BACHELOR OF PHYSIOTHERAPY (B.P.T)

SHORT TITLE AND COMMENCEMENT

These regulations shall be called "SPECIFIC REGULATIONS FOR BACHELOR OF PHYSIOTHERAPY" (B.P.T) DEGREE COURSE OF THE Dr.M.G.R EDUCATIONAL & RESEARCH INSTITUTE, U/S 3 of UGC ACT, 1956, CHENNAI -600095.

These regulations shall come into force from the academic year 2017-2018

The Regulations and the Syllabi are as prescribed under these regulations and are subject to modification by the Standing Academic Board from time to time.

AIM

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.

OBJECTIVES

A. To prepare compassionate, competent and ethical entry-level physiotherapists, with the skills and techniques necessary for the physical diagnosis, prevention and management of various conditions based on current evidence of physiotherapy practice.

B. To Acquire adequate knowledge of the basic medical subjects in the practice of physiotherapy.

C. To Develop skills and physiotherapy techniques such as therapeutic massage and manual therapy, exercise, electrotherapy, specialized techniques in the field of various specialties relevant to physiotherapy

D. To plan and implement appropriate physiotherapeutic intervention for all clinical conditions related to physiotherapy in acute and chronic phases , critical care ,indoor and outdoor institutional care and independent practice.

E. Ability to crucially appraise published literature, interpret data and to broaden his/her knowledge by keeping abreast with modern developments in the respective physiotherapy and thereby enhancing research ability.

F. Development of proper attitude for compassion and concern for the individuals and welfare of the physically handicapped in the community levels.

G. To develop skills as a self- directed leaner, recognize continuous education, select and use appropriate learning resources.

H. Ability to inculcate appropriate professional relationship in multidisciplinary set up, patient management and co-partnership basis.

I. To Demonstrate skills in teaching, management, research, guidance and counseling.

COURSE OUTLINE

The bachelor degree in physiotherapy is a four year full time academic programme with non – semester pattern of examination.

After passing the fourth year of education the student undergoes physiotherapy internship for a period of six months in various departments after which he/she is eligible to apply for the convocation.

ELIGIBILITY

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.

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 up to 12th standard level.

AGE LIMIT FOR ADMISSION

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

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.

REGISTRATION

A candidate admitted to this course 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 Principal within the stipulated time.

DURATION OF THE COURSE

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

MEDIUM OF INSTRUCTION

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

CURRICULUM

The curriculum and the syllabi for the course shall be as prescribed by the Standing Academic Board from time to time as per the recommendations of the Board of studies in physiotherapy.

COMMENCEMENT OF THE COURSE

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

COMMENCEMENT OF EXAMINATION

The Examinations shall commence in the Month of September / April of the calendar Year.

WORKING DAYS IN AN ACADEMIC YEAR

Each academic year shall consist of not less than 240 working days

ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATIONS

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.

CONDONATION OF LACK OF ATTENDANCE

Condonation of shortage of attendance up to a maximum of 10% is eligible for admission to an examination rests with the discretionary power 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.

INTERNAL ASSESSMENT MARKS:

A minimum of Five written examination and Two Practical examinations shall be conducted in each subject during each year and average marks of the five performances shall be taken into consideration for the award of sessional marks.

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

If a failed candidate does not appear for an improvement mark examination in the failed subjects the internal marks awarded in the previous examination shall be carried over for his/her subsequent appearance.

The internal assessment marks should be submitted to the university endorsed by the Principal of the Institution 15 days prior to the commencement of the theory examination, along with attendance sheet.

MARKS QUALIFYING FOR PASS

A candidate shall be declared to have passed the examination if he/she obtains the following qualifying marks. 50% of marks in university theory exam and 50% of marks in university oral/Practical examination,50% of aggregate of theory, oral and internal marks put together.

CLASSIFICATION OF SUCESSFUL CANDIDATES

A candidate who obtains not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in the first class, provided they pass all the examinations prescribed for the course within a period of four academic years from the year of admission to the course.

A candidate who secures less than 60% of the aggregate marks in the whole Examination shall be declared to be passed the examination in the second class, provided they pass all the examinations prescribed for the course with in a period of four academic years from the year of admission to the course.

Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed examination in first class with distinction provided they pass all the examinations Prescribed for the course at first appearance.

Candidates who pass all the examinations prescribed for the course in the first appearance only is eligible for ranking.

CARRY-OVER OF FAILED SUBJECTS

The First and Second Year subject should be passed before entering into the Final Year. The candidates can carry over only two subjects of Third year to the Final year and write along with Final year examination. If the candidate fails in more than two subjects of the Third year, it is a Break.

RE-ADMISSION AFTER BREAK OF STUDY

As per recent university regulations

PHYSIOTHERAPY INTERNSHIP (PI)

All candidates admitted to Bachelor of Physiotherapy Degree Course shall undergo Six (6) months of physiotherapy internship after successful completion of the

final examination in the following clinical areas.

1. Department of orthopedics & Traumatology – 30 days
2. Department of Neurology– 30 days
3. Department of Cardio pulmonary Sciences – 30 days
4. Physical Medicine & Rehabilitation including Geriatrics – 30 days
5. Obstetrics & Gynaecology – 15 days
6. Pediatrics – 15 days
7. Oncology – 15 days
8. Sports & Fitness – 15 days

AWARD OF DEGREE

The degree will be awarded by the university only after the completion of the physiotherapy internship for a period of not less than six months.

AUTHORITY FOR ISSUE OF INTERNSHIP COMPLETION CERTIFICATE

The Principal of the 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.

AUTHORITY TO ISSUE"CONSOLIDATED STATEMENT OF MARKS"

The University shall be the Authority for issuing consolidated statement of marks after remitting the prescribed fee to the university.

