important ascending and descending tracts, site of crossing of fibres of these tracts, and function of each tract.

g. State the main consequences of spinal cord transection and hemi section, and explain the rationale of cordotomy.

h. Indicate the blood supply and meninges of spinal cord.

2. a. Name the subdivision of the brain. Identify and mention the external features of parts of the brain.

b. Mention the internal structure and basic features of parts of the brain - stem and name the nuclei and fibre tract with special emphasis on cranial nerve nuclei.

c. Identify and mention parts of the cerebellum.

d. Mention the external features and internal structures of the cerebellum and name its various afferent and efferent tracts and their termination.

e. Mention the features of the gross component of the cerebrum.

f. Mention & identify the location of gyri, sulci, and cortical areas.

g. State and identify association, commissural and projection fibres.

h. Define and identify component of forebrain, including cerebral cortex, insula, olfactory bulb, olfacotry tract,

uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.

i. Predict the result of damage to internal capsule.

j. Outline sensory and motor pathways and be able to trace these pathways.

k. Name sensory and motor nerve endings with function.

l. Define pyramidal motor system and name its tracts

m. Define upper and lower motor neurons.

n. Name the parts and tracts of the extra pyramidal system and indicate the functions.

3. Outline the basic structure of sensory organs:- Nose, tongue, eye, ear and skin.

4. Briefly outline the nature and basis of muscle tone.

Mention the anatomical pathway involved in the production and maintenance of muslce tone.

5. a. State the formation, circulation and drainage of CSF.

b. Locate & identify the ventricles.

c. Identify and name the meninges and space around and locate the cistern.

d. Define lubmar puncture and cisternal puncture.

e. State the features of the meninges.

f. Recognise the difference between extra dural, sub dural and Subarachnoid haemorrage.

6. a. Outline the arrangement of major blood vessels around the brain and spinal cord.

   b. Mention the arteries forming the Circle of Willis.

   c. Name the branches of major arteries supplying the brain and spinal cord and mention the parts of brain they supply.

   d. Predict the result of blockage or rupture of central deep branches.

   e. Predict the result of occlusion of cerebral arteries.

   f. Predict the result of occlusion of vertebral or basilar arteries.

   g. Identify and mention the connection of dural venous sinuses.

   h. Name and identify the parts of the limbic system. Mention their function in emotion and behaviour.

7. a. Mention the position and structure of the autonomic nervous sytem.

   b. Mention the site of origin and termination of the preganglionic and postganglionic sympathetic and parasympathetic fibres.

   c. Name and locate the sympathetic and parasympathetic ganglia.

   d. Summarise the functional difference between the sympathetic and parasympathetic system.

8. a. Enumerate the cranial nerves in serial order.

   b. Mention the nuclei of origin & termination and indicate the site of attachment to brain / brain stem.

   c. Explain the general distribution of the cranial nerves and the course of the VIIth nerve.

   d. Predict the result of injury to cranial nerves.

9. a. Anatomy of spinal cord — review.

   b. Name the group of spinal nerves.

   c. Explain the formation and branches of the spinal nerves and distribution of anterior and posterior rami.

   d. Locate & name the plexuses of nerves.

   e. Indicate the course and distribution of branches of the plexuses & nerves.

J. ENDOCRINE SYSTEM

1. List the endocrine organs and mention their position.

2. Mention the hormones produced by each endocrine organ.

K. INTRODUCTION TO BONES (Oeteology)

1. a. Define skeleton.

   b. Mention the subdivisions of the skeleton. Name the bones in each subdivision. Know the number of bone in each subdivision and total number of bones.

   c. Classify the bones and give examples.

   d. Enumerate the common surface feature of bones.

e. Define ossification. Explain the types of ossification and give examples. Define ossification centre. Explain the growth of long bone in length and width.

2. When regional anatomy is taught:

a. Identify, name and correctly orientate the bone

b. Identify surface, border and all other surface features.

c. Mark and indicate the muscular and ligamentous attachments on the bone.

L. INTRODUCTION TO JOINTS (Arthrology)

1. a. Define a joint or articulation.

b. Classify the joints and give examples for each type. Define each type of joint.

c. Mention the basic features of a synovial joint.

d. Define the axis, & movements possible in a synovial joint.

e. Define range of movement and limiting factor.

f. Indicate the blood supply and nerve supply in general.

g. Define stability of a joint.

h. Demonstrate common movements.

2. When regional anatomy is taught:-

a. Mention the type, the articular surface, ligament, movement, axis of movement. Chief muscles producing

the movement, limiting factors and nerve supply and blood supply of all individual joints.

b. Mention the factors for stability.

c. Articulate the bones correctly.

d. Indicate applied anatomy for all joints.

M. INTRODUCTION TO MUSCLES (SKELETAL MUSCLE) (Myology)

1. a. Define a skeletal muscle.

   b. Define faciae, tendon aponeurosis.

   c. Classify the skeletal muscles by shape etc, and give examples.

   d. Define origin, insertion, muslce work (contraction), types of muscle work, range of muscle work, group action - protagonist, antagonist, synergist and fixator; shunt and spurt muscle; type of levers with examples.

2. When the regional anatomy is taught:

   a. Mention the position, origin, insertion, nerve supply and action of the skeletal muscles. (for the skeletal muscles of soft palate, pharynx and larynx, position, action, nerve supply may be sufficient).

   b. Indicate group of muscles by position and action, group action and nerve supply of group of muslces.

   c. Indicate segment innervation of muscles.

   d. Predict the result of paralysis of individual and group of muscles.

N. UPPER EXTREMITY

1. Pectoral region :

   a Outline the features of the pectoral region.

   b. Name, identify and correctly orientate the sternum. clavicle, scapula and humerus.

   c. Outline the main features of the bones of shoulder girdle.

   d. Identify the parts, borders and surfaces of sternum Mention its other features.

   e. Identify the ends, surfaces, curvatures and other features of clavicle.

   f. Identify the borders, angles, surface, processe, fossa and other features of scapula.

   g. Identify the ends, head, greater and lesser tuberosities and anatomical and surgical necks of humerus; also the capitellum, trochlea and radial, coronoid and olecranon fossa and epicondyles.

   h. Locate and identify the muscles of pectoral region. Mention their origin, insertion, nerve supply and action.

2. Scapular region:

   a. Comprehend the main features of the muscles in the scapular region.

   b. State the layer, arrangement, of the muscles of the back.

   c. Name and identify the muslces of the scapular region. Mention their origin, insertion, nerve supply and action.

   d. Demonstrate the bony land mark of scapula, humerus and clavicle.

3. Axilla:

   a. Mention, identify the boundaries and contents of axilla. Name the branches of axillary artery. Name and identify the cords and branches of brachial plexus and mention their root value.

   b. Illustrate the formation of brachial plexus.

4. Shoulder girdle:

   a. Comprehend and apply the function, the main features of joints of the shoulder girdle.

   b. Name the joints of shoulder girdle. Identify the articular surfaces and name the ligaments and movements of sternoclavicular and acromioclavicular joints.

      Mention the type of the joints.

   c. Demonstrate and name the movement of scapula. Mention the chief muslces producing these movements.

      Correlate movement of scapula.

   d. Assign functional role of the articular disc and sternoclavicular joint and coracoclavicular ligament.

5. Shoulder joint:

   a. Mention the type, articular surface and ligaments of the shoulder joint.

   b. Define and demonstrate the movements of shoulder joint.

c. Name and identify the chief muscles producing these movements. Analyse these movements and mention limiting factors.

d. Mention the blood supply and nerve supply of this joint.

e. Analyse the associate movement of scapula and movement of the shoulder joint.

f. Mention the limiting factors and the factors for its stability. Indicate applied anatomy.

6. Upper arm:

a. Name and identify the muscles at the front and back of the upper arm.

b. Name and identify the ends, borders, surfaces and features of the humerus. Identify the head anatomical neck, tuberosities, surgical neck, bicipital groove, condyle, capitellum, trochlea, epicondyles, radial, coronoid and olecranon fossa.

c. Mention the origin, insertion, nerve supply and action of muscles of the front and back of upper arm.

d. Indicate the course, relation and distribution of radial and musculo - cutaneous nerves.

7. Elbow joint:

a. Mention the type, articular surface and ligaments of elbow joint.

b. Define and demonstrate the movement possible and name the chief muscles producing this movement.

c. Mention the factors for stability and limiting factors.

d. Indicate the applied anatomy.

e. Mention the applied anatomy.

f. Explain the carrying angle.

8. Forearm, wrist and hand :

a. Mention the bones of forearm, Identify the ends, borders, surfaces and features of radius and ulna.

b. Identify the head, neck, tuberosity and styloid process of radius. Identify the coronoid process, olecranon process, trochlear notch, tuberosity, head and styloid process of ulna. Also the radial notch of ulna and ulnar notch of radius.

c. Name and identify the carpal bones, metacarpal bones and phalanges in an articulated hand.

d. Identify the muscles of front and back of the forearm.

e. Mention the position, insertion, nerve supply and action of these muscles.

f. Indicate the course, relations and distribution of median, ulnar and radial nerves.

g. Mention the type, articular surface and ligaments of radioulnar joints. Define the movement of supination and pronation. Mention the axis and muscles producing these movements. Analyse these movements and apply its functional role in routine day to day actions.

h. Mention the position and distribution of ulnar and radial arteries and ulnar, median and radial nerves.

i. Name and locate the carpal bones. Mention the type, articular surface and ligaments of wrist joint.

Define and demonstrate the movements and mention the muscles producing them. Mention the blood supply and nerve supply.

Mention the visible tendons around the wrist and their synovial sheaths.

j. Predict the result of paralysis of muslces of the forearm.

k. Mention the functional implications of prehension in the structure of head.

l. Indicate the arrangement of tendons of the digits, retinaculae, fibrous flexor sheaths, and synovial sheaths.

m. Evaluate the hinge type of interphalangeal joints, ellipsoid type of metacarpophalangeal joints and saddle type of carpometacarpal joint.

n. Name and identify the small muscles of the hand. Mention their position, origin, insertion, nerve supply and action.

o. Mention the types of bones forming and ligaments of the joints of the hand. Define the movement and the muscles producing these movements. Predict the results of paralysis of the small muscles of hand.

p. Demonstrate the types of grip.

9. Nerves of upper limb:

a. Comprehend and apply the knowledge of the position and distribution of blood vessels and lymph nodes.

b. Mention the root value of the nerves.

c. Identify the nerves and mentions the position course, relations and distribution of nerves of upper limb.

d. Predict the result of injury to these nerves.

10. Blood vessels of upper limb:

a. Comprehend and apply the knowledge of the position and distribution of blood vessels and lymph nodes.

b. Trace the main arteries and veins.

c. Indicate their position and name the main branches of tributaries.

d. Name and locate the lymph nodes.

11. Cutaneous Nerves of upper limb:

a. Name the cutaneous nerves and illustrate the areas of their distribution.

b. Illustrate the dermatome.

O. LOWER EXTREMITY

1. a. Name, identification and orientation of hip bone, femur, tibia, fibula and patella.

b. Identify the component and features of hip bones. Identify the ends, borders, surfaces, head, neck, trochanters, condyles and epicondyles of femur and the features of the tibia and fibula.

c. Identify and mention the origin, insertion, nerve supply and action of the muslces in the front of thigh.

d. Mention the boundaries and contents of femoral triangle and subsartorial canal.

e. Indicate the position, course and distribution of femoral nerve.

f. Indicate the course and main branches of femoral artery and mention the blood supply of neck of femur.

g. Indicate the position of femoral vein.

2. Medial side of thigh:

a. Name and identify the muscles of the medial side of thigh. Mention their origin, insertion, nerve supply and action.

b. Indicate the course, relations and distribution of obturator nerve.

3. Back of thigh:

a. Identify and mention the position, origin, insertion, nerve supply and action of the hamstring muscles.

b. Indicate the position, course, relation and distribution of sciatic nerve.

4. Gluteal region:

a. Identify and mention the position, origin, insertion, nerve supply and action of the muscles.

b. Name and mention the position and course of the nerves found there and name the arteries there.

5. Hip joint:

a. Mention the type, articular surface and ligaments.

b. Define the movement and name the chief muscles producing the movements.

c. Mention the blood supply, nerve supply, factor for stability and limiting factors.

d. Indicate applied anatomy.

6. Knee joint:

a. Mention the type, articular surfaces and ligaments.

b. Define the movement and name the chief muscles for the movements.

c. Analyse the movements.

d. Know the blood supply and nerve supply.

e. Indicate applied anatomy.

f. Define locking and unlocking of the joint.

7. Popliteal fossa;

a. Indicate the boundaries and contents.

b. Mention the position and branches of tibial and common peroneal nerves.

8. Front of leg and dorsum of foot:

a. Name and identify the tarsal bones, metatarsal bones and phalanges in an articulated foot.

b. Name and identify the muscles.

c. Mention the positions, origin, insertion, nerve supply and action of the muscles.

d. Position and distribution of deep peroneal nerve.

e. Indicate the position and attachment of extensor retinaculae.

f. Mention and identify the features of the tibia and fibula.

9. Lateral Side of leg:

a. Name and identify the muscles.

b. Mention the position, origin, insertion, never supply and action of muscles.

c. State the position, course and distribution of superficial peroneal nerve.

d. State the position and attachment of peroneal retinacula.

10. Back of leg and sole of foot:

a. Name and identify the features of the bones of the foot.

b. Name and identify the muscles of back of leg.

c. Mention the position, arrangement, origin, insertion, nerve supply and action of the muscles.

d. State the position course and distribution of tibial artery.

e. State the position, and distribution of posterior tibial artery.

f. Mention the position, and attachment of flexor retinaculum.

g. Mention the arrangement, origin, insertion, nerve supply and action of muscles of the foot.

h. Indicate the type of formation, and factors for the maintenance of the arch of foot.

i. Mention the type, articular surface, ligaments, movements chief muscles for the movement. Axis of movements and applied anatomy of tibiofibular joints, ankle joints, subtalar-joints, M.P. joints and I.P. Joints.

j. Palpate and identify the tendons around the ankle and dorsum of foot.

11. Nerves:

a. Indicate the position, formation and branches of lumbar and sacral plexuses.

b. Mention the root value of the nerves.

c. Mention the position, course, relation and distribution of the nerves.

d. Predict the result of injury to the nerves.

e. Illustrate cutaneous innervation of dermatomes.

12. Blood Vessels:

a. Indicate the position of arteries and their main branches.

b. Indicate the position of veins and their main tributaries.

c. Indicate the position of lymph nodes.

P. TRUNK - THORAX - ABDOMEN

Vertebral Column:

1. State the basic osteology of vertebral column.

2. Identify the parts of a typical vertebra. identify and state the main features of typical vertebra of each group of vertebrae. Identify a typical vertebrae.

3. State the form, structure and movements of joints of vertebral column. Mention the movements and the muscles producing them.

4. Identify the intervertebral disc and mentions its parts.

5. State the formation and ligaments of the intervertebral joints.

6. Name and identify the curvatures of the vertebral column and indicate deformities.

7. State the contents of vertebral canal.

THORAX:

1. a. State the main features of the bones and joints of thoracic cage. Mention the boundaries.

   b. State the parts and features of sternum.

   c. Defines true, false and floating ribs. Mentions the parts of features of typical rib. Know the main features of a typical rib.

   d. Mention the type and formation of the joint between rib and vertebra, between costal cartilage and sternum, and between costal cartilages.

   e. Mention the type and formation of joints between parts of sternum. Indicate the importance of sternal angle.

   f. Analyse pump handle and bucket handle movement of ribs.

   g. Palpate bony land marks such as jugular notch, sternal angle, xiphisternum and spine of thoracic vertebrae.

2. a. Define intercostal space and list the contents.

Mention the course and branches of typical intercostal nerve. Name the muscles of thorax. Mention the origin insertion, nerve supply and action of intercostal muscles and diaphragm.

b. Name the structures passing through the diaphragm and mention the orifices in the diaphragm.

3. a. Define the boundaries, and subdivision of the mediastinum and list the contents. Identify the contents.

b. State the features of thoracic parts of sympathetic trunk.

Abdomen:

1. a. Mention the main features of lumbar vertebra, sacrum and coccyx.

b. Mention the formation and subdivision of bonypelvis List the features of the female bony pelvis and their role.

c. Mention the type, articular surfaces, ligaments and movements of the joints of pelvis.

2. a. Define abdominal cavity.

b. List the layers of anterior abdominal wall. Name and mention the origin, insertion, nerve supply and action of the muscles, and the features of these muscles.

c. Explain the formation of rectus sheath and list its contents.

d. Define inguinal canal and know its position, extent, formation and contents. Indicate its clinical importance. Define inguinal hernia.

e. Name and identify the muscles of posterior abdominal wall. Give their origin, insertion, and action. Lists the organ on the posterior abdominal wall. Name the blood vessels on the posterior wall.

f. Mention the position and formation of lumbar plexus. Name its branches.

g. State the anatomy of lumbar region. Understand the disposition of muscles of the layers. Mention the arrangement of lumbar fascia identify the muscles in lumbar region. Understand the lumbar routs to abdomen. Identify and mention the attachment and action of the large muscles of back. (at least the ones ending capitis)

h. Distinguish abdominal cavity and peritioneal cavity.

i. Mention the features of lumber part of sympathetic trunk and other sympathetic ganglia.

j. Mention the branches and distribution of the abdominal aorta and iliac arteries.

k. State the inferior vena cava and iliac veins and mention their tributaries.

G. PELVIS

1. State the main features of subdivision, boundaries, walls and floor of pelvis.

2. Mention the features of the public symphysis and sacroiliac joints.

3. Distinguish and mention and major difference between the male and female pelvis.

4. Identify the muscles of the pelvic floor and mention their attachements, actions and nerve supply.

5. Mention the structure of the urogenital diaphragm.

H. HEAD AND NECK

Musculo skeletal and neurovascular features. Identify the anterior and posterior triangles of neck. Name the subdivisions. List the contents.

1. a. State the main features of the skull and the facial skeleton.

   b. Identify the large skull bones and their parts.

   c. Identify the cranial fossae and hypophyseal fossa.

   d. Identify the internal and external auditory meatuses, forearm magnum and stylomastoid forearm and name the main structures passing through them.

   e. Identify and name the main muscles of the face. Mention their nerve supply and action.

   f. Predict the result of paralysis to the facial muscles and sequel of injury to the facial nerve. (VII nerve)

   g. Map the cutaneous distribution of the three divisions of the trigeminal (Vth) nerve on the face.

2. a. Identify the general feature of a typical cervical vertebra, atlas, axis and seventh cervical vertebra.

   b. Identify the erector spinae, sternomastoid and scalene muscles, glenohyoid. Mention their attachments, actions and nerve supply.

c. Identify the phrenic, accessory and vagus nerves. Mention their distribution.

d. Identify and state the position, distribution and root value of the nerves of cervical and brachial plexuses.

e. Demonstrate the action of sternomastoid.

f. Mention the type, articular surfaces, ligaments, movements, and muscles producing these movements, at the atlanto - occipital and atlanto - axial joints. Demostrates these movements and the movements of the cervical part of vertebral column.

3. a. Identify the subclavian, vertebral and cartoid arteries. Mentions the position and extent of these arteries.

b. Identify the components of the Circle of Willis. Mention the distribution of internal and external carotid and vertebral arteries. Predict the sequelae of occlusion of these arteries.

c. Identify the internal jugular and subclavian veins. Mentions their position, formation and termination.

4. a. State the basic organization of the autonomic nervous system.

b. State the sites of craniosacral and thoracolumbar outflows.

c. Define the mode of the distribution of pre and post- ganglionic efferent neurones in sympathetic and para sympathetic nervous system.

d. Name the cranial nerves containing para sympathetic fibres and mention their distribution.

e. Distinguish between sympathetic and para sympathetic system in relation to their function.

Eye:

1. State the position of the lacrimal apparatus, the functional, implications of structure of the eye and the lacrimal apparatus.
2. Name and illustrate the coats, their subdivisions, the refractive media, the chambers of the eye and the optic nerve.
3. Mention the structure of retina and optic pathway.
4. Has a basic understanding of the light and accommodation reflex. (omitting the pathway).
5. Mention the distribution of the three divisions of trigeminal (v[illegible]) nerve.
6. Name and state the nerve supply and simple actions of the extra ocular muscles.
7. Predict the result of lesions of 3rd, 4th and 6th cranial nerves .

Nose:

1. Name the bony component of the nose.
2. Mention the parts and boundaries of the nose.
3. State the main features of the nasal cavity.
4. Name and identify the para nasal air, sinuses and locates their openings.

Temporomandibular joint:

1. State the type, articular surface, ligaments, possible movements, muscles performing the movements and nerve supply of the temporomandibular joint.
2. Palpate and identify the joint and its articular surfaces.

3. Identify and name the muscles of mastication. Mention their actions and nerve supply.

Mouth:

1. State the main features of the mouth cavity tongue, Palate, salivary glands, teeth and gums.
2. Mention the sensory and motor innervation of the tongue.
3. Identify the salivary glands.
4. Demonstrate movements of the tongue and palate.
5. Test and produce the swallowing (gag) reflex.
6. Predict the sequelae of lesions of the VIIth and XIIth cranial nerves.

Pharynx:

1. State the position and extent of the pharynx.
2. State the three subdivisions and the features of each subdivision.
3. Name the muscles of pharynx and their action.
4. Mention the sensory and motor innervation of the pharynx.

Larynx and trachea:

1. Identify the hyoid and state its parts.
2. Identify the larynx and name the laryngeal cartilages.
3. State the boundaries of laryngeal inlet and glottis.

4. Identify the vocal and vestibular folds.

5. State the movements of the laryngeal cartilages. Names the laryngeal muscles and mentions their attachments, action and nerve supply.

6. Define the position, extent and gross structure of the trachea.

7. State the mechanics of phonation and speech, production of sound voice and speech.

Ear:

1. State the basic structural plan of the organs of hearing and equilibrium.

2. Mention the three subdivisions of the ear.

3. Mention the nerve endings for hearing and equilibrium.

Cranial nerves:

1. Enumerate the cranial nerves in serial order.

2. Relate interprets the number to the name.

3. Indicate the nuclei of origin of termination.

4. Mention the attachments of the brain and the cranial exit.

5. State the sensory and motor distribution.

6. State the position and course of VII nerve.

7. Predict the sequel of lesion.

EVALUATION

Physiology

Examination at the end of: IInd Semester Instruction hours: 100

COURSE DESCRIPTION

This course which runs concurrently with the anatomy course helps the student to understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculo - skeletal and nervous system.

COURSE OBJECTIVES

The objective of this course is that after 100 hours of lectures, demonstrations Lab practicals the student will be able to demonstrate an understanding of elementary human physiology.

The student will be able to fulfil with 75% accuracy (as measured by written & oral internal evaluation) the following objectives of the course.

LECTURE OUTLINES Hours

A. CELL INTRODUCTION

Outline of basic concept of cell structure, function of components; transport across membranes.

B. SKIN

Structure; functions; blood flow; temperature regulation.

C. BLOOD

1. Outline of components; and their functions; RBC, WBC, platelets, Blood groups.

2. Significance of RBC & WBC counts, ESR and other related tests.

3. Clotting mechanisms;

4. Blood volume and its regulation.

D. CIRCULATION

1. Structure & properties of cardiac muscle; Cardiac cycle.

2. ECG; Heart sounds Cardiac output.

3. Factors regulating the action of the heart.

4. Blood pressure; its maintenance and regulation.

5. Cerebral circulation; Renal circulation; Pulmonary circulation.

6. Effects of exercise; effects of postural changes.

7. Lymph; factors affecting its flow.

E. RESPIRATION

1. Defence mechanism in the Respiratory tree; mucociliary transport. Mechanics of Respiration.

2. Transport of blood gases, Acid-base balance.

3. Lung function tests (including lung volumes). Artificial ventilation.

4. Nervous and chemical regulation of respiration.

5. Hypoxia - types and causes.

6. Effects of exercise on respiration.

F. DIGESTION

1. Digestion in the mouth, stomach and intestine.
2. Bile; Pancreatic secretion.
3. Mechanism of control of secretions and motility.
4. Diet and Nutrition.

G. EXCRETION

1. Structure of the nephron.
2. Formation of urine.
3. Micturation.

H. ENDOCRINES

1. General metabolism, Carbohydrates, protein and fat metabolism.
2. Outline of the various hormones and their actions with special emphasis on Thyroxine and Parathyroid hormone.

I. REPRODUCTION

1. Male reproductory system.
2. Female reproductory system.
3. Outline of pregnancy; functions of placenta; Parturition; lactation, contraceptive measures.
4. Physiology of foetus; factors that affect foetal growth.

J. NERVOUS SYSTEM

1. Structure of neurones.
2. Properties of neurones; (excitation & conduction)

3. Synapse and synaptic transmission; Reflexes and properties of reflexes;
4. Sensory endings
5. Spinal cord; Pathways in the spinal cord.
6. Brain stem; Thaimus; Basal ganglia, Cerebellum; Cerebral cortex.
7. Control of posture and control of voluntary motor activity.
8. Autonomic nervous system.

K. SPECIAL SENSES

1. Vision.
2. Audition; Olfaction; Gustation; Vestibular apparatus.

L. MUSCLE

1. Structure of muscle tissue; Gross structure and microscopic structure. Arrangement of myofibrills. Myoneural junction.
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction, Single muscle twitch, Quantal Summation, Wave Summation, Tetany, Effects of temperature changes, All or none law, Fatigue, Isotonic, isometric and isokinetic contraction.
4. Exercise metabolism, Oxygen debt, Respiratory quotient.
5. Development of endurance, Factors affecting endurance and muscle strength, Factors affecting general and cardio respiratory endurance, Aerobic and anaerobic work, Efficiency of muscular activity, aerobic versus anaerobic (e.g. speed, work load, fatigue, diet, obesity).

6. Age and exercise, Age changes in muscle function. Age changes in CVS, Age changes in pulmonary function, Age and physical work capacity Age and nervous system.

7. Environment and exercise. Adaption to heat and cold, Exercise in heat and in cold. Human limitation in heat, Acclimatization to heat, Exercise at high altitudes.

PRACTICAL DEMONSTRATIONS

A. Determination of RBC & WBC count.

B. Examination of different types of WBC in stained blood smear.

C. Circulation in the web of the frog's feet.

D. Ischaemic pain.

E. & F. Muscle contraction in frog: simple muscle curve, tetany, wave summation, quantal summation, fatigue.

G. Lung Volume.

H. Effect of exercise on ventilation.

I. Physical fitness.

K. Determination of BP; effect of exercise on BP.

L. Examination of sensory and motor systems;
Examination of superficial and deep reflexes.

M. Tests of vision (acuity and colour perception) and hearing (Rhine's test and Weber's test).

EVALUATION

APPLIED PHYSIOLOGY

Not for University Examination Instruction hours: 30

COURSE DESCRIPTION

This course supplements the knowledge of physiology and enables the student to have a better understanding of how abnormal physiology affects human function and dysfunction.

COURSE OBJECTIVES

The objectives of this course is that after 30 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the effect of abnormal physiology on function and dysfunction of the human body.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written & oral internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. THE HEART AND CIRCULATION

1. Structure and properties of heart muscles.
2. The action of the heart.
3. Determinants of cardiac performance.
4. Normal E.C.G.
5. Maintenance of blood pressure.
6. Cardiac arrest and heart failure.

7. Outline of lymphatic circulation & pulmonary circulation.
8. Cardiovascular compensation for postural and gravitational changes.
9. Hypertension.
10. Oedema.
11. Central and peripheral venous pressure.

B. NERVOUS SYSTEM AND MUSCLES

1. Outline the structure and function of the control nervous system.
2. Outline the autonomic nervous system.
3. Types of nerve cells, electrical phenomena in nervecells.
4. Properties of mixed nerves.
5. Reflex action, reciprocal innervation.
6. Degeneration and regeneration of nerves.
7. Control of posture.
8. Outline of voluntary movement.
9. Cutaneous, deep and superficial sensation.
10. Synaptic transmission.
11. Neuro Muscular transmission
12. Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes.

C. RESPIRATION

1. Mechanics of respiration.
2. Breath sounds.
3. Properties of gases.
4. Exchange of gases.
5. Gas tension in air at sea level, tracheal air, cellular air, mixed air, plasma, arterial blood and mixed venous blood.
6. Lung volume.
7. Magnitude of death space.
8. Control of bronchial smooth muscle.
9. Lung compliance.
10. Nervous control of respiration.
11. Chemical control of respiration.
12. Voluntary control of respiration.
13. Oxygen and carbon dioxide transport.
14. Acid base reactions in blood.
15. Effects of exercise on respiration.
16. Artificial respiration.

EVALUATION

MICROBIOLOGY

Examination at the end of III semester Instruction hours: 25

L - Lecture

LD - Lecture demonstration

A. Introduction and history of Microbiology (L)

B. General lectures on Micro - organisms (LD)

1. Classification, 2. Shape and arrangement, Special characteristics - spores, capsules, enzymes, motility, reproduction.

C. Disinfection and antiseptics

D. Sterilization and asepsis (LD)

E. Antibacterial agents - fundamental aspect, susceptibility tests.

F. Infection - Source of infection (LD)
- Portals of entry
- Spread of infection

G. Non - specific immunity (L)

H. Immunity - natural and acquired (L)

I. Allergy and hypersensitivity (L)

J. Outline of common pathogenic bacteria and diseases produced by them. Treatment and prevention.

1. Respiratory tract infections
2. Meningitis
3. Enteric infection
4. Anaerobic infection
5. Urinary tract infection
6. Leprosy, tuberculosis and miscellaneous infections
7. Wound infection
8. Sexually transmitted diseases
9 Hospital acquired infection

K. Pathogenic Yeasts and fungi (LD)

L. Virology - Viral infection with special mention about Hepatitis, Poliomyelitis & Rabies (LD)

EVALUATION

PATHOLOGY

Examination at the end of III semester Instruction hours: 25

A. Introduction, Concept of disease, classifications of lesions

B. Bacterial, Viral and Parasitic infection - a general outline

C. Inflammation and repair, Degeneration, necrosis and gangrene

D. Hemorrhage, Shock, embolism, thrombosis

E. Tuberculosis, Leprosy, typhoid

F. Deficiency diseases

G. Tumours, Aetiology & spread, common tumours

H. Blood, anaemia, Heart and blood Vessels, common congenital anomalies, Rheumatic & Coronary heart diseases.

I. Respiratory System, Pneumonias, Bronchioctasis Emphysema, Chronic bronchitis, Asthma.

J. Bone and Joints, Autoimmune disease, septic arthritis Osteomyelitis

K. Skin, Leprosy

L. Urinary system

M. Central nervous system, CNS infections, vascular disorders

N. Rheumatoid Arthritis

O. Selrodema and Psoriasis

P. Diseases of muscle including poliomyelities myopathies.

Q. Volkmann's Ischaemia 25 hrs

COURSE OUTLINE

GENERAL MEDICINE

Examination at the end of III semester Instruction hours: 135

A. INFECTIONS

Outline the mode of spread and appropriate prevention measure of the following communicable diseases.

Bacteria - Tetanus.

Viral Herpes simplex, zoster, varicella, Measles, German measles, Hepatitis B, AIDS.

Protozoal - Filaria.

B. HAEMATOLOGY

1. Define and briefly describe clinical aspect of iron deficiency, B 12 and folic acid deficiency anemias.
2. List types of bleeding diathesis.
3. Describe the clinical features of Haemophilia.

C. RESPIRATORY TRACT

1. Bronchitis - Define, list etiological factors and describe symptoms.
2. Pneumonia - List types of pneumonia (lobar, broncho, aspiration pneumonia.)
3. List etiologic agents and briefly outline symptoms and complications of pneumonia.
4. Asthma - Define, describe briefly the etiological factors and clinical features during actue exacerbation.