BACHELOR OF PHYSIOTHERAPY (B.P.T)

FOUR YEARS & SIX MONTHS INTERNSHIP (NON -SEMESTER PATTERN)

RECOMMENDED CLOCK HOURS OF INSTRUCTIONS FOR EACH SUBJECTS

YEAR	SUBJECTS	*E/NE	SUB CODE	L	P	CL	TOTAL HOURS
I	PSYCHOLOGY&SOCIOLOGY	E	BPT1201	150	-	-	150
I	HUMAN ANATOMY	E	BPT1202	200	50	-	250
I	HUMAN PHYSIOLOGY	E	BPT1203	150	50	-	200
I	BASIC AND APPLIED PHYSICS	E	BPT1204	80	-	-	80
I	ENVIRONMENTAL STUDIES	E	BPT1501	40	10	-	50
I	NURSING	NE	---	50	25	25	100
I	FIRST AID	NE	---	25	25	25	75
II	MICROBIOLOGY&PATHOLOGY	E	BPT1205	50	20	-	70
II	GENERAL MEDICINE, GENERAL SURGERY&PAEDIATRICS	E	BPT1206	100	50	-	150
II	EXERCISE THERAPY AND MASSAGE	E	BPT1207	140/50	140/40	20/10	400
II	APPLIED ANATOMY, BIOMECHANICS AND KINESIOLOGY	E	BPT1208	120	40	-	160
II	ELEMENTS OF BIO-CHEMISTRY/PHARMACOLOGY	NE	---	75	30	-	105
II	CLINICAL NUTRITION	NE	---	25	-	-	25
II	BASIC COMPUTER & MEDICAL ELETRONICS	NE	---	25	-	-	25
II	PHYSIOTHERAPY ETHICS	NE	---	25	-	-	25
II	EXERCISE PHYSIOLOGY	NE	---	25	-	-	25
III	ELECTROTHERAPY-I[LOW&MEDIUM FREQUENCY]	E	BPT1209	100	100	40	240
III	ELECTROTHERAPY-II[HIGH FREQUENCY]	E	BPT1210	100	100	40	240
III	COMMUNITY MEDICINE	E	BPT1211	60	25	-	85
III	CARDIO RESPIRATORY FOR PHYSIOTHERAPISTS	E	BPT1212	65	25	25	115
III	PHYSIOTHERAPY FOR CARDIO RESPIRATORY CONDITIONS	E	BPT1213	65	40	45	150
III	EMG/BIOFEEDBACK/RADIOLOGY	NE	---	25	25	-	50
III	YOGA	NE	---	25	25	-	50
III	BIO-STATISTICS AND RESEARCH METHODOLOGY	NE	---	30	-	-	30
III	SPORTS PHYSIOTHERAPY	NE	---	50	30	25	105
III	COMMUNITY BASED REHABILITATION	NE	---	50	25	25	100
IV	BASICS OF ACUPUNCTURE	NE	---	25	25	-	50
IV	ORTHOPAEDICS FOR PHYSIOTHERAPISTS	E	BPT1214	65	25	25	115
IV	NEUROLOGY FOR PHYSIOTHERAPISTS	E	BPT1215	65	25	25	115
IV	PHYSIOTHERAPY FOR ORTHOPAEDIC CONDITIONS	E	BPT1216	65	40	45	150
IV	PHYSIOTHERAPY FOR NEUROLOGY CONDITIONS	E	BPT1217	65	40	45	150
IV	*PHYSIOTHERAPY FOR OBSTETRICS AND GYNAECOLOGY	E	BPT14E1	65	40	45	150
IV	*PHYSIOTHERAPY FOR SPORTS CONDITIONS	E	BPT14E2	65	40	45	150
IV	*PHYSIOTHERAPY FOR PAEDIATRIC CONDITIONS	E	BPT14E3	65	40	45	150
IV	REHABILITATION MEDICINE	E	BPT1218	40	20	20	80
IV	PROJECT	E	BPT1219	-	-	-	-
IV	PHYSICAL EVALUATION/ ORTHO,NEURO,CARDIO CONDITIONS	NE	---	25	25	-	50
	VISITS AND SPECIAL LECTURES	--	---				75
	CLINICAL (COURSE TEACHING)	---	---				1220
	CLINICAL (INTERNSHIP TRAINING)	---	---				1150
						TOTAL	6210

*E-EXAMINATION,*NE-NON –EXAMINATION,L-LECTURE,P-PRACTICAL,CL-CLINICAL

BACHELOR OF PHYSIOTHERAPY (B.P.T)

FOUR YEARS & SIX MONTHS INTERNSHIP (NON SEMESTER PATTERN)

SCHEME OF EXAMINATION

YEAR	SUBJECTS	*E/NE	SUB CODE	S	T	O	P	TOTAL MARKS
I	PSYCHOLOGY&SOCIOLOGY	E	BPT1201	50	100	-	-	150
I	HUMAN ANATOMY	E	BPT1202	50	100	50	-	200
I	HUMAN PHYSIOLOGY	E	BPT1203	50	100	50	-	200
I	BASIC AND APPLIED PHYSICS	E	BPT1204	50	100	-	-	150
I	ENVIRONMENTAL STUDIES	E	BPT1501	50	100	-	-	150
I	NURSING	NE	-	-	-	-	-	-
I	FIRST AID	NE	-	-	-	-	-	-
II	MICROBIOLOGY&PATHOLOGY	E	BPT1205	50	100	-	-	150
II	GENERAL MEDICINE, GENERAL SURGERY&PAEDIATRICS	E	BPT1206	50	100	-	-	150
II	EXERCISE THERAPY AND MASSAGE	E	BPT1207	50	100	25	75	250
II	APPLIED ANATOMY, BIOMECHANICS AND KINESIOLOGY	E	BPT1208	50	100	-	-	150
II	ELEMENTS OF BIO-CHEMISTRY/PHARMACOLOGY	NE	---	-	-	-	-	-
II	CLINICAL NUTRITION	NE	---	-	-	-	-	-
II	BASIC COMPUTER & MEDICAL ELETRONICS	NE	---	-	-	-	-	-
II	PHYSIOTHERAPY ETHICS	NE	---	-	-	-	-	-
II	EXERCISE PHYSIOLOGY	NE	---	-	-	-	-	-
III	ELECTROTHERAPY-I[LOW&MEDIUM FREQUENCY]	E	BPT1209	50	100	25	75	250
III	ELECTROTHERAPY-II[HIGH FREQUENCY]	E	BPT1210	50	100	25	75	250
III	COMMUNITY MEDICINE	E	BPT1211	50	100	-	-	150
III	CARDIO RESPIRATORY FOR PHYSIOTHERAPISTS	E	BPT1212	50	100	50	-	200
III	PHYSIOTHERAPY FOR CARDIO RESPIRATORY CONDITIONS	E	BPT1213	50	100	25	75	250
III	EMG/BIOFEEDBACK/RADIOLOGY	NE	---	-	-	-	-	-
III	YOGA	NE	---	-	-	-	-	-
III	BASIC OF ACUPUNCTURE	NE	---	-	-	-	-	-
III	SPORTS PHYSIOTHERAPY	NE	---	-	-	-	-	-
III	COMMUNITY BASED REHABILITATION	NE	---	-	-	-	-	-
III	BIO-STATISTICS AND RESEARCH METHODOLOGY	NE	---	-	-	-	-	-
IV	ORTHOPAEDICS FOR PHYSIOTHERAPISTS	E	BPT1214	50	100	50	-	200
IV	NEUROLOGY FOR PHYSIOTHERAPISTS	E	BPT1215	50	100	50	-	200
IV	PHYSIOTHERAPY FOR ORTHOPAEDIC CONDITIONS	E	BPT1216	50	100	25	75	250
IV	PHYSIOTHERAPY FOR NEUROLOGICAL CONDITIONS	E	BPT1217	50	100	25	75	250
IV	*PHYSIOTHERAPY FOR OBSTETRICS AND GYNAECOLOGY	E	BPT14E1	50	100	25	75	250
IV	*PHYSIOTHERAPY FOR SPORTS CONDITIONS	E	BPT14E2	50	100	25	75	250
IV	*PHYSIOTHERAPY FOR PAEDIATRIC CONDITIONS	E	BPT14E3	50	100	25	75	250
IV	REHABILITATION MEDICINE	E	BPT1218	50	100	50	-	200
IV	PROJECT	E	BPT1219	50	25 *(EA)	25	-	100
VII	PHYSICAL EVALUATION/ ORTHO,NEURO,CARDIO CONDITIONS	NE	---	-	-	-	-	-