5. Chronic obstructive airway diseases - Define emphysema and chronic bronchitis. Briefly describe the pathology, symptoms of diseases and clinical course.

6. Tuberculosis - Describe the etiology, pathology and clinical features of pulmonary TB.

7. Bronchiectasis - Define and describe briefly the pathology, and clinical symptoms of bronchiectasis, bronchopulmonary segments and postural drainage.

8. Emphysema - Define and briefly describe etiological factors.

9. Chest wall deformities - Describe funnel chest, Pigeon chest barrel chest, kyphoscoliosis of thoracic spine.

10. Briefly outline functional disability of occupational, lung diseases, List pneumoconiosis.

D. CARDIO - VASCULAR SYSTEM

1. Cardiac failure - Define, List causes and symptoms.

2. Rheumatic fever - Define and briefly describe etiology and gross pathology of rheumatic heart disease.

3. Infective endocarditis - Define and outline etiology, symptoms and complications.

4. Ischaemic heart disease - Outline pathology of IHD, define angina pectoris and Myocardial infarction. Describe clinical features and broadly outline medical and surgical treatment.

5. Hypertension - Define and outline the clinical features, complications & goals of therapy.

6. Outline pathogenesis and clinical features of: Pulmonary embolism, Deep vein thrombosis, pulmonary infarct.

7. Congenital heart disease - List ASD, VSD, Fallot's Tetralogy and PDA & a briefly outline the pathologic anatomy.

E. BONE, JOINT AND CONNECTIVE TISSUE DISORDERS

1. Brief introduction to concept of autoimmune disease.
2. Define: Systemic lupus erythematous, Polymyositis, Dermatomyositis, polyarthritis Nodosa, Sclerodema.
3. Rheumatoid arthritis - Describe etiology, clinical features and complications, drug therapy and non pharmacological therapy.
4. Osteoarthritis - Describe etiology, clinical features and complications and review nonsteroidal antiinflammatory drugs and steroids.

F. RENAL DISEASES

1. Define and briefly outline acute and chronic renal failure.
2. Urinary tract infection. Pathogenesis. Outline common clinical conditions complicated by UTI.

G. METABOLIC DISEASES

1. Diabetes: define and outline etiology. List types of diabetes & complications and briefly outline use of insulin, diet and oral hypoglycaemic agents in management of diabetes.
2. Obesity - Define and outline management.

H. GERIATRICS

1. List diseases commonly encountered in the elderly population and their role in causing disability; Hypertension, Ischaemic Heart disease, Cerebrovascular accident, Benign prostatic Hyperplasia, Cataracts & other causes of failing vision.

GENERAL & PLASTIC SURGERY

1. Describe abdominal surgical incisions.

2. Outline the post operative complications in: Nephrectomy, Appendicectomy, Herniorraphy Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatecomy, Cholecystectomy, Ileostomy.

3. Classify burns by depth and surface area, outline the causes, medical management and precautions in the acute stage.

4. List the potential deformities due to burns, methods of prevention and precautions. Mention cosmetic and functional treatment measures.

5. Outline the plastic surgery procedures and management in rehabilitation of burns, including splinting methods for common deformities and prevention of burns contractures.

PAEDIATRICS

1. Describe growth and development of a child from birth to 12 years: including physical, social, adaptive development.

2. List the maternal and neonatal factors contributing to high risk pregnancy. The neonate: inherited diseases; maternal infections - viral and bacterial; maternal diseases incidental to pregnancy, such as gestational diabetes, pregnancy induced hypertension; chronic maternal diseases such as heart diseases, renal failure, tuber-culosis, diabetes, epilepsy; bleeding in the mother at any trimester.

3. Briefly describe community programmes: International (WHO) national and local, for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism, Outline the immunization schedule for children.

4. Cerebral Palsy: Define and briefly outline etiology Prenatal - perinatal and postnatal causes; briefly mention pathogenesis, types of cerebral palsy (Classification), findings on examination; General examination, examination of C.N.S. Musculoskeletal system, respiratory system, Gastro-intestinal tract & nutritional status.

Briefly outline associated defects; Mental retardation, microcephaly, blindness, hearing and speech impairment, squint and convulsions.

Briefly outline treatment.

Outline prevention: Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections metabolic problems.

5. Muscular dystrophy: Outline various forms, modes of inheritance and clinical manifestation; physical findings in relation to disabilities progression of various forms and prognosis, Describe treatment goals.

6. Spinabifida, meningomyelocele: Outline development; clinical features, lower limbs, bladder and bowel control; complications - U.T.I. & hydrocephalus; medical treatment and surgical treatment.

7. Still's disease: Classification, pathology in brief, physical findings, course & prognosis. Outline treatment, prevention and correction of deformity.

8. Acute C.N.S. infections: Classify (Bacterial and viral) and outline the acute illness, CNS sequelae leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.

9. Normal diet of newborn and child: List dietary calorie, fat, protein, mineral and vitamin requirement in a normal child and in a child with malnutrition. Classify and outline etiology, findings and treatment of Rickets: Vitamin D deficiency and resistant rickets.

10. Lung infections: Outline the clinical findings, complications and medical treatment of bronchiectasis, lung abscess and Bronchial asthma.

11. The following: X-ray demonstrations, Opthalmology, E.N.T. and Obstetrics & Gynaecology are not for University examinations.

OPTHALMOLOGY

Lecture - demonstrations only

Briefly outline the following:

1. Eye lesion in leprosy, including causes, treatment and complications of Igophthalmos.

2. Field defects arising from lesions in the visual pathway, their clinical symptoms and methods of testing.

3. Effect of paralysis of the occular muscles and treatment.

4. Causes, clinical features and a treatment of disorders of occular movement occuring in diseases such, as myasthenia gravis, progressive supranuclear palsy and lower motor neuron diseases.

5. Causes, clinical features, treatment and prognosis in visual failure arising from cataract, inflamatory disorders, vitamin A deficiency, Glaucoma and Trachoma; emphasis on preventable causes and prophylactic measures.

6. Define blindness, and visual disability evaluation. Investigative procedures used for testing visual failure, including basic screening procedures for visual accuity suitable for community health surveys.

E.N.T.

Lecture - demonstrations only

1. Outline the Anatomy and physiology of hearing and the use of audiometry in assessment of hearing.

2. Briefly classify causes of hearing loss Outline conservative and surgical intervention, including types and availability of hearing aids.

3. Briefly outline the functions of the vestibular apparatus.

4. Briefly outline common ENT infections and diseases which affect hearing, breathing and speech; and their management.

OBSTETRICS & GYNAECOLOGY

Lecture demonstrations only

1. Review the anatomy of the female pelvis and embryonic and foetal development.

2. Outline the physiological skeletal changes during pregnancy, delivery and post-partum period.

EVALUATION

ELEMENTS OF BIOCHEMISTRY

BIO CHEMISTRY

PLACEMENT III Semester Time allotted: 10 hours

I. Introduction to Bio-chemistry as on allied science to medicine, Blood and Urine investigations of normal & abnormal urine samples.

II. Carbohydrates - Structure and general nature - Biological importance - classification, polysaccharides & their physio-logical importance.

III. Lipids - Structure and general nature - Classification, - Bio-logical membranes and membrane transport.

IV. Proteins - structure and functional aspect of haemoglobin, myoglobin, collagen and cellular proteins (their names only).

V. Enzymes - specificity and factors affecting enzyme activity intra cellular and extracellular enzymes, isoenzymes - clinical significance of alkaline phosphatse, acid phosphatase and cholinesterase, creatine phosphokinase (CPK).

VI. Metabolic pathways related to Carbohydrate and lipid metabolism, their names and significance only. Disorders of carbohydrate metabolism, hyper and hypoglycemia - glycosuria-diabetes mellitus - typs - biochemical changes.

VII. Metabolic pathways - related to protein metabolism - their names and significance only - amino aciduria, alkalptonuria, nucleic acid metabolism - Gout.

VIII. Vitamins - fat soluble and water soluble. - their source, requirement, special requirements, - biochemical functions & deficiency state.

IX. Minerals and trace elements & their role in growth and development - Disorders of calcium, phosphorus metabolism - muscular dystrophies.

X. Fundamentals of nutrition & dietetics.

PHARMACOLOGY

PLACEMENT: III Semester Time allotted: 15 Hours

NOTE: Although the time slot appears to be 1 hour lectures 10 in all, it is strongly recommended that this be altered to 10 lectures of 90 minute duration each - to make the course meaningful and profitable to the candidates despite the fact that NO examination has been incorporated.

LECTURE No: DETAILS OF SUBJECT MATTER.

1. Introduction to Pharmacology - Terminology - Agonist - Antagonist Pharmacokinetics, Pharmacodynamics, Pharmaco-therapeutics, Toxicology Drug - Receptor interaction - Association - Dissociation constants, Routes of administration - Absorption - Distribution - Termination of action.

2. Autonomic Pharmacology - neurotransmitters, Acetylcholine, sites of action-- Epinephrine, Norepinephrine - Cholinergic blockers of muscarinic and nicotinic function - Belladonna alkaloids, synthetic substitutes, adrenergic blockers, both alpha and beta blockers and blockade.

3. Cardiovascular Pharmacology - Congestive Cardiac failure - glycosides - Angina AND ANTIANGINAL AGENTS - Anihypertensives - Diuretics - beta blockers, calcium channel blockers, ACE - inhibitors, - Peripheral vascular diseases and vasodilators - Cardiac antiarrythmic agents.

4. Blood disorders - anaemia, iron deficiency anaemia, iron substitute as therapeutic tool - Megaloblasitc anemia - cyanocobalamine - Shock - plasma substitutes, plasma expanders,

vasoconstrictors - coagulants and anticoagulanyts - heparin and coumarins.

5. Neuropharmacology - Sedatives and Hypnotics, barbiturates and their antagonists - Narcotics and narnotic analgesics - Opioids - Dangers of addition - prevention Role of superficial and Topical remedies in induction of analgesia - Demonstrate preparation of a Liniment.

6. Behaviroal Pharmacology and Psychopharmacology - Anxiety states, Antianxiety drugs - Benzodiazepines - Diazepam congeners - Mood disorders and depressed states - antidepressants Lithium - Psychodysletics and their dangers in misuse among student population.

7. Movement Disorders - Parkinsonism - CHARACTERISTICS OF DISEASE, tremor, rigidity - chemotherapy, Epilepsies - types - drug management of disease - Spastic disease - drug treatment of acute muscle spasms - gastro intestinal pharmacology, hyperqacidity, antidiarrhoels, purgatives.

8. Inflammatory diseases - antiinflammatory agents - Analgesics - Nonsteroidal antiinflammatory agents - Aspirin, paracetamol, indomethacin, diclofenac, piroxicam, mefenamoic acid, Steroidal AGENTS, CLUCOCORTICOIDS, PREDNISOLONE, dexamethasone, betamethasone, beclomethasone.

9. Endocine disorders - thyroid - hypo and hyperthyroidism, diabetes and insulin - oral hypoglycemic agents, gonadal hormones - oral contraceptives - role in arthritic conditions of glucocortiocoids - dangers of prolonged use of steroidal agents.

10. Chemotherapy - bacterial infections - drugs against micro-organism - sulphonamides, antibiotics, floxacins - Parasitic infestations malaria, amebae, filariasis - flagellates - Respiratory Pharmacology use of broncho dilator - airway clearance - Cancers - antimitotics, antimetabolities, irradiation - radioactive materials in cancers.

Exercise Therapy

Examination at the end of : IV Semester Instruction hours : 270

COURSE DESCRIPTION

In this course the student will learn the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES

The objective of this course is that after 270 hours of lectures, demonstrations, practicals and clinics the student will be able to list the indications and contractions of various types of exercises, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, Oral & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. MECHANICS

Define the following terms and describe the principles involved with suitable examples.

1. Force : Composition of force, Parallelogram of forces.
2. Equilibrium : Stable, unstable, neutral.
3. Gravity : Centre of gravity, Line of gravity.
4. Levers : 1 st order, 2nd order, 3rd order, Their examples in the human body and their practical applications in physiotherapy, forces applied to the body levers.
5. Pulleys : Fixed, Movable.
6. Springs : Series; Parallel
7. Tension
8. Elasticity : Hook's law.
9. Axis : Sagittal, Frontal, Transverse, vertical.

10. Planes : Sagittal, Frontal, Horizontal.
11. Definitions of : Speed, Velocity, work, Energy, power, Acceleration, Momentum, Friction and Inertia.

B. MUSCLE ACTION

Explain the following:

1. Muscle work : Isotonic (concentric, eccentric), isometric (static)
2. Group action : Agonists (prime movers), Antagonists, synergists, Fixators
3. Angle of muscle pull, Mechanical efficiency of the muscles.

C. PELVIC TILT

Describe the following:

1. Normal pelvic tilt; Alteration from normal, Anterior tilt (forward), posterior tilt (backward), Lateral tilt.
2. Muscles responsible for alteration and pelvic rotation.
3. Identification of normal pelvic tilt, pelvic rotation and altered tilt and their corrective measures.

D. STARTING POSITION

Describe the following starting positions, their muscle work, effects and uses. Specify the importance and derived positions for each one.

Standing, Kneeling, Sitting, Lying, Hanging.

E. MOVEMENT

Explain the following terms, with suitable examples:

1. Anatomic movements : Flexion, Extension, Abduction, Inversion, Eversion, Supination, Pronation, Internal rotation, External rotation, Gross flexion, Gross extension, Trunk side flexion.
2. Surface Anatomy of the individual joint

3. Rhythm of movement.

4. Timing of movement.

5. Duration of movement.

6. Classification of movement. : Active, Passive.

7. Effects of exercise : Physiological effects, Therapeutic effects.

8. List the indications and contra - indications of the following and demonstrate the technique for each:

Active movement: Voluntary (free, active, assisted-resisted, resisted), involuntary (associated reflex, Peristaltic / Visceral, cardiac).

Passive movement : Relaxed passive movement, mobilisation (forced P.M. manipulation, serial manipulations), passive stretching

F. PASSIVE STRETCHING

Demonstrate passive stretching of following muscles / muscle groups and describe the indications, contra - indications physiological effects, advantages and disadvantages of each. Upper limb : pectorialis major, biceps brachii, triceps brachii, long flexors of the fingers.

Lower limb : rectus femoris, iliotibial band (tensor fascialata) gastrocnemius, soleus, hamstring, hip adductor, iliopsoas.

Neck : Sternocleidomastoid.

G. ACTIVE MOVEMENT

1. Describe the types, techniques, indication and contra indications, physiological effects, advantages and disadvantages and demonstrate three progressive resisted exercises in progression for the following muscle group : Shoulder abductor, shoulder forward flexor, Triceps Brachii, Hip abductor, Hip flexor, Quadriceps -femoris, Abdominal muscles, Back extensor.

2. Describe the home programme for strengthening neck muscles and back extensor.

H. PROGRESSIVE RESISTED EXERCISE

1. Describe the following exercises, their advantages and disadvantages and demonstrate the techniques of the following types of PRE : Fractional system, MacQueen's set system, MacQueen's power system.

2. Demonstrate practically each system using: Dleorme's Boot, Dumbell, Sand bag, pulley, Powder board and suspension therapy.

I. MUSCLE GRADING

1. Describe the types of muscle grading, key to muscle grading, techniques of muscle testing - easy test hard test, and functional test (ADL)

2. Demonstrate the skill to grade upper and lower limb, neck and trunk muscles.

J. RE-EDUCATION OF MUSCLE

1. Describe the following in re-education of muscle : The term re-education of muscle, Technique, Spatial summation, Temporal summation.

2. Demonstrate the various re-education techniques and facilitating method on various groups of muscles.

3. Demonstrate the progressive exercises in strengthening using various application: (according to their muscle power) Grade 1 - Grade 5.

K JOINT MOBILITY

Describe the following :

1. Joint ranges (outer range, middle range, inner range), individual joint structures, joint movements (anatomic, accessory), Causes of joint range limitations, prevention of Jointstiffness positioning (physiological resting position).

2. Passive range of movement, methods of relaxation, active exercises, Manual mobilisation techniques.

3. Pain relieving modalities : Moist heat, Infra red, Ultra sound S.W.D., Microwave. Diathermy.

4. Forced passive movements : small amplitudes, Large amplitudes.

5. Muscle strengthening techniques (PNF) : Hold - relax, slow reversal, Rhythmic stabilisation. repeated contractions.

6. Accessory movements : Posterior glide, Anterior glide, superior and inferior glide, Traction and approximation.

7. Indications and contra - indications for mobilisation of individual joints and demonstrate practically the various mobilisation techniques for individual joint and teaching home programme.

L. GONIOMETRY

1. Describe the following : Normal range of various joints, Description of goniometer, Range of measuring system (180 foot trunk and head), Techniques of goniometry.

2. Demonstrate measuring of individual joint range using goniometer.

Massage

Examination at the end of : IV Semester Instruction hours : 80

COURSE DESCRIPTION

In this course the student will learn the principles, technique and effects of massage as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES

The objective of this course is that after 80 hours of lectures, demonstrations, practicals and clinics, the student will be able to list the indications and contra - indications of various types of massage manipulations, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fullfil with 75% accuracy (as measured by written, Oral & practical, internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. Describe briefly:

1. History of massage
2. Mechanical points to be considered
3. Points to be considered while giving massage
    a. Manipulations
    b. The time of day for treatment
    c. The comfort and support of the patient (draping, bolstering, & positioning)

d. Position of operator (therapists stance)

e. Using body weight

f. Contact and continuity

g. Techniques, indications, and contra - indications.

4. Physiological effects of massage on various systems of body. Effects on: Excretory system, Circulatory system Muscular system, Nervous system & Metabolic system.

B. Define and describe the various manipulation techniques used in massage.

1. Stroking manipulations : Effleurage, Stroking.

2. Pressure manipulations : Kneading : Squeezing. Stationary, Circular Ironing (reinforced kneading) Finger kneading, Petrissage (picking up, wringing, rolling), Frictions.

3. Percussion manipulations : Tapotement, Hacking, Clapping, Beating & Pounding.

4. Shaking-manipulations : Vibration, Shaking.

C. Define and describe the technique, effects & uses and contra indications of the following manipulations :

1. Massage for upper limb:

a. Scapular region

b. Shoulder joint

c. Upper arm

d. Elbow joint

e. Forearm

f. Wrist joint

g. Hand

2. Massage for lower limb:

a. Thigh

b. Knee joint

c. Leg

d. Foot (including ankle joints and toes)

3. Massage for back :

a. Neck and Upper back

b. Middle and lower back

c. Gluteal region.

4. Massage for the face :

EVALUATION

REFERENCES : Manual of massage and measurements - Edith M. Prosser.

WOOD & BECKER : Beards Massage
MARGARETT HOLLIS : Massage for Therapist
AUDREY GITA GOLDBER : Massage for the Beauty Therapist ST

Applied Anatomy & Biomechanics

Examination at the end of : IV Semester Instruction hours : 80

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 function and dysfunction.

COURSE OBJECTIVES

The objective of this course is that after 80 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate an understanding of the principles of Biomechanics and Kinesiology and their application in health and disease.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, Oral & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. MECHANICS

1. Describe types of motion, planes of motion, direction of motion and quantity of motion.

2. Define forces, force vectors, components of forces.

3. Describe gravity, segmental centres of gravity, center of gravity, line of gravity of the human body, stability and center of gravity, relocation of the centre of gravity.

4. Describe Reaction forces, Newton's Law of Reaction.

5. Describe equilibrium - Law of inertia and Establishing equilibrium of an object.

6. Describe objects in motion; Law of Acceleration joint distraction in a linear force system and Force of friction.

7. Describe concurrent Force Systems : Composition of forces; Muscle Action Lines, Total muscle force vector, Divergent muscle pulls, Anatomic pulleys.

8. Describe parallel force Systems : First class levers second class levers - Third class levers - Torque - Mechanical Advantage.

9. Define moment arm; Moment Arm of a muscle force. Moment arm of gravity and Anatomic pulleys.

10. Describe equilibrium of a lever.

DESCRIBE THE FOLLOWING :

1. Three types of motion.

2. The plane in which a given joint motion occurs, and the axis around which the motion occurs.

3. The location of the centre of gravity of a solid object, the location of the centre of gravity of a segmental object the location of the centre of the gravity of the human body.

4. The action line of single muscle.

5. The name, point of application direction, and magnitude of any interforce, given its reaction force.

6. A liner force system, a concurrent force system, a parallel force system.

7. The relationship between torque, moment arm and rotatory force component.

8. The methods of determining torque for the same given set of forces.

9. How anatomic pulleys may change action line, moment arm, and torque passing through them.

10. In general terms, the point in the joint range of motion at which a muscle acting over the joint is biomechanically most efficient.

11. How external forces can be manipulated to maximise torque.

12. Friction, its relationship to contacting surfaces and to the applied forces.

DETERMINE THE FOLLOWING :

1. The identity (name) of diagrammed forces on an object.

2. The new centre of gravity of an object when segments are rearranged, give the original centres of gravity.

3. The resultant vector in a linear force system, a concurrent off system, and a parallel force system.

4. If a given object is in linear and rotational equilibrium.

5. The magnitude and direction of acceleration of an object not in equilibrium.

6. Which forces are joint distraction force and which are joint compression forces what are the equilibrium force for each?

7. The magnitude and direction of friction in a given problem.

8. The class of term in a given problem.

COMPARE THE FOLLOWING :

1. Mechanical advantage in a second and third class level.

2. Work done by muscle in a second and third class level.

3. Stability of an object in two given situations in which location of the centre of gravity and the base of support of the object.

DRAW THE FOLLOWING

1. The action line of muscle.

2. The rotary force component, the translatory force component, and the moment arm for a given force on a lever.

B. JOINT STRUCTURE AND FUNCTION

1. Describe the basic principles of joint design and a human joint.

2. Describe the tissue present in human jonts; including dense fibrous tissue, bone, cartilage and connective tissue.

3. Classify joints - synarthrosis, Amphiarthrosis, Diarthrosis, subclassification of synovial joints.

4. Describe joint function, kinematic chains, range of motion.

5. Describe the general effects of injury and disease.

RECALL THE FOLLOWING

1. The elementary principles of joint design.

2. The three main classification of joints.

3. The five features common to all diarthodial joints.

4. Types of materials used in human joint construction.

5. Properties of connective tissue.

IDENTIFY THE FOLLOWING

1. The axis of motion for any given motion at a specific joint (knee, hip, metacarpophalangeal).

2. The plane of motion for any given motion at a specific joint, shoulder, interphalangeal, Wrist.

3. The degree of freedom at any given joint.

4. The distinguishing features of a diarthrodial joint.

5. The structures that contribute to joint stability.

COMPARE THE FOLLOWING

1. A synarthrosis with a amphiarthrosis on the basis of methods, materials and function.

2. A synarthrosis with a diarthrosis on the basis of methods, materials and function.

3. Closed kinematic chain with an open kinematic chain

4. Dense fibrous tissue with bone.

5. Hyaline cartilage with fibrocartilage.

C. MUSCLE STRUCTURE AND FUNCTION

1. Describe Mobility and stability functions of muscles.

2. Describe elements of muscle structure - Composition of a muscle fibre, the motor unit, types of muscle fibres, muscle fibre size, arrangement and number, Muscle tension, length - tension relationship.

3. Describe types of muscle contraction, speed and angular Velocity. Applied load, Voluntary control, Torque & Isokinetic exercise.

4. Summarise factors affecting muscle tension.

5. Classify muscles - spurt and shunt muscles, Tonic and phasic muscles.

6. Factors affecting muscle function: Type of joint and location of muscle attachment, number of joints, passive insufficiency, Sensory receptors.

DESCRIBE THE FOLLOWING:

1. Ordering of the myofibrils in a sarcomere.

2. An alpha motor neuron.

3. The connective tissue in a muscle.

4. How tension develops in muscle.

5. Isokinetic exercise.

DEFINE THE FOLLOWING:

1. Active and passive insufficiency.

2. Active and passive tension.

3. Concentric, eccentric and isometric contractions.

4. Reserve action.

5. Agonists, antagonists and synergists.

RECALL THE FOLLOWING:

1. Factors affecting muscle tension.

2. Characteristics of different fibre types.

3. Characteristics of motor units.

4. Factors affecting angular velocity.

DIFFERENTIATE THE FOLLOWING:

1. A spurt from a shunt muscle.

2. A phase from a tonic muscle.

3. Agonist from an antagonist.

4. Active from passive insufficiency.

5. Concentric from eccentric contractions.

COMPARE THE FOLLOWING:

1. Tension development in eccentric versus concentric contractions.

2. The angular velocity of isometric versus concentric & isokinetic contractions.

3. Isokinetic exercise with concentric exercise.

D. THE VERTEBRAL COLUMN

1. Articulations, Ligaments and muscles, typical vertebra, intervertebral disc.

2. Describe factors affecting stability and mobility.

3. Regional structure and function of cervical, dorsal, lumbar and sacral vertebrae.

4. Describe the muscles of the vertebral column - Flexors, Extensors, Rotators and Lateral flexors.

5. Describe the effects of injury and developmental deficits.

DESCRIBE THE FOLLOWING:

1. The curves of the vertebral column using appropriate terminology.

2. The articulations of the vertebral column.

3. The major ligaments of the vertebral column.

4. The structural components of typical and atypical vertebrae.

5. The intervertebral disc.

6. Regional characteristics of vertebral structure.

7. Motions of the vertebral column.

8. Lumbar - pelvic rhythm.

9. Rotation of the vertebrae in each region.

10. Movements of the ribs during rotation.

IDENTIFY THE FOLLOWING:

1. Structure that provide stability for the column.

2. Muscles of the vertebral column and the specific functions of each.

3. Ligaments that limit specific motions (i.e. flexion, extension, lateral flexion, rotation).

4. Forces acting on the vertebral column during specific motions.

EXPLAIN THE FOLLOWING:

1. The relationship between the intervertebral and facet joints during motions of the vertebral column.

2. The role of the intervertebral disc in stability and mobility.

3. The effects of forces acting on the structural components during motion and at rest.

ANALYSE THE FOLLOWING:

1. The effects of disease process, injury, or other defects in the vertebrae.

2. The effects of an increased lumbosacral angle on the pelvis and lumbar vertebral column.

F. THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulating surfaces, capsular attachments and ligaments and movements of the following joints:

i) Sternoclavicular ii) Acromioclavicular

iii) Scapulothoracic iv) Glenohumeral

2. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, musculohumeral Rhythm, Scapulothoracic and glenohumeral contributions.

3. Describe the muscles of elevation (Deltoid, Supraspinatus, Infraspinaturs, Teres minor Subscapularis, Upper Trapezius, lower Trapezius, Serratus anterior, Middle Trapezius & Rhomboids).

4. Describe the muscles of depression Lattissimus dorsi Pectoralis, Teres Major, Rhomboids)

DESCRIBE THE FOLLOWING:

1. The articular surfaces of the joints of the complex.

2. The function of the ligaments of each joint.

3. Accessory joint structures and the function of each.

4. Motions and ranges available at each joint and movement articular surfaces within the joint.

5. The normal mechanism of dynamic stability of the glenohumeral joint, utilizing principles of biomechanics.

6. The normal mechanism of glenohumeral stability in the dependent arm.

7. Scapulohumeral rhythm, including contributions of each joints.

8. The extent of dependent of independent function of each joint in scapulohumeral rhythm.

9. How restriction in the range of elevation of the arm may occur.

10. One muscular force couple at a given joint and its function.

11. The effect of given muscular deficit may have on shoulder complex function.

COMPARE THE FOLLOWING:

1. The advantages and disadvantages of coracoacromial arch.

2. The structural stability of the three joints, including the tendency toward degenerative changes and derangement.

Draw the action lines of muscles of the shoulder complex and the moment arm for each, and resolve each into components.

G. THE ELBOW COMPLEX

1. Describe the structure of the Humeroulnar and Humeroradial joints including articulating surfaces, joint capsule, Ligaments & Muscles.

2. Describe the function of the Humeroulnar and Humeroradial joints including the Axis of motion, Range of motion, Muscle action.

3. Describe the structure of the superior and inferior radioulnar joints.

4. Describe the function of the superior and inferior Radioulnar joints.

5. Describe the mobility and stability of the Elbow complex and its relationship to Hand and Wrist.

6. Describe the effects of injury and the resistance to longitudinal compression forces, to distraction forces & to Medial lateral forces.

DESCRIBE THE FOLLOWING:

1. All of the articulating surfaces associated with each of the following joints - humeroulnar, humeroradial superior and inferior radioulnar.

2. The ligaments associated with all the joints of the elbow complex.

IDENTIFY THE FOLLOWING:

1. Axes of motion for supination and pronation and flexion and extension.

2. The degrees of freedom associated with each of the joints of the elbow complex.

3. Factors limiting the range of motion in flexion and extension.

4. Factors that create the carrying angle.

5. Factors limiting motion in supination and pronation.

COMPARE THE FOLLOWING:

1. The translatory and rotatory components of the brachioradial is and brachialis at all points in the range of motion.

2. The moment arms of the flexors at any point in the range of motion.

3. Muscle activity of the extensions in a closed kinematic chain with activity in an open kinematic chain.

4. The role of pronator teres with the role of pronator quadratus.

5. The role of biceps with that of brachialis.

6. The resistance of elbow joint to longitudinal tensile forces with its resistance to compressive forces.

7. The features of a classic tennis elbow with the features of cubital tunnel syndrome.

8. The role of and structure of the annular ligament with the role and structure of the articular disc.

H. THE WRIST AND HAND COMPLEX

1. Describe the wrist complex including Radiocarpal joint Midcarpal joint and the ligaments of the wrist complex.

2. Describe the function of the radiocarpal and midcarpal joints including the movements and muscles involved.

3. Describe the Hand complex including: Structure of fingers (Carpometacarpal, Metacarpophalangeal and interphalangeal joints of fingers, ligaments Range of motion).

4. Describe the finger musculature including Extrinsic & MCP, PIP and DIP joint function, and intrinsic finger muscles.

5. Describe the structure of the Carpometacarpal, MCP and IP joints of thumb.

6. Describe the structure including the Extrinsic & Intrinsic thumb muscles.

7. Describe Prehension, Power, Cylindrical, Spherical & Hook grips.

8. Describe Precision handling, Pad to pad, Tip to tip and Pad to side prehension and Functional position of wrist and hand.

DESCRIBE THE FOLLOWING:

1. The articular surfaces of the joints of the wrist and hand complexes.

2. The ligaments of the joints of the wrist and hand, including the function of each.

3. Accessory joint structures found in the wrist and hand complex, including the function of each.

4. Types of movements and types of motion of the radiocarpal joint, the midcarpal joint, and the total wrist complex.

5. The sequence of joint activity occuring from full wrist flexion to extension including the role of the scaphoid, the sequence of joint activity in radial and ulnar deviation from neutral.

6. The role of the wrist musculature in producing wrist motion.

7. Motions and ranges available to joints of the hand complex.

8. The gliding mechanisms of the extrinsic finger flexors.

9. The structure of the extensor mechanism, including the muscles and ligaments that compose it.

10. How M.C.P. extension occurs, including the muscles that produce and control it.

11. How flexion and extension of the PIP joint occur, including the muscular and ligamentous forces that produce and control these motions.

12. How flexion and extension of DIP joints occur, including the muscular and ligamentous forces that produce and control these motions.

13. The role of the wrist in optimising length - tension in the extrinsic hand muscles.

14. The activity of reposition, including the muscles that perform it.

15. The functional position of the wrist and hand.

DIFFERENTIATE BETWEEN

1. The role of the interossei and lumbrical muslces at the MCP and IP joints.

2. The muscles used in cylindrical grip to those active in spherical grip, hook grip, and lateral, prehension.

3. The muscles that are active in pad - to - pad, tip - to - tip and pad to side prehension.

COMPARE

1. The activity of muscles of the thumb (in oppostion of the thumb to the index finger) with the activity of those active in opposition to the little finger.