*EA-EXTERNAL ASSESSMENT

*E-EXAMINATION,NE-NON –EXAMINATION,S-SESSIONAL,T-THEORY,O-ORAL,P-PRACTICAL

***THE STUDENTS WILL BE GIVEN AN OPTION TO SELECT ANYONE OF THE ABOVE SAID SUBJECT AS THEIR ELECTIVE SUBJECT FOR THE UNIVERSITY EXAMINATION AT THE COMMENCEMENT OF FOURTH YEAR**

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 selecting group of patients and normal subjects or justify the chosen procedure.

Thus the student will submit a written project work / case study report. The student will be expected to submit this above project work /case study report to the Principal of the institution Three Months before the IV Year Examination on or before the dates notified by the university.

Guidance :

Each student will receive guidance from physiotherapy teacher towards the project work.

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 & One Internal Examiner) will conduct oral examination conjointly and score for 25 marks

Thus project evaluation marks offered by the external examiner is added with the oral examination marks and collectively entered as university marks scored by the students.

BACHELOR OF PHYSIOTHERAPY (BPT)

For B.P.T I Year all Examination Paper has a Theory Examination for 100 marks and the Duration of the Examination is 3 hours.

Total Marks : 100

Hours : 3 Hrs

PART – A

I. Essay – Answer any TWO questions out of FOUR. 2X15=30

PART – B

II. Short Notes – Answer any EIGHT questions out of TEN. 8X5=40

PART – C

III. Short Answers – Answer all TEN questions . 10X3=30

The same pattern applies for all the SUBJECTS BPT1202 - HUMAN ANATOMY, BPT1203 - HUMAN PHYSIOLOGY, BPT1204 - BASIC AND APPLIED PHYSICS, BPT1501 - ENVIRONMENTAL STUDIES except for the subject mentioned below.

For the subject BPT 1201 – Section A – PSYCHOLOGY (50 Marks) and Section B – SOCIOLOGY (50 Marks) in BPT I Year. The students should write Section A & Section B in SEPARATE ANSWER BOOKLETS.

BPT 1201 – Section A – PSYCHOLOGY (50 Marks)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any FOUR questions out of FIVE. 4X5=20

PART – C

III. Short Answers – Answer all FIVE questions . 5X3=15

BPT 1201 – Section B – SOCIOLOGY (50 Marks)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any FOUR questions out of FIVE. 4X5=20

PART – C

III. Short Answers – Answer all FIVE questions . 5X3=15

B.P.T II YEAR

For B.P.T II Year all Examination Paper has a Theory Examination for 100 marks and the Duration of the Examination is 3 hours.

In B.P.T II year for the subject BPT-1205 Section A - MICROBIOLOGY and Section - B PATHOLOGY. The students should write Section A & Section B in SEPARATE ANSWER BOOKLETS.

BPT 1205 - MICROBIOLOGY - Section A (50 Marks)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any FOUR questions out of FIVE. 4X5=20

PART – C

III. Short Answers – Answer all FIVE questions . 5X3=15

BPT 1205 – PATHOLOGY - Section B - 50 Marks

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any FOUR questions out of FIVE. 4X5=20

PART – C

III. Short Answers – Answer all FIVE questions . 5X3=15

BPT1206 – GENERAL MEDICINE, GENERAL SURGERY & PAEDIATRICS

In B.P.T II year for the subject BPT1206 – Section A - GENERAL MEDICINE & PAEDIATRICS (70 marks) Out of 70 marks, GENERAL MEDICINE carries 50 marks Part – A Essay – 15 Marks, Part – B – Shorts Notes – 20 Marks , Part – C - Shorts Answer 15 Marks & PAEDIATRICS – 20 marks, Part – B – Shorts Notes 20 Marks, Section B - GENERAL SURGERY (30 Marks). The students should write Section A & Section B in SEPARATE ANSWER BOOKLETS.

Total Marks : 100

Hours : 3 Hrs

BPT1206 –Section A- GENERAL MEDICINE & PAEDIATRICS (70 Marks)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any EIGHT questions out of TEN. 8X5=40

PART – C

III. Short Answers – Answer all FIVE questions . 5X3=15

BPT1206 –Section B – GENERAL SURGERY (30 Marks)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Answers – Answer all FIVE questions . 5X3=15

BPT1207-EXERCISE THERAPY & MASSAGE

The students should write Section A & Section B in SAME ANSWER BOOKLET.

BPT1207- Section A -EXERCISE THERAPY- 75 Marks

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any TWELVE questions out of FOURTEEN.12x5=60

BPT1207 - Section B (MASSAGE)

PART – A

I. Essay – Answer any ONE question out of TWO. 1X15=15

PART – B

II. Short Notes – Answer any TWO questions out of FOUR. 2X5=10

TOTAL=100 MARKS

BPT 1208-APPLIED ANATOMY, BIOMECHANICS AND KINESIOLOGY

Total Marks : 100

Hours : 3 Hrs

PART – A

I. Essay – Answer any TWO questions out of FOUR. 2X15=30

PART – B

II. Short Notes – Answer any EIGHT questions out of TEN. 8X5=40

PART – C

III. Short Answers – Answer all TEN questions . 10X3=30

B.P.T III YEAR

For B.P.T III Year all Examination Paper has a Theory Examination for 100 marks and the Duration of the Examination is 3 hours.

Total Marks : 100

Hours : 3 Hrs

PART – A

I. Essay – Answer any TWO questions out of FOUR. 2X15=30

PART – B

II. Short Notes – Answer any EIGHT questions out of TEN. 8X5=40

PART – C

III. Short Answers – Answer all TEN questions . 10X3=30

BPT IV YEAR

For B.P.T IV Year all Examination Paper has a Theory Examination for 100 marks and the Duration of the Examination is 3 hours.

Total Marks : 100

Hours : 3 Hrs

PART – A

I. Essay – Answer any TWO questions out of FOUR. 2X15=30

PART – B

II. Short Notes – Answer any EIGHT questions out of TEN. 8X5=40

PART – C

III. Short Answers – Answer all TEN questions . 10X3=30

ELEMENTARY, GENERAL AND HEALTH PSYCHOLOGY

Instruction Hours: 50

Part A - General Psychology
Examination at the end of I Year

Instruction Hours: 25

Part B - Health Psychology
Not for University Examination

COURSE DESCRIPTION

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

COURSE OBJECTIVE

The objective of this course is that 90 hours of lectures, the student will be able to recognize and help with 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 students will be able to show their proficiency based on written and internal evaluation.

OBJECTIVES

1. Psychological assessment of patients in various developmental stages.
2. Concept of stress and its relationship to health, sickness and one's profession.
3. Identify Ego defense mechanisms and learn counseling techniques to help those in need.
4. Help them to understand reasons for non-compliance among patients and improving compliance behaviour.

COURSE OUTLINE

The course will be divided into parts A & B. Part A will be preclinical subject, devoted to the elementary principles of behaviour and will be examined separately at the end of first semester. Part B will be taught as an applied subject after the student has been exposed to clinical work.

Part - A
GENERAL PSYCHOLOGY

A. Definition of Psychology

Definition of Psychology. Basic information in relation to the following schools, methods and branches:

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

b**) Methods** : Introspection, observation, and experiemental method.

c**) Branches** : Child, social, abnormal, industrial.

B. Heredity and Environment

Twin studies relative importance of heredity and invironment, 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 tests: WAIS, WISC, Bhatis's performance test. Raven's progressive Matrices.

E. Motivation

Definitions : Motive, drive incentive and reinforcement. Basic information about primary needs hundger, thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex. Psychological needs-information, security, self-esteem, competence, love and hope.

F. Emotions

Definitions, 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 of Components : Physical characteristics, character,
   Abilities, temperament, interests and attitudes.

2. Discuss briefly the role of heredity, nervous system, physical charac-
   Teristics, abilities, family and culture or personality development

3. Basic concepts of Freud, unconscious, conscious, IdEgo and Superego.
   List and define the oral, anal and phallic stages of personality development. List and define the 8 stages of personality development as proposed by Erickson. 4 concepts of learning as proposed by Dollard and Miller, drive, cue, response and reinforcement.

4. Personality assessment : interview, standardized, non-standardised. Exhaustive and stress interview, 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 Throndike. 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, Whole Vs. Part, Recitation Vs. Reading, Serial Vs. Free recall, knowledge of results,

Association, Organisation, Pneumonic methods, Intentional 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, Perception

1. List the senses : Vision, hearing, olfactory, gustatory and cutaneous
   Sensation, movement, equilibrium and visceral 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 social-economic status.

3. Define illusion and hallucination.
4. List visual, auditory, cutaneous, gustatory and olfactory hallucination, communication, specific communication techniques.

L. Democratic and authoritarian leadership.

Qualities of leadership : Physical factors, intelligence, self-confidance, 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, counseling and religious conversion).

M. Defense mechanism of the ego

Denial, rationalism, projection, reaction formation, identification, repression,
Emotional insulation, undoing, introjection, acting out, depersonalization.

EVALUATION

Unit tests, assignments and term examinations are conducted to evaluate a Student.

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-reaction, perceptual changes, confusion, disorientiation, 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 communications, barriers to good
   Communication, developing effective communication.

2. Counselling : Definitions, aim, differentiate from guidance, principles
   In counseling and personality qualities of counselors.

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, disinfigurement, 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.

J. Substance Abuse

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

K. Personality styles

Different personality styles of patients.

ELEMENTARY SOCIOLOGY

Instruction Hours: 75

Examination at the end of I Year

COURSE DESCRIPTION

This course will introduce to the student, the basic sociological concepts, principles and social processes. 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 OBJECTIVE

The objective of the course is that after 50 hours of lectures, the students will be able to demonstrate an understanding of the role of socio-cultural factors as determinants of health and behaviors in health and sickness. They will be able to relate this to therapeutic situations in the practice of physiotherapy.

In addition, the student will be able to show their proficiency based on written and interval evaluation.

OBJECTIVES

A. Understand the role of family and community in the development of behaviours.

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

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

D. Understand the social and economic aspects of community that influence the health of the people.
E. Learn to assess the social problems and participate in social planning.
F. Identify social institutions 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

Definition of Sociology. Sociology as a science, uses of the study of Sociology, application of knowledge of sociology in Physiotherapy.

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 health and the people.

C. Socialisation

Meaning of socialization, influence of social factors on personality, socialization in hospital and socialization in rehabilitation of patients

D. Social groups

Concepts 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 familym, influence of family on the individual's health, family and nutrition. The effects of sickness on family, family and psychosomatic disease.

F. Community

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

G. Culture

Components of culture, impact of culture on human behaviours cultural meaning of sickness, response to sickness and choice of treatment (role of culture as social consciousness in moulding the perception of reality). Culture induced symptoms and diseases, sub-culture of medical workers.

H. Caste system

Features of the modern caste system and it's trends.

I. Social change

Meaning of social changes, factors of social change, human adaptation 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 of human behaviour, social Deviance and disease.