2. The characteristics of power grip with those of precision handling.

3. The most easily disrupted form of precision handling that may be used some on without any active hand musculature; what are the pre-requisties; for each?

I. THE HIP COMPLEX

1. Describe the general features of the hip joint incluidng the articulating surfaces on the pelvis & the femur; Angulations; Angle of

indication, Angle of Torsion; Internal architecture of femur and pelvis; joint capsule. Ligaments & Muscles (Flexors, Extensors - one joint extensors, two joint extensors, Adductors, Medial Rotators and Lateral Rotators).

2. Describe the function of hip - Rotation between pelvis, lumbar spine and hip; Pelvic motion - Anterior posterior pelvic tilting, Lumbar pelvic rhythm, Lateral pelvic tilting, Pelvic rotation.

3. Summarise the pelvic motions in the static erect posture.

4. Describe Femoral motion.

5. Describe Hip stability in Erect Bilateral stance, sagital plane equilibrium and Unilateral stance.

6. Describe reduction of Forces with weight shifting and using a cane and deviations from normal in muscular weakness & Bony abnormalities.

DESCRIBE THE FOLLOWING:

1. The articulating surfaces of the pelvis and femur.

2. The structure and function of the trabecular systems of the pelvis and femur.

3. The structure and function of the ligaments of the hip joint.

4. The angle of inclination and the angle of torsion.

5. The planes and axes of the following pelvic motions and the accompanying motions at the lumbar spine and hip joints, pelvic rotation, and anterior, posterior and lateral tilting of the pelvis.

6. The muscle activity that produces tilting and rotation of the pelvis.

7. Motions of the femur on the pelvis including planes and axes of motion.

8. The structure and function of all the muscles associated with the hip joints.

9. The forces that act on the head of femur.

10. The position of greatest stability at the hip.

EXPLAIN THE FOLLOWING:

1. How sagital and frontal plane equilibrium are maintained in erect bilateral stance.

2. How frontal plane equilibrium is achieved in unilateral stance.

3. How force acting on the femoral head may be reduced.

4. How the function of the two joint muscle at the hip are affected by changes in the position of the knee and hip.

5. The functional and structural relationship among the hip, knee, pelvis and lumbar spine.

COMPARE THE FOLLOWING:

1. Forces acting on the femoral head in erect bilateral stance with the forces acting on the head in erect unilateral stance.

2. Coxa valga with coxa vara on the basis of hip stability and mobility.

3. The motions that occur at the hip, pelvis and lumbar spine during forward trunk bending with the motions that occur during anterior and posterior tilting on the pelvis in the erect standing position.

4. Anterversion with retroversion on the basis of hip stability and mobility.

5. The structure and function of the following muscles - Flexors and extensors, abductors and adductors, lateral and medial rotators.

J. THE KNEE COMPLEX

1. Describe the structure of the Tibiofemoral joint Articulating surfaces on femur and tibia, the menisci, Joint capusle and bursae, Ligaments and other supporiting structures, Anterior - posterior and Medio - Lateral stability; Muscle structure; Knee flexors &

extensors: Axes of knee complex: Mehcanical axis, Anatomic axis and axis of motion.

2. Describe the function of the Tibiofemoral joint: Range of motion. Flexion and extension, Rotation, Abduction and Adduction, locking and unlocking; Function of Menisci and Muscle function.

3. Describe the strucutre of the patellofemoral joint.

4. Describe the function of the patellofemoral joint.

5. Describe the effects of injury and disease in the Tibiofemoral and patellofemoral joints.

DESCRIBE THE FOLLOWING:

1. The articulating surfaces of tibiofemoral and patellofemoral joints.

2. The joint capsule.

3. The anatomic and mechanical axes of knee.

4. Motion of the femoral condyles during flexon and extension in a closed kinematic chain

5. Motion of the tibio in flexion & extension in an open kinematic chain.

DRAW:

The Q angle when given an illustration of the lower extremity.

2. Moment arm of the quadriceps at the following degree of knee flexion: 90 deg., 130 deg., 30 deg.,10 deg.

3. The action lines of vastus lateralis and the vastus medialis oblique.

LOCATE:

1. The origins and insertion of all the muscles at the knee.

2. The bursae surrounding the knee.

3. The attachments of the ligaments of the medial and lateral compartments.

IDENTIFY:

1. Structures that contribute to the medial stability of the knee including dynamic and static stabilisers.

2. Structures that contribute to the lateral stability of the knee including dynamic and static stabilisers.

3. Structures that contribute to the posterior stability of the knee including dynamic and static stabilisers.

4. Structures that contribute to the anterior stability of the knee including dynamic and static stabilisers.

5. Structures that contribute to the rotary stability of knee.

6. The normal forces that are acting on the knee.

COMPARE:

1. The knee and the elbow joint on the basis of similarities / dissimmilarities in structure and function.

2. The lateral with the medial meniscus on the basis of structure and function.

3. The forces on the patellofemoral joint in full felxion with full extension.

4. The action of quadirceps in an open kinematic chain with that in a closed kinematic chain.

5. The effectiveness on the hamstrings as knee flexors in each of the following hip positions:- hyperextension, ten degrees of flexion and full flexion (open kinematic chain).

6. The effectiveness of the rectus femoris as a knee extensor at sixty degree of knee flexion with its effectiveness at ten degrees of knee flexion.

EXPLAIN:

1. The function of the menisci.

2. How a tear of the medial collateral ligament may affect joint function.

3. The functions of the suprapatellar, gastrocnemus, infrapatellar and prepatellor bursae.

4. Why the semiflexed position of the knee is the least painful position.

5. Why the knee may be more susceptible to injury than the hip joint.

K. TYPE ANKLE - FOOT COMPLEX

DESCRIBE the structure, ligaments, axis and function of the following: ankle joint, tibiofibular joints, subtalar joints, Talocalcaneonavicular joints. Transverse Tarsal joint, Tarsometatarsal joint, Plantar arches, Metatarasophalangeal joints, Interphalangeal joints.

Define the terminology unique to the ankle foot complex, including inversion exarsion, pronation - supination, dorciflexion - plantar flexion, flexion - extension and adduction and abduction.

DESCRIBE:

1. The compound articulations of the ankle, subtalar, talocalcaneonavicular, transverse tarsal and tarsometatarsal joints.

2. The role of the tibiofibular joints and supporting ligaments.

3. The degrees of freedom and range of motion available at the joint of the ankle and the foot.

4. The significant ligaments that support the ankle, subtalar and transverse tarsal joints.

5. The triplanar nature of ankle joint motion.

6. The articular movemnts that occur in the weight - bearing subtatar joint during inversion - eversion.

7. The relationship between tibial rotation and subtalar / talocal - caneonvicular inversion - eversion.

8. The relationship between hind foot inversion eversion and motiligy - stability of the transverse tarsal joint.

9. The function of the tarsometatarsal joints, including when motion at these joints is called upon.

10. Supination - pronation of the forefoot at the tarsometatarsal joints.

11. Distribution of weight within the foot.

12. The structure and function of the plantar arches inluding the primary supporting structure.

13. When muscles supplement arch support, including those muscles that specifically contribute.

14. The effects of toe extension on the plantar arches.

15. The general function of the extrinsic muscles of ankle & foot.

16. The general function of the intrinsic msucle of foot.

L. POSTURE

1. Describe the effects of gravity and indicate the location of the gravity line in the sagital plane in optimal posture.

2. Analyse posture with respect to the optimal alignment of joints in the antero - posterior and leteral views.

DESCRIBE:

1. The position of hip, knee and ankle joints in optimal erect posture.

2. The position of body's gravity line in optimal erect posture, using appropriate points of reference.

3. The effects of gravitational moments of body segments in optimal erect posture.

4. The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture.

5. Muscles and ligamentous structures that counter balance gravitational moments in optimal erect posture.

6. The following postural deviations: pesplanus, halluxvalgus, pes cavus, idiopathic scoliosis, kyphosis and lordosis.

7. The effects of the above postural deviations on body structures i.e. ligaments, joints and muscles.

DETERMINE:

1. How changes in the location of the body's gravity line will effect gravitational moments acting around specified joints axes.

2. How changes in the alignment of body segments will affect either the magnitude or the deviation of the gravitational moments.

3. How changes in alignment will affect supporting structures such as ligaments, joints capsules, muscles and joints surfaces.

M. GAIT
DEFINE:

1. The stance, swing and double support phases of gait.

2. The subdivisions of the stance and swing phases of gait.

3. The time and distance parameters of gait.

DESCRIBE:

1. Joint motion at the hip, knee and ankle for one extremity during a gait cycle.

2. The location of line of gravity in relation to the hip, knee, and ankle during the stance phases of gait.

3. The gravitational moments of force acting at the hip, knee and ankle during the stance phase.

EXPLAIN:

1. Muscle activity at the hip, knee and ankle throughout the gait cycle, including why and when a particular muscle is active and type of contraction required.

2. The role each of the determinants of gait.

3. The muscle activity that occurs in the upper extremity and trunk.

COMPARE:

1. Motion of upper extremities and trunk with motion of pelvis and lower extremities.

2. The traditional gait terminology with the new terminology.

3. Normal gait with a gait in which there is a weakness of the hip extensors and abductors.

4. Normal gait with a gait in which there is unequal leg lengths.

EVALUATION

VETERINARY PHYSIOTHERAPY

Veterinary Surgeons Act (1966) 10 Hours

Professional standards and the relationship of the physiotherapist to the veterinary surgeon and the owner

Comparative Anatomy
Observation and Examination
Causes of Injury
Treatment and rehabilitation

ELECTROTHERAPY

Electrotherapy I (Low & Medium Frequency)

Electrotherapy II (High Frequency Laser & Actinotherapy)

Examination at the end of : V Semester Instruction hours: 350

COURSE DESCRIPTION

In this course the student will learn the principles, technique, and effects of electrotherapy as a therapeutic modality in the restoration of physical function.

COURSE OBJECTIVES

The objective of this course is that after 350 hours of lectures, demonstratiosn, practicals and clinics the student will be able to list the indications and contra-indications of various types of electrotherapy, demonstrate the different techniques, and describe their effects.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

INTRODUCTORY PHYSICS

DESCRIBE the following

A. Electricity:

1. Definition and types.

2. Therapeutic uses.

3. Basic physics.
4. Working.
5. Importance of currents in treatment.

B. Static Electricty

1. Production of electric charge.
2. Characteristics of a charged body.
3. Characteristics of line soft forces.
4. Potential energy and factors on which it depends.
5. Potential difference and E.M.F.

C. Current Electricity:

1. Units of Electricty: Farad, Volt, Ampere, Coloumb, Watt.
2. Resistance: In series & in parallel.
3. Ohm's law and its application to DC and AC currents
4. Potentiometer: Construction and working
5. Fuse: Construction, working and application.
6. Transmisstion of electrical energy through solids, liquids, gases and vacuum.
7. Direct current:
   a. Definition
   b. Physiological and chemical effects.
   c. Therapeutic and polar effects.
   d. Dangers of DC: Shock, safety precautions and management.
8. Burns: Electrical & chemical; Prevention & management.
9. Condensers: Definition, Principle, Types: Construction and working, capacity and uses.

10. Alternating current.
    a. Faradism
    b. Surged Faradism.
    c. Physiological effects.
    d. Therapeutic uses.

D. Magnetism:
1. Definition
2. Properties of magnets.
3. Electro - magnetic induction.
4. Transmission by contact.
5. Magnetic field and magnetic forces.
6. Magnetic effects of an electric field.

E. Moving coil milliameter: Construction, working and uses

F. Voltmeter:

G. Trasnformer:
1. Definition
2. Types
3. Principle
4. Construction
5. Eddy current
6. Working uses

H. Chokes:
1. Principle
2. Construction and working
3. Uses

I. Electric valves of thermionic valves:
1. Types: Diode, Triode, Double anode diode.
2. Principles of Thermionic valves.

3. Construction and working of different valves.
4. Uses.

J. Metal oxide rectifier:

1. Definition.
2. Construction
3. Working
4. Uses

K. Ionisation:

1. Theory
2. Effects of various ions
3. Techniques of medical ionisation and surgical ionisation.

LOW FREQUENCY

A. Interruped galvanic current:

1. Types of frequencies - low and high
2. Types of duration - short and long

B. Effects of interrupted galvanic current on innervated and denervated muscles.

C. Characteristics of stimulating current:

1. Type
2. Duration
3. Shape
4. Frequency

D. Threshold of stimulation:

1. Rheobase
2. Chronaxie
3. Masking

E. Physiological effects of IG current, chemical and therapeutic effects.

F. Electrodiagnostic tests as follows:

1. Strength duration curves:
   a. Definition
   b. Type of Current required
   c. Shape
   d. Frequency
   e. Procedure
2. F.G. Test
3. Fatigue test
4. Outline of EMG

G. Characteristics of normal and denervated muscle.

H. Peripheral nerve lesions: Neuropraxia, Axonotmesis, Neurotomesis. Describe clinical symptoms and signs, aims in treatment. Methods and selection of currents in different type of lesions.

I. Selection of current: Differentiate between the type of current, duration, shape & frequency of current used in stimulating nerve and muscle.

HIGH FREQUENCY

A. Define electricity : Discuss its properties, briefly describe the types of electricity - static, current.

B. Magnetism: Discuss briefly :
   1. Nature - molecular theory.
   2. Properties
   3. Magnetic effect of an electric current.

C. Define electromagnetic induction. Discuss:
   1. Principles, construction & types of transformers.
   2. Choke coil.

D. Condensers. Define and discuss:
   1. Principles
   2. Measurement
   3. Factors
   4. Construction

5. Field between condensers
6. Charging and discharging
7. Discharge through inductance & capacitive resistance

E. Valves. Describe :
1. Types
2. Construction
3. Function (illustrate with aid of diagram)

F. Rectifiers: Discuss briefly.

G. Fuse and grid - ex plain with diagram the working and use of these two.

H. Discuss the various devices used in regulating intensity of current.

I. Define oscillation. What is "capacitance" and "inductance"? Give an example of an oscillating system:
1. What is the frequency of oscillating.
2. What do you mean by damping of oscillation.
3. How does transfer of energy between 2 circuit take place.

J. Radiation energy end its properties (discuss in brief)

K. Electro magnetic waves and its properties (discuss in brief)

L. Physiological and therapeutic effects of HF (discuss in brief)

SHORT WAVE DIATHERMY

DESCRIBE THE FOLLOWING

A. Properties of H.F. currents
1. Sustained and Unsustained.
2. Damped and undamped.
3. Impedance
4. Define nodes and Antinodes. Explain, with examples, the fields, set up, etc.
5. Define wavelength.

B. Types of high freq. currents (in brief)

C. Production of H.F currents :
1. Principles.
2. Construction of apparatus with diagram.

3. Tuning of machine
4. Regulation of current.

D. Methods :
1. Condenser field.
2. Cable method.
3. Effects of above methods

E. Physiological and therapeutic effects of S.W.D

F. Technique of Application :
1. Testing machine.
2. Preparation of patient.
3. Types of electrodes.
4. Position and size to electrodes
5. Leads.
6. Application of current.
7. Dosage.

G. Specific requirement - application of :
1. Condenser field method.
   a. Spacing - need & type.
   b. Position
   c. Application
   d. Size of electrode.
2. Cable method - type of application.

H. Dangers and precautions

I Pulsed diathermy : Indications and contra - indications.

ACTINOTHERAPY

DESCRIBE THE FOLLOWING :

BASIC PHYSICS (Part I)
1. Define heat and temperature (in brief)
2. Physical effects of heat - (in brief)
3. Transmission of heat (in brief)
4. Sources of therapeutic heating and its physiological effects.
5. Radiantion energy and its properties.
6. Electromagnetic spectrum - production and its properties.
7. Laws governing radiation.

8. Skin.
   a. Structure
   b. Depth of penetration
9. Discuss in brief piezo - electric effect.

INFRA RED

A. 1. I.R. rays - wavelength and frequency.
   2. Types of generators and its working.
   3. Physiological effects.
   4. Therapeutic effects and uses.

B. Technique of Irradiation
   1. Choice of apparatus.
   2. Preparation of patient.
   3. Arrangement of lamp.
   4. Application of treatment.
   5. Duration and frequency.

C. Dangers - briefly discuss

D. Indications & contra - indications

E. Therapeutic uses, Physiological effects.

MICROWAVE DIATHERMY (M.W.D.)

A. 1. Production - explain with diagram.
   2. Explain how the magnetron works
   3. Application of M.W.D.
   4. Physiological effects.
   5. Therapeutic effects.

B. Technique of application - dosage (in detail)

C. Indications & contra - indications

D. Dangers

PARAFFIN WAX & MOIST HEAT

1. Method.
2. Effects and indications.
3. Circulatory effects.
4. Effects on sensory nerves.
5. Effect on skin.

6. Indications& contra indications.
7. Its use in various conditions.

ULTRASONIC THERAPY

1. What is U.S. therapy
2. Explain with the aid of diagram production of U.S.
3. Properties of U.S
   a. reflection.
   b. transmission.
   c. absorption (in detail)
4. Properties of ultrasonic field : depth of penetration in relation to (a) intensity and (b) frequency.
5. Effect on tissues :
   a. thermal
   b. mechanical
   c. Chemical and biological
6. Coupling media
7. Pulsed U.S
8. Uses of U.S
9. Techniques of application :
   a. Methods
      - direct contact
      - water bath
      - water bag
   b. Dosage in acute and chronic conditions
   c. Indications & contra - indications.

CYROTHERAPY

1. Physical Principles
2. Physiological effects and uses
   a. Circulatory response and uses.
   b. Normal response and uses.
3. Techniques of application :
   a. Preparation
   b. application
   c. modification
4. Methods :
   a. Ice pack
   b. Ice towel

c. immersion
d. Ice cube

5. Indications & contra- indications to treatment.

INTERFERENTIAL THERAPY (M.F)

1. Define interferential current.
2. Discuss Production of medium frequency currents
3. Physiological and contra - indications.
5. Dangers.
6. Techniques of treatment.
7. Therapeutic uses.

T.E.N.S. (L.F)

A. 1. Define TENS.
2. What is the principles involved
3. Working of TENS (in brief)
   a. frequency, output etc.
   b. Placement of electrodes.
   c. Type - monophasic.

B. Basic physiology :
1. Theory of pain :
   a. Specificity theory
   b. Pattern theory
   c. Gate control theory
2. Cutaneous innervation

C. Basic Anatomy

D. Indications& contra - indications

LASER (H.F.)

Define Laser and briefly outline its therapeutic indications, contra - indications, efficacy, and precautions advisable.

ULTRA VIOLET RADIATION (H.F.)

1. a. Physics
   - Electric arc
   - Process of ionisation
   - Transmission of current through gages
   b. Types of lamps

2. a. Construction of lamps
   - High pressure mercury vapour lamps
   - Kromayer lamp

   b. Tridymite formation
   c. Cooling
   d. Spectrum - mercury vapour lamps (in brief)
   e. Fluorescent tube for U.V. production
   f. PUVA apparatus
   g. Care of lamp

3. Physiological and Therapeutic effects - in detail
   Photosensitization - in brief.

4. Indication, contra - indications and dangers.

5. Technique of application :
   a. Test dose
   b. Local treatment
   c. General irradication
   d. Treatment

6. Conditions (common) in which above treatment given.

7. Sensitisers (in brief)

8. Filters

9. Comparison between Infrared radiation & Ultra violet radiation

Miscellaneous :

A. Erythema - Development, Appearance, Duration
B. Wavelength
C. Penetration
D. Pigmentation
E. Tolerance
F. Practical on the following conditions.
   1. Acne - shoulder and chest.
   2. Acne - Back and face
   3. Psoriasis
   4. Allopecia arieta and totalis.
   5. Ulcer - non infected, infected.
   6. Pressure - sore.

7. Rickets.
8. General body bath.

EVALUATION

EMG BIOFEED BACK

1. Cathode - Ray - Oscilloscope
2. Taub's Theory of "Learned Nonuse" mechanism
3. Definition of EMG Biofeed back
4. Principles of EMG Biofeed back
   a) Objective documentation of covert residual function
   b) Process of shaping
   c) Process of motivation
5. Sensory Theory
6. Motor Theory
7. Role of Biofeedback in Control of Movement
8. Biofeedback devices
   (a) EMG (or) Myoelectric Biofeedback
   (b) Biomonitor (or) Myotimer
   (c) Bioconvertor
   (d) Pressure transducer
   (e) Motion feedback Goniometer
9. Methodology
   (a) Preparation
   (b) Prevention of Artifacts
   (c) General information
10. Application of Biofeedback
11. Indication for Biofeedback

BASIC OF PHYSICS INCLUDING RADIOLOGY 10 Hrs

1. Radiation and auto - Radio activity - Radiation units X ray production and properties - Quality and intensity of X-ray - Interaction of radiation with human body - x-ray films - Radiographic Image Quality - Exposures to patients - Radiation safety and quality control.

2. Detailed Radiological Anatomy of Joints and related regions - both in normal and in stress - Vertebral column; Lumbo - sacral, knee joint, ankle joint arches of foot etc.,

3. Role of Physiotherapy in the management of cancer patients undergoing treatment.

VI Semester: **PROJECT WORK / CASE STUDY**

OBJECTIVES

This assignment of clinical study / review of literature is designed to develop the aptitude among students towards further reading and selecting references and present a written dissertation, or conduct a comparative study of the value / efficacy of a physiotherapy procedure in selective group of patients and normal subjects or justify the chosen procedure.

Thus the student will submit to the University a written dissertation / case study report through institution of study. The student will be expected to submit above project work / case study report at the commencement of eighth semester of the four and half years B.P.T. degree course.

GUIDANCE:

Each student will receive guidance from the physiotherapy teacher towards referring relevant literature / collect required data and discuss them with the project guide periodically.

After correction and edition of handwritten manuscripts by the project guide, the student will compile his/ her study / work into a manual form for submission to the institution of study.

Under case study, the student may study the patients in clinical areas, consolidate the findings and discuss them with the project guide before compiling into final shape.

EVALUATION / SCORING :

Total Marks for Project work / case study record

Internal Assessment	External Assessment	Oral	Total
50	25	25	100

External Assessment: 25 Marks

Note: Project evaluation by the external Physiotherapy examiner will carry 25 marks.

Oral : 25 Marks

The two Physiotherapy examiners (one external and one internal examiner) will conduct oral examination conjointly and score for 25 marks.

Thus project evaluation marks offered by the external Physiotherapy examiner is added with the oral examination marks and collectively entered as university marks scored bythe student.

Internal Assessment : 50 Marks

MODE OF EVALUATION FOR INTERNAL ASSESSMENT :

The topics for case Study / project work are evaluated by a physiotherapy teacher who has not been the guide for the student. The internal assessment will carry a maximum of 50 marks.

UNIVERSITY EXAMINATION :

The Project work / case study record examination will be conducted by the university in a oral examination pattern with two physiotherapy examiners (one internal physiotherapy examiner and one external physiotherapy examiner) conducting the orals.

The student will be expected to present at University Viva-Voice exam, the project work / discuss the cases studied and also answer when questioned by the examiners.

A student must earn a minimum of 50% of marks for passing the project work / case study at the University examinations.

MODE OF SUBMISSION OF PROJECT WORK / CASE STUDY TO THE UNIVERSITY :

As done with other allied health science courses (Occupational Therapy, Speech Therapy, etc.) two copies of the project work done by the student be certified by the project guide as a bonafide record of project work done and be forwarded to the University by the Principal of the College / Head of the Institution atleast 1 month before the commencement of Theory Examination, at the University exam.

Community Medicine

Examination at the end of : VI Semester Instruction hours : 55

COURSE DESCRIPTION

This course will enable students to understand the effects of the environment and the community dynamics on the health of the individual.

COURSE OBJECTIVES

The objective of the course is that after 55 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate an understanding of the influence of social and environmental factors of health of individual and society.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral and practical internal evaluation) the following objectives of the course.

A. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases.

B. Outline the various measures of prevention and methods of intervention - especially for diseases with disability.

C. Outline the national care delivery system and the public health administration system at central and state Government level.

D. Outline selective national health schemes.

E. Define occupational health and list methods of prevention of occupational hazards.

F. Outline the Employees State Insurance scheme and its benefits.

G. Describe the social security measures for protection from occupational hazards, accidents, diseases, and workman's compensation act.

H. Outline the objectives and strategies of the national Family Welfare Programme.

I. Define community based rehabilitation, institution based rehabilitation. Describe the advantages and disadvantages of institution based rehabilitation. Describe the advantages and disadvantages of institution based and community based rehabilitation.

J. Describe the following communicable diseases with reference to water reservoir, mode of transmission, route of entry and levels of prevention. a. Poliomyelitis, b. Meningitis, c. Encephalitis, d. Tuberculosis, e. Filariasis, f. Leprosy, g. Tetanus & h. Measles.

K. Describe the Epidemiology of Rheumatic heart disease, cancer, Chronic degenerative disease and cerebrovascular accident.

L. Outline the influence of nutritional factors such as Protein Energy Malnutrition, Anaemia, Vitamin deficiency and minerals on disability.

M. List the principles of health education, methods of communication, and role of health education in rehabilitation service.

N. Define the role of community leaders and health professionals in health education.

O. Outline the role of international health agencies in rehabilitation of the disabled

EVALUATION

YOGA AND HEALTH — 10 Hours

Introduction
Pranayama and breathing exercises
Asanas
Therapeutic effects of Asanas

SPORTS PHYSIOTHERAPY — 20 Hours

Introduction
Physical fitness
Sports injures - prevention
Management of common injuries
Sports physiotherapy
Nutrition

Basic Acupuncture (non exam) — 5 Hours

Topics of Instruction for Acupuncture

Introduction (5 Elements)
Classification of meridians
The command points
Meridians and their functions
Needle Therapy - Indications and contra indications

ORTHOPAEDICS FOR PHYSIOTHERAPISTS

Examination at the end of : Instruction hours : 55
VII Semester

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the orthopaedic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their under-standing of the limitations imposed by orthopaedic pathology on the functioning of the individual.

COURSE OBJECTIVES

The objective of this course is that after 55 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A . INTRODUCTION TO ORTHOPAEDICS

Introduction to orthopaedic terminology, types of pathology commonly dealt with, clinical examination, common investigations and out line of non - operative & management.

B. PRINCIPLES OF OPERATIVE TREATMENT

List indications, Contra-indications and briefly outline principles of : Arthrodesis, Arthroplasty, Osteotomy, Bonegrafting and Tendon - Transfers.

C. SPRAINS AND MUSCLE STRAINS

List common sites of sprains and muscle strains and describe the clinical manifestations and treatment.

D. FRACTURES & DISLOCATIONS : General Principles Outline the following:

1. Types of Fractures including patterns, open and closed fractures and fracture - dislocations.

2. Difference between dislocation & subluxation.
3. General & Local signs & symptoms of fractures, dislocations.
4. Principles of management of fractures, dislocations.
5. Prevention & treatment of complications including : Fracture - diseases, Volkmann's ischaemic contracture, Sudek's Atrophy, Carpal Tunnel syndrome, Myositis -ossificans, and shoulder - hand syndrome.
6. Fracture healing.

E. UPPER LIMB FRACTURES & DISLOCATIONS

1. Enumerate major long bone fractures and joint injuries.
2. Briefly describe their clinical features, principles of management and complications.

F. LOWER LIMB FRACTURES & DISLOCATIONS

1. Enumerate major long bone fractures and joint injuries.
2. Briefly describe their clinical features, principles of management and complications.

G. SPINAL FRACTURES AND DISLOCATIONS

Outline the mechanism, clinical features, principles of management and complications of spinal injuries.

H. RECURRENT DISLOCATIONS

Outline the mechanism, clinical features principles of management and complications of recurrent dislocation of the shoulder and patella.

I. AMPUTATIONS

1. Classify amputations, list indication for surgery.
2. Outline pre - operative, operative and prosthetic management.
3. Outline prevention and treatment of complications.

J. BONE & JOINT INFECTIONS

Outline the etiology, clinical features, management and complications of: septic arthritis, osteomyelitis, Tuberculosis (including spinal T.B)

K. BONE JOINT TUMORS

Classify and outline the clinical features, management and complications of the following (benign / malignant bone and joint tumours, osteoma, osteosarcoma, osteoclastoma, Ewing's sarcoma, multiplemyeloma.

L. CHRONIC ARTHRITIS

Outline the pathology, clinical features, mechanism of deformities, management and complications of : Rheumatoid arthritis, Osteoarthritis of major joints and spine, Ankylosing spondylitis.

M. LOW BACK ACHE, PAINFUL ARC SYNDROME, TENDONITIS FASCITIS & SPASMODIC TORTICOLLIS

Outline the above including clinical features and management.

N. SPINAL DEFORMITIES

Classify spinal deformities and outline the salient clinical features, management and complications.

O. POLIOMYELITIS

Describe the pathology, microbiology, prevention, management and residual problems of polio, outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfers.

P. CONGENITAL DEFORMITIES

Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (Radial club hand and femoral, tibial and fibular deficiencies, meningomyelocele, Arthogryposis multiplex congenita, osteogenesis imperfecta.)

Q. PERIPHERAL NERVE INJURIES

Outline the clinical features and management, including reconstructive surgery of:

1. Radial, median and ulnar nerve lesions.
2. Sciatic and lateral popliteal nerve lesions.
3. Brachial Plexus injuries including Erbs Palsy Klumpke's Paralysis, crutch palsy.

R. HAND INJURIES

Outline clinical features, management and complications of: Skin and soft tissue injury - Tendon injury, Bone and joint injury.

S. LEPROSY

Outline clinical features, management and complicatioins of neuritis, muscle paralysis, trophic ulcer of hand & feet deformities.

EVALUATION

NEUROLOGY FOR PHYSIOTHERAPISTS

Examination at the end of : VII Semester Instruction hours : 55

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the neurological conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by neurological pathology on the functioning of the individual.

COURSE OBJECTIVE

The objective of this course is that after 55 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical, internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. NEUROANATOMY

Review the basic anatomy of the brain and spinal cord including : Blood supply of the brain and spinal cord, anatomy of the visual pathway, Connections of the cerebellum, and extrapyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cord, the brachial and lumbar plexuses, and cranial nerves.

B. NEUROPHYSIOLOGY

Review in brief the Neurophysiological basis of : tone, disorder of tone posture, bladder control, muscle contraction, movement and pain.

C. CLINICAL FEATURES & MANAGEMENT

Briefly outline the clinical features and management of the following Neurological Disorders :

1. Congenital childhood disorders.
   a. Cerebral palsy.
   b. Hydrocephalus.
   c. Spina Bifida.
2. Cerebrovascular accident.
   a. General classification; thrombotic, embolic, haemorhagic & inflammatory strokes.
   b. Gross localisation and sequelae.
   c. Detailed rehabilitative programme.
3. Trauma - broad localisation, first aid and management of sequelae of head injury and spinal cord injury.
4. Diseases of the spinal cord.
   a. Craniocerebral junction anomalies.
   b. Syringomyelia.
   c. Cervical and lumbar disc Pesions.
   d. Tumours.
   e. Spinal archnoiditis.
5. Demyelinating diseases (central and peripheral)
   a. Guillain - Barre syndrome.
   b. Acute disseminated encephalomyelitis.
   c. Transverse myelitis.
   d. Multiple sclerosis.
6. Degenerative disorders.
   a. Prakinson's disease.
   b. Dementia.
7. Infections
   a. Pyogenic Meningitis sequelae.
   b. Tuberculous infection of central nervous system.
   c. Poliomyelitis.
8. Diseases of the muscle : classification, signs, symptoms, progression and management.
9. Peripheral nerve disorders.
   a. Peripheral nerve injuries : localisation and management.
   b. Entrapment neuropathies.
   c. Peripheral neuropathies.