K. Social problems of the disabled

- 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 be disabled.

EVALUATION

Unit tests, assignments and term examinations are conducted to evaluate a student.

BOOKS FOR REFERENCE

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 , Madras. Allied Publications - 1973.

HUMAN ANATOMY

Instruction Hours: 250
(L-200,P-50)

Examination at the end of I Year

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, brain, cardio-pulmonary and nervous systems as these relate to the application of Physiotherapy.

COURSE OBJECTIVE

The objective of this course is that after 250 hours of lectures, demonstrations and practicals, the student will be able to demonstrate knowledge in human anatomy as in necessary for the study and practice of physiotherapy.

In addition, the students will be able to show their proficiency based on written and oral internal evaluation.

COURSE OUTLINE

A. Introduction

1. Define Anatomy and mention its sub-divisions.
2. Name regions, cavities and systems of the body.
3. Define anatomical position and anatomical terms.

B. Cell

1. Define a Cell.
2. Mention the shape size and parts of cell.
3. Name and give functions of organelles. Name inclusion bodies.
4. Define chromosomes.
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 of types of tissues and such as epithelial, connective, muscular and nervous tissues. Give examples for each type of tissue.

D. Cardio-vascular system

1. a. Comprehend the external and internal features of the structure of the heart and their
   implications.
   b. Mention position of the heart.
   c. Identify and name the chambers of the heart, surfaces and borders 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 and nerve supply of the heart.
   b. State the basic arrangement of the pericardium.
   c. Identify the coronary arteries and coronary sinus.
   d. Name the parts of the conducting 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 types of blood vessels.

E. Lymphatic system

1. Comprehend the general and regional arrangements of the lymphatic system.
2. Name the lymphatic organs and mention their location.
3. Illustrate the basic structural features of lymphatic vessels, lymph nodes, thymus, spleen and tonsils.
4. Assign functions to the lymphatic system.
5. State the position and immediate relations of spleen.

F. Respiratory system

1. a. List the parts of 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, extend and gross and microscopic structure of the parietal pleura.

b. Comprehend the arrangements of pleurae. 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 the 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, sub-division, communications, internal features and muscles of pharynx.
   e. Identify internal features of the mouth and pharynx in the specimen

2. a. State the position, course and extent of oesophagus.
   b. Identify oesophagus in the specimen.
   c. State its basic nerve supply.

3. a. Mention the position and gross structure of the stomach.
   b. Identify the stomach and its borders, the surfaces and sub-divisions.
   c. Enumerate the immediate relations of the stomach.
   d. State the basic nerve supply of the stomach.

4. a. Name the sub-divisions of intestine and mention their positions.
   b. Mention the differences between small and large intestine.

5. a. Name the arteries arising from abdominal aorta.
   b. Name and mention positions of the principal autonomic visceral nerve plexuses in the abdomen and pelvis and the organs supplied by them.

6. Mention the position and gross features of the liver and biliary sytem.
7. Name the position and sub-divisions of the pancreas.
8. a. Name the major salivary glands.
   b. Indicate their positions.
   c. Mention the site of openings of their ducts.

H. Genito-urinary system (N.B.: No details are required)

1. a. Comprehend the basic functional implications and the basic structure of the kidney and ureter.
   b. Mention the position, size and shape of the 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 a kidney.
   e. 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, size and surfaces of the bladder.
   c. Indicate the immediate relations of the bladder.
   d. Mention the basic innervation of the bladder.
   e. Name and identify the sub-divisions of 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 the parts of male reproductive organs and its location. State the anatomy and functional considerations of the testes, male accessory organs of reproduction and external organs.
   b. Name the constituent structure 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 the female reproductive organs and their location. 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 lilac arteries.

I. Nervous System

1. a. Define the sub-divisions of nervous system. Define central, peripheral and autonomic nervous systems and name their sub-divisions. Comprehend the position and formation of the spinal cord, its structure and functions 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 multi synaptic spinal reflex pathway.
   e. Illustrate the white and grey matter and anterior lateral and posterior columns of the spinal cord.
   f. Mention the origin, termination and position of important ascending and descending tracts, sites of crossing of fibres of tracts and functions of each tract.
   g. State the main consequences of spinal cord transection and hemisection and explain the rationale of cordotomy.
   h. Indicate the blood supply and meninges of spinal cord.

2. a. Name the sub-divisions of 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 tracts with special emphasis on cranial nerve nuclei.
   c. Identify and mention the parts of cerebellum.
   d. Mention the external features and internal structures of the cerebellum and name its various afferent and efferent fibre tracts and their origin and termination.
   e. Mention the features of the gross components of the cerebrum.
   f. Mention and identify the location of gyri, sulci and cortical areas.
   g. State and identify association commissural and projection fibres.
   h. Define and identify components of forebrain, including cerebral cortex, insula, olfactory bulb, olfactory tract, uncus, fornix, basal galglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.

i. Sequelae following damage to internal capsule.
j. Outline sensory and motor pathways.
k. Name sensory and motor nerve endings with functions.
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 structures of sensory organs, nose, tongue, eye, ear and skin.
4. Briefly outline the nature and basis of muscle tone. Mention the anatomical pathways involved in the production and maintenance of muscle tone.
5. a. State the formation, circulation and drainage of CSF.
   b. Locate and identify the ventricles.
   c. Identify and name the meninges and spaces around and locate cisterns.
   d. Define lumbar puncture and cisternal puncture.
   e. State the features of the meninges.
   f. Recognize the differences between extradural, subdural and subarachnoid heamorrhage.

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 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 basilar arteries.
   g. Identify and mention the connections 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 system.
   b. Mention the site of origin and termination of preganglionic and post ganglionic sympathetic and parasympathetic fribres.
   c. Name and locate the sympathetic and parasympathetic ganglia.
   d. Summarize the functional differences between sympathetic and parasympathetic system.

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

b. Mention the nuclei of origin and 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 VII nerve.
d. Predict the result of injury to cranial nerves.

9. a. Anatomy of Spinal cord-review.
b. Name the groups of spinal nerves.
c. Explain the formation and branches of the spinal nerves and distribution of anterior and posterior rami.
d. Locate and name the plexuses of nerves.
e. Indicate the courses and distribution of branches of the plexuses of nerves.

J. Endocrine System

1. List the endocrine organs and mention their positions.
2. Mention the hormones produced by each endocrine organ.

K.Introduction to bones (Osteology)

1. a. Define Skeleton.
b. Mention the sub-divisions of skeleton. Name the bones in each subn-division. Mention the number of bones in each sub-division and total number of bones.
c. Classify the bones and give examples.
d. Enumerate the common surface features of bones.
e. Define ossification. Explain the types of ossification and give examples. Define ossification center. Explain the growth of along bone in length and width.
f. Indicate blood supply and nerve supply of a bone.

2. When regional anatomy is taught :

a. Identification and orientation of bones.
b. Identify surfaces, borders and all other surface features.
c. Mark and indicate the muscular and ligamentous attachments on the bone.

L. Introduction to joints (Syndesmology / Anthrology)

1. a. Define a joint or articulation.

g. Classify the joints and give examples for each joint. Define each type of joint.
h. Mention the basic features of a synovial Joint.
i. Define the axes and movements possible in a … joint
j. Define range of movement and limiting factors.
k. Indicate the blood supply and nerve supply in general.
l. Define stability of a joint.
m. Demonstrate common movements.

2. When regional anatomy is taught :
   a. Mention the type, the articular surfaces, ligaments, movements, axes of movements, chief muscles producing the movements, limiting factors and nerve supply and blood supply of all individual joints.
   b. Mention the factors for stability.
   c. Articulate the bones correctly.
   d. Explain applied anatomy for all joints.

M.Introduction to Muscles (Skeletal Muscle) (Myology)

1. a. Define a skeletal muscle.
   n. define faciae, tendon, aponeurosis.
   o. Classify the skeletal muscles by shape etc. and give examples.
   p. Define origin, insertion, muscle work (contractions), type of muscle work, range of muscle work, group actions protagonists, antagonists, synergists and fixators, shunt and spurt muscles, types of lever with examples.
2. When regional anatomy is taught :

   a. Mention the position, origin, insertion, nerve supply and actions of the skeletal muscles. (For the skeletal muscles of soft palate, pharynx and larynx, position, action and nerve supply may be sufficient).
   b. Indicate group of muscles by position and group action and nerve supply of group of muscles.
   c. Indicate segmental 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 pectoral region.
   b. Name and identify 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, surfaces, processes, fossae and other features of scapula.
g. Identify the ends, head, greater and lesser tubercles and anatomical and surgical necks of humerus also the capitulum, 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 layered arrangements of the muscles of the back.
c. Name and identify the muscles of scapular region. Mention their origin, insertion, nerve supply and actions.
d. Demonstrate the bony landmarks of scapula, humerus and clavicle.

3. Axilla

a. Mention and identify the boundaries and contents of axilla. Name the branches of 'axilliary 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 the main features of joint 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 movements of scapula. Mention the chief muscles producing these movements. Correlate movements of scapula.
d. Assign functional roles of the articular disc, costoclavicular ligament of sternoclavicular joint and coracoclavicular ligament.

5. Shoulder joint

a. Mention the type, articular surfaces 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 association of movements of scapula and movements 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, tubercles, surgical neck, bicipital groove, condyles, capitulum, trochlea, epicondyles, radial, coronoid and olecranon fossae.
c. Mention the origin, insertion, nerve supply and actions of the muscles of the front and back of upper arm.
d. Indicate the course, relations and distribution of radial and musculo-cutaneous, nerves.

7. Elbow joint

a. Mention the type, articular surfaces and ligaments of elbow joint.
b. Define and demonstrate the movements possible and name the chief muscles producing these movements.
c. Mention the factors for stability and limiting factors.
d. Indicate the applied anatomy.
e. Mention the blood supply and nerve supply.
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, origin, insertion, nerve supply and action of these muscles.
f. Indicate the courses, relations and distribution of median, ulnar and radial nerves.
g. Mention the type, articular surface and ligaments of radioulnar joints. Define the movements and muscles producing these movements. Analysis and functional application of these movements in daily activities.
h. Mention the position and distribution of radial and ulnar 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 its blood supply and nerve supply. Mention the visible tendons around the wrist and their synovial sheaths.
j. Predict the result of paralysis of muscles of the forearm.
k. Mention the functional implications if prehension is lost in the hand.
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 type of bones forming and ligaments of joint of hand. Define the movements 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 the knowledge of the position distribution of nerves of upper limb and explain, the application of the same.
b. Mention the root value of the nerves.
c. Identify the nerves and mention the position, course, relations and distribution of nerves of upper limb.
d. Predict the result of injury to these nerves.

10.Blood vessels and lymphnodes :

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

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 dermatomes.

O.Lower Extremity

1. a. Name and identify the orientation of hip bone, femur, tibia, fibula and patella.
q. Identify the components and features of hip bone. Identify the ends, borders surfaces, head neck, trochanters, condyles and epicondyles of femur and the features of the tibia and fibula.
r. Identify and mention the origin, insertion, nerve supply and action of the muscles in the front and back of thigh.
s. Mention the boundaries and contents of femoral triangle and subsartorial canal.

t. Indicate the position, course and distribution of femoral nerve.
u. Indicate the course and main branches of femoral artery and mention the blood supply of neck of femur.
v. 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. Analysis 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, nerve 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 tibniofibular 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 and 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. Indentify parts of a typical vertebra of each group of vertebrae. Identify a typical vertebra. Identify a atypical vertebra.
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 mention 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.

Thoracic Spine

1. State the main features of the bones and joints of thoracic cage. Mention the boundaries.
2. Identify parts of a typical vertebra.
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 mention 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.

Thoracic Cage

1. a. State the main features of the bones and joints of thoracic cage. Mention the boundaries.
   w. State the parts and features of sternum.
   x. Define true, false and floating ribs. Mention the parts and features of tyopical rib.
   y. Mention the type and formation of the joints between rib and vertebrae, between costal cartilage and sternum, and between coastal cartilages.
   z. Mention the type and formation of joints between parts of sternum. Indicate the importance of sternal angle.
   aa. Explain pump handle and bucket handle movements of ribs.
   bb. Palpate bony land marks such asjugular notch, sternal angle, xiphisternum and spines of thoracic vertebrae.

2. a. Define intercostals space and list the contents. Mention the course and branches of typical intercostals nerve. Name the muscles of thorax. Mention the origin, insertion, nerve supply and action of intercostals muscles and diaphragm.