10. Miscellaneous.
    a. Epilepsy : Definition, classification and management.
    b. Myasthenia Gravis; Definition, course and management.
    c. Intracranial tumours : Broad classification, sings and symptoms.
    d. Motor neuron disease.

D. ASSESSMENT

Clinical assessment of neurological function to be taught through bedside or demonstration clinics spread out over at least 5 sessions.

1. Basic history taking to determine whether the brain, spinal cord of peripheral nerve is involved.
2. Assessment of higher mental function such as orientation, memory, attention, speech and language.
3. Assessment of cranial nerves.
4. Assessment of motor power.
5. Assessment of sensory function: touch, pain and position.
6. Assessment of tone : spasticity, rigidity and hypotonia.
7. Assessment of cerebellar function.
8. Assessment of higher cortical function : apraxia, etc.
9. Assessment of gait abnormalities.

EVALUATION

CARDIO - RESPIRATORY FOR PHYSIOTHERAPISTS

Examination at the end of : VII Semester instruction hours : 55

COURSE DESCRIPTION

Following the basic science and clinical science and clinical science course, this course introduces the student to the cardio - thoracic conditions which commonly cause disability. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardio - thoracic pathology on the functioning of the individual.

COURSE OBJECTIVES

The objective of this course is that after 55 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopaedics conditions causing disability and their management.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. ANATOMY AND PHYSIOLOGY

1. Describe in detail the anatomy of the lungs, bronchi and bronchopulmonary segments.

2. List the relationship of the bony thorax and lungs to each other and to the abdominal contents.

3. Briefly describe the variations in the bony cage in the following conditions :

   a. Cervical rib
   b. rickets - rickety rosary
   c. Pigeon chest
   d. Funnel chest
   e. Scoliosis
   f. Kyphosis

4. Describe the movement of the thorax : Bucket handle, pump hand.

5. List the muscles of respiration involved in inspiration and expiration (including accessory muscles that are involved).

6. Describe in brief the anatomy of the heart and its blood supply; Briefly outline the electrical activity of the myocardium and normal ECG.

7. Describe the physiological control of respiration and highlight the function of the medullary, pontine respiratory centres and peripheral chemoreceptors.

8. Describe the mechanism of maintenance of blood pressure.

9. Describe in detail the cough reflex.

10. List the mechanical factors involved in breathing. Describe briefly factors, affecting lung compliance and airway resistance.

11. List the factors affecting diffusion of oxygen and carbon dioxide in the lungs. Explain Ventilation, perfusion and their interrelationship.

12. Outline the energy expenditure of various common activity of daily living.

13. Pulmonary function assessment : Briefly describe the pulmonary function tests and their use, briefly outline the value of blood gas analysis.

14. Briefly outline the principles of cardio vascular stress testing.

B. CARDIAC SURGERY

1. List the Cardiac conditions, required closed heart surgery and briefly describe the following :

Acquired heart diseases (Mitral stenosis and Aortic stenosis), Congenital heart diseases (patent ductus arteriosus, Coarctation of aorta)

2. List the cardiac conditions, required open heart surgery and briefly describe the following : Congenital (Atrial septal defect, ventricular septal defect, pulmonary stenosis, Tetralogy of Fallot, Transposition of great vessels and A.V. malformation), Acquired (Mitral stenosis, Mitral regurgitation, aortic stenosis & regurgitation, coronary disease)

C. THORACIC SURGERY

1. Describe very briefly the clinical features and management of the following : Fracture rib, Flail chest, Stove - in chest,

pneumothorax, Haemothorax, Haemopneumothorax, Lung confusion & laceration, Injury to Heart, Great vessels & Bronchus.

2. List the causes of empyema and its treatment. Describe briefly Intercostal drainage, Rib resection, Decortication and window operation.

3. List the manifestation of pulmonary Tuberculosis and briefly describe tuberculosis, Bronchiectasis sicca, Bronchostenosis, Massive haemoptysis, Empyema & Destroyed lung.

4. Outline briefly the clinical features and management of the following suppurative lesions of the lung : Bronchiectasis lung abscess, Bronchopneumonia & Aspergillosis.

5. Outline briefly the clinical features and management of carcinoma lung.

6. Outline the extent, use and complication of the following surgical incisions : Anterolateral thoracotomy, Posterolateral thoracotomy and Median sternotomy.

7. Describe the post operative management of patients with: Segementectomy,Lobectomy, Pneumonectomy, & Tracheostomy.

8. Outline briefly the principles of various ventilator and their use.

9. Describe in detail the preoperative assessment and management of a patient posted for thoracotomy.

10. Describe in detail the following post operative procedures: management of endotracheal / endonasal tubes, tracheal suction, weaning the patient from the ventilator extubation technique & post extubation care.

11. Describe the principles of Cardio - pulmonary resuscitation: Cardiac massage, artificial respiration defribrillators and their use.

D. MISCELLANEOUS

1. Briefly outline the management of a patient after a myocardial infarct.

2. Briefly outline the management of a patient with chronic obstructive airway disease.

EVALUATION

Physiotherapy in Orthopaedic Conditions

Examination at the end of : VIII Semester Instruction hours : 120

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical orthopaedics with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to musculoskeletal pathology

COURSE OBJECTIVES

The objective of this course is that after 120 hours of lectures & demonstrations, praticals and clinics, the student will be able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore musculoskeletal function.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. Define fracture, Review the types, the signs and symptoms, first - aid measures, principles of immobilisation and healing of fracture.

B. Describe the PT assessment of a patient with a fracture during the immobilisation and post immobilization periods.

C. List the aims of PT management in a patient with a fracture.

D. Review manual, mechanical, skin, skeletal, lumbar and cervical traction.

E. Describe the methods of mobilization of a patient / extremity after healing of a fracture.

F. Review the mechanism of injury. Clinical features, treatment and complications and describe the PT management and home programme for the following injuries: 1. Fracture clavicle, upper 1/3 of humerus. 2. Fracture head of radius, olecranon process, shaft of radius and ulna, Colles'. 3. Fracture scaphoid. Bennett's and metacarpal neck. 4. Fracture proximal tibia, both bones of leg, Potts' fracture and Dupeytrens contracture, calcaneum and metatarsal (march).6. Dislocation of (a) Hip (Congenital), Traumatic Posterior & Central (b) Shoulder (Anterior & Recurrent (c) Patella.

G. Describe briefly the general and PT assessment of the vertebral column:

Subjective history; Occupation, symptoms, motor problems objective examination: (1) Observation - body type, musculature deformity & fair (2) palpation - Temperature, swelling, bony prominence, local tenderness. (3) Postural evaluation using a plumb line (4) Active movement: the vertebral column - flexion extension, lateral flexion and rotation (5) Specific tests - straight leg raising, proneknee bend, passive neck flexion Kemig's sign (6) Proximal joints of pelvic and shoulder girdles (7) Neurological tests - muscle strength, sensation and reflexes.

H. Review cervical and lumbar spondylosis, spondylolisthesis, TB spine and spinal fracture. Outline PT assessment, PT aims and management and a detailed home programme.

I. List the common postural abnormalities affecting the spine. Review kyphosis, Lordosis and Scoliosis; Outline PT assessment, and PT aims and management along with home programme.

J. Review the clinical features and describe the PT management of Ankylosing spondylitis.

K. Intervertebral Disc Prolapse: Review basic anatomy and biomechanics of the spine. Review causes, sign, symptom and investigations done for IVDP. Review the different types and degrees of IVDP. List PT aims and demonstrate treatment techniques.

L. Define the following terms, review their etiology & clinical features and describe their treatment - strain, sprain (Medial Ligament of knee, and Lateral ligament of ankle), bursitis (Subacromial & Prepateller) synovitis, tendonitis, tenosynovitis, fibrositis, fibromyositis, rupture and avulsion of tendons (Tendoachillis & Quadriceps) tennis elbow, torticollis, tendonitis (supraspinatus & bicepral), periarthritis shoulder and shoulder - hand syndrome.

M. Review upper & lower limb and spinai orthoses and prostheses. Describe the principles and function of each list indications and Contra-indications, advantages and disadvantages of each. Demonstrate the fabrication of simple hand and foot splints out of POP.

N. Review the indications and principles of ampulations of the upper and lower limbs and describe the PT management and training of amputees before and after prosthetic fitting. Review immediate post - operative prosthetic fitting and list its advantage.

O. Define poliomyelitis and review the etiology, clinical features, staging and medical management. Outline PT assessment during the acute, subacute and chronic stages. Describe PT aims and demonstrate treatment techniques, List the common deformities seen in polio and methods of preventing them. Review common reconstructive tendon transfer operations in polio and its PT management. Review the common orthoses used, and describe the technique of measurement for a KAFO and check - out along with detailed home programme including care of the orthosis.

P. Define cerebral palsy. Review its causes, sings, symptoms, classification and common deformities. Outline PT assessment, aims and management along with home programme. Review common surgical correction and its PT management.

Q. Define Rheumatoid Arthritis. Review its signs, symptoms radiological features. pathology. common deformities, medical and Surgical management. Describe the PT assessment, aim and management in the acute and chronic stage and detailed home programme.

R. Define Osteoarthritis. Review its signs, symptoms radiological features. pathology. common deformities, medical and Surgical management. Describe the PT assessment, aims and management and detailed home programme with special emphasis on osteoarthritis of hip, knee, ankle and shoulder joints.

S. Define leprosy. Review the incidence and mode of transmission of leprosy. Review the clinical features, common deformities and Medical management . Review the tendon transfer operations and describe PT management before and following tendon transfers. Describe the risk of anesthetic limbs and outline its care to prevent complications. Review planter ulcer in leprosy and its management (including foot wear.)

T. Describe the different degrees of norms and review relevant first aid measures. Outline the PT assessment of burns as follows: degree and percentage of burns, presence of oedema and aherent skin , ROM of involved joints, muscle power, contractures, deformities, altered posture and chest movements. Review Medical and Surgical management including skin grafting Describing the PT aims and management of a patient with burns along with home programme.

EVALUATION

Physiotherapy in Neurological Conditions

Examination at the end of : VIII Semester Instruction hours : 120

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical Neurology, with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

COURSE OBJECTIVES

The objective of this course in that after 120 hours of lectures & demonstrations, praticals and clinics, the student will be able to identify disability due to neurological dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore neurological function.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A. REVIEW OF NEUROANATOMY AND PHYSIOLOGY:

Review the structure and function of a) neuron b) synapse c) supporting tissue. Review the organisation and function of a) cerebral hemispheres b) cerebellum c) spinal cord d) peripheral nerves e) pyramidal system f) extraphyramidal system. Review the factors influencing alpha motor neuron activity. Review the neurological basis of muscle tone and movement and demonstrate the following: a) hypotonia b) hypertonia - spasticity and rigidity c) ataxia d) athetosis e) chorea.

B. PRINCIPLES OF ASSESSMENT: Review a) skill in history taking b) assessment of higher functions, cortical sensations, cranial nerves, dorsal column sensation and pain & temperature sensations c) assessment of motor function : grading of muscle power, assessment of range of movement, balance and coordination d) assessment of superficial and deep reflexes e) assessment of reflex maturation in terms of stimulus, position negative / positive

reactions and their significance f) assessment of gait - both normal and abnormal (spastic, ataxic and paralytic patterns) Emphasis should be placed on teaching accurate assessment techniques and various recording methods e.g.. colour coding on body charts, graphs etc.

C. PRINCIPLES OF TREATMENT : Review the treatment principles as follows:-

a. Sensory re - education: hypersensitivity, hyposensitivity and anesthesia.

b. Treatment of altered tone : hypertonicity and hypotonicity

c. Motor re - education : Strengthening exercise, coordination exercise, joint mobilisation exercise, use of equilibrium and labyrinthine systems, use of PNF patterns, controlled sensory stimulation to bias the spindle cells e.g.. vibration, tactile, ice etc. use of stretch to elicit movement (facilitation), light joint compression (inhibition) use of reflex activity to improve motor function, physlogenic sequence of motor behavior.

d. Treatment to improve function : Free exercise, gait training with and without aids, activities of daily living, mat exercise, exercise for recreation.

e. Review the use of ambulatory aids in neurological conditions : in spastic upper motor neuron lesions, in lower motor lesions, in dorsal column dysfunction and cerebral dysfunction.

f. Review the use of splints and braces in spastic upper motor neuron and in flaccid lower motor neuron lesions, in both upper and lower limbs.

g. Review the management of chronic pain in neurological conditions with respect to the type of pain, treatment modalities available, selection criteria for each modality and possible complications.

D. CEREBRAL PALSY: Define cerebral palsy and describe the topographical classification - monoplegia, diplegia, paraplegia

hemiplegia & tetraplegia. Describe types of cerebral palsy: Visual, hearing, speech and intelligence. Assess reflex activity at different levels : Cortical, mid brain, brain stem, spinal. Assess developmental milestones from birth to five years. Assess functional ability : Prone to supine (rolling) Coming to sitting, quadripod, crawling, kneeling, kneel - stand, stand with support and walking. Examine for contractures as follows: hip flexion, adduction, internal rotation: knee flexion: ankle plantar flexion, inversion / eversion: flexion contracture of elbow, wrist & fingers and spinal deformities.

Treatment - Describe and demonstrate the treatment motor dysfunction : Passive movement, stretching of soft tissue tightness, use of ice to reduce spasticity, positioning the child to prevent soft tissue contractures, to inhibit abnormal reflexes and to facilitate volitional movement. Describe and demonstrate techniques of carrying of different types of CP children, encouraging bimanual activities in different starting positions like prone. sitting and standing and activities across the midline. Describe appropriate home programmes for positioning the child, handling them and assisting improvement of function. Introduction to treatment techniques: Bobath, Rood.

E. PERIPHERAL NERVE LESIONS: Identify types of peripheral nerve lesions. Assess the motor system: Specific muscles. range of motion, active and passive ranges, muscle girth. Assess sensory system: touch, pain, temperature, paraesthesia, nerve reverberation. Assess autonomic function: sweating, skin condition, soft tissue atrophy. Treatment: describe muscle reeducation techniques: electrical stimulation (selection of current): active, assisted, resisted movements: Passive and self assistive stretching and massage. Describe sensory reeducation and pain relief by various modalities. Describe the common splints used in peripheral nerve lesions. static, dynamic and functional; isolating muscle contraction, specific muscle strengthening.

Post - operative management: Pressure bandaging & muscle reeducation after transfer. Describe a home programme.

F. MUSCULAR DYSTROPHY Describe stages of the disease: ambulatory, wheelchair and bed stages. Describe significance of

exercises: resisted, active and free. Identify and assess common contractures and deformities. Assess range of motion and muscle power. Assess functional ability.

Demonstrate treatment programme for strengthening weak muscles: active movements and hydrotherapy. Increase range of motion by suspension therapy, powder board, passive stretching positioning etc. Demonstrate gait training with appropriate orthoses, Describe management of chest complication: breathing exercises, chest percussion, drainage of secretions and assisted coughing.

G. PARKINSONISM: Review the natural history, course and prognosis of the disease. Identify and assess problems in posture, sitting, kneeling and standing balance, voluntary and automatic movements, rigidly, tremor and gait. Assess also hearing, speech and finger dexterity. Describe disability grading according to Yulu

Demonstrate treatment: postural awareness and relaxation training, gait training techniques: associated reactions, heel - toe gait, overcoming obstacles, start and stop on command, turning and walking backwards, forwards and sidewards. Describe an appropriate home exercise programme.

H. SPINAL CORD LESIONS: Describe types of spinal cord lesions. Describe signs of tract and root interruptions. Describe positioning of the patient in acute spinal cord injury. Describe assessment of the motor system: tone, power of specific muscles, range of motion and limb girth Describe assessment of sensory system and reflexes. Describe assessment of functional ability and balance reactions in appropriate cases. Describe assessment of respiratory function. Muscles of respiration, coughing ability and vital capacity. Describe how the level of lesion is ascertained.