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

3. a. Define the boundaries and sub-divisions 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 vertebrae, sacrum and coccyx.
   b. Mention the formation and sub-divisions of the bony pelvis. List the features of the bony pelvis and their roles.
   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 explain 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. List the organs 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. Explain the muscles of the back in layers. Mention the arrangements of lumbar fascia. Identify the muscles in lumbar region. Explain the lumbar routes to abdomen. Identify and mention the attachments and actions of the large muscles of back (atleast the one ending capitis).
   h. Distinguish abdominal cavity and peritoneal cavity.
   i. Mention the features of lumbar 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.

Q.Pelvis

1. State the main features, sub-divisions, boundaries, wall and floor of pelvis.
2. Mention the features of the public sympysis and sacroiliac joints.
3. Compare the major differences between the male and female pelvis.

4. Identify the muscles of the pelvic floor and mention their attachments, actions and nerve supply.
5. Mention the structure of the urogenital diaphragm.

R.Head and Neck

Musculoskeletal and neurovascular features. Identify and explain the anterior and posterior triangles of neck. Name the sub-divisions. List the contents.

1. a. State the main features of the skull and the facial skeleton.
   cc. Identify the large skull bones and their parts.
   dd. Identify the cranial fossae and hypiphyseal fossa.
   ee. Identify the internal and external auditory meatuses, foramen magnum and stylomastold foramen and name the main structure passing through them.
   ff. Identify the name of main muscles of the face. Mention their nerve supply and action.
   gg. Predict the result of paralysis to the facial muscles and sequel of injury to the facial nerve (VII nerve).
   hh. Map the cutaneous distribution of the three divisions of the trigeminal nerve (V nerve) on the face.

2. a. Identify the general features of atypical cervical vertebra atlas, axis and seventh cervical vertebra.
   b. Identify the erector spinae, sternomastoid and scalenei muscles. 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 values of the nerves of cervical and brachial plexus.
   e. Demonstrate the action of sternomastoid.
   f. Mention the type, articular surfaces, ligaments, movements and muscles producing these movements and the movements of the cervical part of vertebral column.

3. a. Identify the subclavian, vertebral and carotid arteries. Mention 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. Mention their position, formation and termination.
d. State the basic organization of the autonomic nervous system
e. State the sites of craniosacral and thoracolumbar outflows.
f. Define the modes of distribution of pre and post ganglionic efferent neurons in sympathetic and parasympathetic nervous systems.
g. Name the cranial nerves containing parasympathetic fibres and mention their distribution.
h. Distinguish between sympathetic and parasympathetic systems in relation to their functions.

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 sub-divisions, the refractive media, the chambers of the eye and the optic nerve.
3. Mention the structure of retina and optic pathway.
4. Briefly explain the basic information of the light and accommodation reflexes (omitting the pathways).
5. Mention the distribution of the three divisions of trigeminal nerve (V nerve).
6. Name and state the nerve supply and simple actions of the extraocular muscles.
7. Predict the results of lesions of III, IV and VI cranial nerves.

Nose :

1. Name the bony components to 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 paranasal air sinuses and locate 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 VII and XII cranial nerves.

Pharynx :

1. State the position and extent of the pharynx.
2. State the three sub-divisions and the features of each sub-divisions.
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 cargilages.
3. State the boundaries of laryngeal inlet and glottis.
4. Identify the vocal and vestibular folds.
5. State the movements of the laryngeal cartilages. Name the laryngeal muscles and mention 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 sub-divisions of the ear.
3. Mention the nerve endings for hearing and equilibrium.

Cranial nerves :

1. Enumerate the cranial nerves in serial order.
2. Relate and interpret the number to the names.
3. Indicate the nuclei of origin of termination.
4. Mention the attachments to 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 :

Unit tests, term examination and assignments are conducted to evaluate a student.

Books Recommended :

1. Ross & Wilson - Anatomy & Physiology in Health & Illness.
2. T.S.Ranganathan - Text book of Human Anatomy.
3. Gray's Anatomy 38th Edition for Reference only.
4. Srivastava,H.C, - Human Anatomy 3 Vols

HUMAN PHYSIOLOGY

Instruction Hours: 200
(L-150,P-50)

Examination at the end of I Year

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 systems.

COURSE OBJECTIVE

The objective of this course is that after 200 hours of lectures, demonstrations and practicals the student will be able to demonstrate an understanding of elementary human physiology.

The student will be able to show their proficiency based on written oral and internal evaluation.

A - PHYSIOLOGY

COURSE OUTLINES

A. Cell Introduction

Outline of basic concepts of cell structure, functions 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 and WBC count, ESR and other related tests.

3. Clotting mechanisms.
4. Blood volume and its regulation.

D. Circulation

1. Structure and 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 regulations.
5. Cerebral circulation, renal circulation, pulmonary circulation.
6. Effects of exercise, effects of postural changes.
7. Lymph and factors affecting its flow.

E. Respiration

1. Defence mechanisms in the respiratory tree, mucocilliary 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. Mechanisms of control of secretions and motility.
4. Diet and nutrition.

G. Excretion

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

H. Endocrines

1. General metabolism, carbohydrate, protein and fat metabolism.

2. Outline of the various hormones and their actions with special emphasis on thyroxine and parathyroid hormone. Abnormalities in function.

I. Reproduction

1. Male reproductory system.
2. Female reproductory system.
3. Outline of pregnancy, function of placenta, parturition, lactation, contraceptive measures.
4. Physiology of the fetus, factors that affect fetal growth.

J. Nervous System

1. Structure of neurons.
2. Properties of neurons (excitation and conduction).
3. Synapses and synaptic transmission, reflexes and properties of reflexes.
4. Sensory endings.
5. Spinal cord, pathways in the spinal cord in detail.
6. Brain stem, thalamus, 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 miscroscopic structure, arrangement of myofibrills, myoneural junction
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle con traction, single muscle twitch, temperature changes, all or none law, fatigue etc.
4. Exercise metabolism, oxygen debt, respiratory quotient.
5. Development of endurance, factors affecting endurance and muscle strength, factors affecting general and cardiorespiratory 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, and physical work capacity, age changes in NS.

7. Environment and exercise; adaptation to heat and cold, exercise in heat and cold, human limitation in heat, acclimatization to heat, exercise at high altitudes.

PRACTICAL DEMON STRATION

A. Determination of RBC and WBC counts
B. Examination of different types of WBC in stained blood smears.
C. Circulation in the web of the frog's feet.
D. Ischaemic pain.