Treatment: Describe the stages of immobilization & stage when weight bearing is allowed, Describe spinal orthosis.Demonstrate motor reeducation programmes and programme forrespiratory care in high level paraplegics and quadraplegics. Demonstrate progressive amputation, mat exercises, various strengthening programmes, methods of decreasing spasticity and improving sitting

balance. Demonstrate paraplegic gaits and reeducation in functional activities: transfers and protective falling. Describe common ambulatory aids used in paraplegics and commons plints used in tetraplegics. Describe the use of hydrotherapy in paraplegics. Describe the concept of team approach in rehabilitation of these patients.

I HEMIPLEGIA Define hemiplegia and identify the following : Sensory disturbance, alteration in tone, loss of selective movement, loss of balance reactions and communications problems.

Treatment: Describe the unilateral and bilateral approaches to treatment. Describe positioning in the supine position, on the affected and on the unaffected sides. Demonstrate activities in the recumbent position: arm mobilization, trunk elongation sapular movement, arm mobilization, trunk elongation, scapular movement, arm elevation, activities for a recovering arm; activities for the lower limb i.e. hip and knee flexion over the side of the bed, knee extension with dorsiflexion, hip control, isolated knee extension.

Mat activities : demonstrate rolling on to affected and unaffected sides, sitting and kneeling. Describe the technique of making a patient sit passively and active assisted in sitting : Demonstrate Transfer Technique. Describe activities in sitting: equal weight transference on both buttocks shuffling on buttocks, weight transfer through arms balance reactions of truck - head. Demonstrate activities in the standing position : standing from plinth, from chair (assisted and independent), weight bearing on affected leg, knee control in standig weight transfers forward, backward and sidewards, gait training and stair climbing. Describe tilt board activities in the lying and sitting positions. Describe additional methods of stimulation using verbal cues, ice, pressure & tapping. Describe management of shoulder pain and shoulder hand syndrome. Identify and describe hemiplegic gait, identify synergy components and abnormal reflex activities.

Demonstrate reeducation of gait: motor relearning techniques functional approach and use of orthosis.

J. CEREBELLAR LESIONS : Identify and assess abnormal tone, decomposition of movement, rapid alternate movements, pleurothotonus, proprioception, dysmetria, posture and gait.

Treatment: Demonstrate exercises for incoordination - Frenkel's and weighted exercises. Demonstrate techniques for reeducation of balance and equilibrium reactions by visual compensation. Describe use of appropriate aids for ambulation depending on the severity of affection - walker, elbow crutches, qudripod, walking sticks, etc.

K. POLIOMYELITIS : Define poliomyelitis and review the stages in the disease - acute, recovery and residual paralysis. Describe treatment in the acute stage: heat, chest care, positioning. Describe the assessment of a patient in the recovery stage: active and passive range of motion, soft tissue tightness, muscle power & Spinal deformities. Demonstrate treatment in the recovery stage: muscle strengthening - progress resistive exercises, active - assisted, active & active - resisted exercises. Describe the role of suspension and hydrotherapy. Describe the treatment of soft tissue tightness by passive stretching, auto stretching Pre - operative assessment of contractures: hip flexion, TA contracture, knee flexion and foot deformities. Describe also assessment of limb length discrepancy and spinal deformities. Review orthotic aids commonly used the management of polio. Describe tendon transfer operations commonly performed. Describe functional retraining for self care, gait training and posture correction.

EVALUATION

Physiotherapy in Cadio respiratory Conditions

Examination at the end of : VIII Semester Instruction hours : 120

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical Cadiorespiratory conditions with the skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to Cadiorespiratory pathology.

COURSE OBJECTIVES

The objective of this course is that after 120 hours of lectures & demonstrations, praticals and clinics, the student will be able to identify disability due to Cadiorespiratory dysfunction, set treatment goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situation to restore Cadiorespiratory function.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluations) the following objectives of the course.

COURSE OUTLINE

A ANATOMY : Review the regional anatomy of thorax; upper respiratory tract - trachea and bronchial tree; lungs and bronchopulmonary segments: muscles of respiration; heart and great vessels : Movements of the chest wall and surface anatomy of lung and heart.

B. PHYSIOLOGY: Review the mechanics of respiration inspiration & expiration, lung volumes, respiratory muscles, compliance of lung and chest wall, work of breathing, dead space gas exchange on lung and pulmonary circulation.

C. GENERAL OVERVIEW: ASSESSMENT - Describe physical assessment in cardio respiratory dysfunction: inspection: Posture (recumbent, erect,): breathing pattern (rate, rhythm, use of accessory muscles): Chest movement (Symmetry, intercostal and disphragmetic components) Chest deformity (Barrel chest, Pigeon

chest): spinal deformity (scoliosis, kyphosis kyphoscoliosis) Sputum, (colour, type, volume, consistency) Cough (types productive / non - productive, presence of a normal cough reflex). Palpation: Tactile and vocal fremitus, mobility of thoracic spine and rib cage. Percussion: dullness and hyperresonance. Auscultation: Normal and abnormal breath sounds.

Measurement: Chest expansion at different levels (axillary), nipple, xiphoid); exercise tolerance (six minute walking test) Post - operative range of motion and muscle assessment.

D. GENERAL OVERVIEW : PHYSICAL TREATMENT

1. Describe indication, goals and procedure of breathing exercises, Describe diaphragmatic breathing, localised basal expansion, apical expansion, specific segmental exercise raising the resting respiratory level.

2. Describe chest mobilisation exercises.

3. Describe relaxation positions for the breathless patient - high side lying forward lean sitting, relaxed sitting, forward lean standing, relaxed standing.

4. Describe controlled breathing during walking and during functional activity.

5. Describe exercise for the breathless patient: exercise tolerance testing and exercise programme.

6. Describe the technique of huffing and coughing, forced expiratory technique, vibratory chest shaking and percussion.

7. Describe technique of Postural drainage, including indications, general precautions and Contra-indications, preparation drainage of individual bronchopulmonary segments, modified postural drainage and continuing postural drainage as a home programme.

8. Outline the history of mechanical respiration, Define the following terms a) Respirator b) Lung ventilator c) Resuscitators d) Bird ventilator e) IPPB f) PEEP g) CPAP h) SIMV i) PEEP. Classify ventilators by third cycling control (volume cycling, pressure

cycling, time cycling and mixed cycling). Describe the principles of operation of commonly used ventilators and outline the use of the following types : i) Bear ii) Bennett iii) Emerson iv) Bird.

9. Outline the principles of Aerosol Therapy. Describe the physical properties of aerosol and their deposition in the alveoli Describe the principles of nebulisers.

10. Outline the principles of humidification therapy and methods of correcting humidity deficits. Describe the principles of operation of pass - over humidifiers and bubble - diffusion humidifiers.

11. Describe techniques of sterile nasopharyngeal and endotracheal suctioning.

E. PHYSIOTHERAPY IN OBSTRUCTIVE LUNG DISEASES:

Assess: Effort of breathing, extent of weeks, pattern of breathing, sputum production, chest deformity, exercise tolerance (Patients Effort Tolerance)

Identify problems: Decreased outflow due to bronchospasm anxiety due to difficulty in ventilation, exhaustion due to increased work of disturbed breathing, Increased secretions which are difficult to remove, decreased exercise tolerance. Demonstrate treatment techniques: Relaxation postures and techniques, reassurance and education about disease, controlled breathing, breathing exercise, postural drainage, vibratory shaking, huffing and coughing graduated exercise programme and posture correction.

F. PHYSIOTHERAPY IN CHEST INFECTIONS:

Assess: sputum, cough, fever and dysponea.

Identify problems: Productive cough with risk hemoptysis, exhaustion due to increased work of breathing, chest deformity, decreased exercise tolerance.

Demonstrate treatment techniques: Postural drainage with use of adjuncts, percussion, vibration, huffing and coughing to expectorate mobilising exercises to thorax and graduated exercises.

G. PHYSIOTHERAPY IN RESTRICTIVE LUNG DISORDERS:

Assess: Chest expansion at different levels, mobility of thorax and spine, posture (kyphosis, scoliosis) and tests for exercise tolerance (six minutes walking test)

Identify problems: Decreased expansion of lung due to restriction of chest wall movement causing decreased ventilation, defective posture and decreased exercise tolerance. Demonstrate treatment techniques. Vigorous mobilising exercises to thorax and spine, breathing exercises to increase ventilation and drain secretions, exercises for posture correction, graduated exercises to increase tolerance.

H. PRINCIPLES OF INTENSIVE CARE PHYSIOTHERAPY:

Describe the principles of intensive care therapy. Demonstrate knowledge of the following equipment: Endotracheal tubes. Tracheostomy tubes, Humidifier, ventilators. High frequency ventilators. Differential ventilators, CPAP masks, Suction pump, Electrocardiogram, Pressure monitors - arterial, central venous, pulmonary artery, Pressure monitors - arterial, central venous, pulmonary artery and pulmonary wedge: intracranial and temperature monitors.

Assess: Special instructions pertaining to any operation performed, respiration, level of consciousness, colour - blood pressure, pulse temperature, sputum, expectorated (colour and quantity), drugs (time last dose of analgesic given), drains, presence of Pacemaker or Intraaortic ballon pump, ECG and blood gas results. Describe chest radiograph with respect to expansion of lungs, size of heart, presence of secretions and placement of chest tubes.

I. PHYSIOTHERAPY AFTER PULMONARY SURGERY:

Pre operative: Demonstrate treatment techniques: explanation to patient, care of incision, mechanical ventilation, breathing exercise, huffing and coughing, mobilising exercise, posture correction, graduated exercise programme.

Post - operative: Assess: special instructions pertaining to operative procedure performed, breath sounds, cyanosis, respiratory rate, temperature and pulse, blood pressure, drainage from pleural drain (puddling or swinging), sputum expectorated, analgesia, movements of chest wall (symmetry) position of patient and effort of breathing, chest radiograph and blood gases.

Identify problems: Pain intercostal drains in situ, decreased air entry, retained secretions, decreased movement of the shoulder of affected side, decreased mobility and poor posture.

Demonstrate treatment techniques: deep breathing and segmental breathing exercises, vibrations, percussions, huffing and coughing, full range active assisted arm exercises, ankle foot exercises, trunk exercises, posture correction, positioning of patient IPPB and inhalations.

J. PHYSIOTHERAPY AFTER CARDIAC SURGERY:

Pre operative: Assess patients medical history, normal breathing pattern of patient, pulse, respiratory rate, BP, thoracic mobility, posture and patients exercise tolerance.

Identify problems: excess secretions, decreased mobility of thorax, defective posture, decreased exercise tolerance. Demonstrate treatment techniques: Explain to the patients about their operation and about the incision, ICU, endotracheal tube, central lines, nasogastric tube, ECG leads, drains, peripheral lines, temperatures probe, etc. Teach breathing exercises, splinting of incision, huffing and coughing, correct posture, range of motion exercises to trunk and shoulders, active exercises to ankle and foot. Post - operative : Assess, special instructions pertaining to operative procedure performed, type of incision, blood pressure, pulse rate, respiration, colour, time of last analgesic dose, drains, temperature, ECG. chest x - ray and blood gases.

Identify problems: pain decreased air entry, retained secretions, reduced arm and leg movements, decreased mobility.

Demonstrate treatment techniques: Deep breathing exercises, sectioning, active / assisted exercises to arm and leg, graduated exercise programme.

K. PHYSIOTHERAPY IN GENERAL SURGERY:

Assess the patients, medical history, past treatment, breathing pattern, ability to cough and pain.

Identify problem pain, increased secretions, defective posture and decreased exercise tolerance.

Demonstrate treatment techniques: Breathing exercise, huffing and coughing, mobilizing exercise, posture correction and graduated exercise programme.

L. PHYSIOTHERAPY IN REHABILITATION AFTER MYOCARDIAL INFARCTION:

Describe the role of the physiotherapist in a Caronary Care unit during the first 48 hours. Describe the principles of formulate of an exercise programme. Bed exercise, walking, stair climbing. Describe a home exercise programme and advice on leisure activities. Describe physiotherapy for complication after myocardial infarction: chest infections, cerebral embolism and shoulder hand syndrome.

EVALUATION

Rehabilitation Medicine

Examination at the end of : VIII Semester instruction hours : 55

COURSE DESCRIPTION

Following the basic sciences and clinical science course, this course will enable the students to understand their role in the management of disability within the rehabilitation team.

COURSE OBJECTIVES

The objectives of this course is that after 55 hours lectures & demonstrations in addition to clinics the student will be able to demonstrate an understanding to:

A. The concept of team approach in rehabilitation will be discussed and implemented. through practical demonstration with contribution from all members of the team.

B. Observation and identification of diagnostic features in physical conditions will be practised through clinical demonstration.

C. Medical and surgical aspects of disabling conditions will be explained in relation to rehabilitation.

D. Identification of residual potentials in patients with partial or total disability (temporary or permanent).

E. Formulation of appropriate goals (long& short term) in treatment & rehabilitation will be discussed.

In addition, the student will be able to fulfil with 75% accuracy (as measured by written, oral & practical internal evaluation) the following objectives of the course.

COURSE OUTLINE

A. INTRODUCTION

Define the term rehabilitation. Explain its aims and principles.

Discuss team work involved in rehabilitation, explaining briefly the role of each team member.

B. THERAPEUTIC TECHNIQUES

Explain the theory and mechanisms of therapeutic techniques and relevant precautions, for the following;

1. Joint mobilisation
2. Reducing spasm
3. Assisting weak muscles
4. Increasing endurance
5. Muscle re - education following muscle transfer surgery
6. Strengthening muscles
7. Increasing co - ordination
8. Improving balance
9. Gait training

C. COMMUNICATION PROBLEMS

Identify communication problems, classify these and out line principles of treatment / training.

D. BEHAVIOURAL PROBLEMS

Identify behavioural problems in the disabled and outline the principles of management.

E. PAIN

Describe the theories of pain and discuss therapeutic management of pain using various modalities. Describe the common myo - fascial pain syndromes and outline their management.

F. EVALUATION OF PHYSICAL DYSFUNCTION

Demonstrate methods of evaluation for physical dysfunction & management of disabilities with particular reference to: Spinal cord injury (including stroke and cerebral palsy) Arthritic conditions,

Muscular Dystrophy, Hansen's disease, Percipheral nerve, lesions, Fracture, disease& Cardio - respiratory dysfunction.

G. ORTHOTIC DEVICES

Explain the principles involved in prescribing orthotic devices for different parts of the body. Outline the purpose of each type and list major indications & Contra-indications and demonstrate methods of training in their use.

H. PROSTHETIC DEVICES

Describe types of artificial limbs and their functions. Demonstrate methods of training in their use.

I. MOBILITY AIDS

Demonstrate knowledge of the indications for different types of mobility aids, and their functions, e.g. wheel chairs, walkers, crutches.

J. PRE - VOCATIONAL EVALUATION

Discuss methods and team involvement in pre - vocational evaluation and training.

K. ARCHITECTURAL BARRIERS

Describe architectural barriers and possible modifications with reference to Rheumatoid arthritis, Cerebrovascular accident, Spinal cord injury, and other disabling conditions.

L. DISABILITY EVALUATION

Outline the principles of disability evaluation and discuss its use.

M. LEGAL ASPECTS

Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.

N. SOCIAL IMPLICATIONS

Outline the social implications of disability for the individual and for the community.

O. COMMUNITY BASED REHABILITATION MODULE

Describe a CBR module and compare this with an institutional based rehabilitation system.

GERIATRIC REHABILITATION 10 Hours

Life history
Sociological & Technological
The Ageing Body
-Theories of Ageing : Physiological : Environmental
Locomotor System
Cardio Respiratroy System
Nuerological Function
Autonomic Function
Metabolic Changes
Mental Function

APPROACH TO THE TREATMENT :
Interview
Examination
Aims of Intervention

Role of the Physiotherapist

EVALUATION