E & F. Muscle contraction in frog, simple muscle curve, tetanus, wave summation, quantal summation, fatifue.

G. Lung volumes.
H. Effects of exercise on ventilation.
I. Physical fitness.
J. Determination of BP. Effects of exercise on BP.
K. Examination of sensory and motor systems, examination of superficial and deep reflexes.
L. Tests of vision (acuity and colour perception) and hearing (Rinne's test and Weber's test).

Evalutation

Unit tests, term examinations and assignments are conducted to valuate a student.

Books Recommended :

1. Sembulingam – Human Physiology
2. Guyton & Hall – Medical Physiology
3. Suresh. R. Essentials of Human Physiology

BASIC & APPLIED PHYSICS

Examination at the end of I Year — Instruction Hours: 80

Section - A — (L-80)

MECHANICS:

1. Definition of mechanics and Biomechanics

2. Force - Definition, diagrammatic representation, classification of forces, concurrent, coplanar and co-linear forces, composition and resolution of forces, angle of pulls of muscle

3. Gravity - Definition, line of gravity, Centre of gravity

4. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state

5. Pulleys - system of pulleys, types and application

6. Springs - properties of springs, springs in series and parallel, elastic materials in use

7. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body

8. Speed, Velocity, Work, Energy, Power, Acceleration, Momentum - principles, and practical application

9. Newton's Laws

10. Friction

11. Elasticity - Definition, stress, strain, HOOKE'S Law

CURRENTS:

1.DC Currents -Modern concept of electricity: fundamental electric charges (proton and electron), bound and free electrons, free electrons and current, static electric charge, charging of an object potential and capacitance, potential difference and EMF

2. A. C. currents: Sinusoidal wave from, frequency, wavelength, Amplitude and phase of a sine wave, Average & RMS value of a sine wave

3. Quantity of electricity, magnitude of current, conductors and insulators, resistance of conductor and Ohm's law, resistances in series and parallel

4. Capacitors: Electric field around a capacitor, charging and discharging a capacitor, types of capacitor with application of each in Physiotherapy department

5.Rheostat: series and shunt Rheostat with application of each in the Physiotherapy department
6. Effects of electric Current: Thermal effect, chemical effect (ionization) and magnetic effect. Electric shock, Earth shock, causes and its prevention

7. Magnetism: Magnetic - non-magnetic substances and their properties, properties of magnet, molecular theory, poles of magnet and its properties, magnetic lines of force and their properties, Electromagnetism, magnetic effects of electric current, Electromagnetic induction, Lenz's law, Inductor and Inductance types of inductor, reactance and impedance.

8. Condenser – Potential & capacity, Principles, factors determining capacity, construction. Electric field, charging & discharging and use of condenser in electrotherapy.

9. Cosine law and its implications.

10. Physical effects of heat and radiation. Laws governing radiation.

11. Law of Grotthus and its implications.

Section – B

1. Thermionic Valves: Thermionic emission, Diode and Triode valves and their characteristics, Construction and application of Cathode Ray Oscilloscope

2. Semiconductor Devices: Intrinsic and extrinsic semiconductors, Light Emitting Diodes, integrated circuits

3. Electronic Circuits: Rectifiers & smoothing circuits, Oscillators - Sinusoidal and nonsinusoidal types

4. A.C. AND D.C. meters: Functions and applications of Ammeter and volt meters, Ohmmeters, Wheat stone bridge

5. Introduction to Therapeutic Energies – Thermal, Mechanical, Electrical, Electromagnetic and magnetic - Definition, description, physiological effects, pathological effects and dangers

6. Medical Instrumentation For Physical Therapy: Brief description of generation, circuit
diagrams and testing

7. Low frequency currents, Direct currents, Medium frequency currents

ENVIRONMENTAL STUDIES

Examination at the end of I Year — Instruction Hours: 50 (L-40Hrs,P-10Hrs)

OBJECTIVES:

Understanding of the human and natural environment. Demonstrate in-depth understanding of the environment. Demonstrate an ability to integrate the many disciplines and fields that intersect with environmental concerns.

UNIT I - INTRODUTION TO ENVIRONMENTAL STUDIES

Definition, scope and Importance – Need for Public awareness – Types for resources – utilization of forest resources, water resources, Mineral resources, food resources, Energy resources and Land resources – Dams and their effects on forest and tribal people – conflicts over water – equitable use of resources for sustainable life styles.

UNIT II – ECOSYSTEMS AND BIODIVERSITY

Kinds of ecosystems – Structure and functions of an ecosystems – Energy flow within the ecosystem – Productivity – food chains and Tropic Levels – Ecological Pyramids – Value of Biodiversity – Biodiversity at global, National & local levels – Hot spots of Biodiversity – Threats to biodiversity – Endangered and Endemic species of India – Conservation of Biodiversity.

UNIT III – ENVIRONMENTAL POLLUTION

Environmental Pollution, Sources, Effects – Control Measures for air pollution, Water pollution, Noise Pollution, Land Pollution, Marine Pollution, e -waste Pollution, Solid Waste Management – Disaster Management.

UNIT IV – ENVIRONMENTAL MANAGEMENT

Introduction – Environmental Management – Climate Change – Population growth – Nuclear, Accidents and Holocaust – Human Health and Human Rights – Environmental Ethics – Environmental Legislation – Public Awareness – Role of Information Technology in Environmental & Human Health.

UNIT V – CASE STUDIES

Visit to a local area to documental assets River/Forest/Grassland/Hill/Mountain)-study of common plants, insects, birds – study of simple ecosystems – pond, River, Hill Slopes – Visit to a local polluted site (Urban/ Rural/Industrial/Agricultural) – e – waste Hazardous – case study

Text Book:

1. T. Meenambal," Environmental Science and Engineering", MJP Publishers, Chennai – 2009.

Reference Books:

1. Iftikarudding, "Principals of Environmental Science and Engineering ", Sooraj Publication, 2006.
2. G. Masters," Environmental Engineering", New Centurion Book House, New Delhi, 2006.
3. Rajagopal, "Environmental Engineering", Oxford University Press, New Delhi.
4. Rana, "Essentials of Ecology and Environmental Science", Prentice – Hall of India Private Limited, New Delhi, 2003.

NURSING

I YEAR (Not for University Examination)

Instruction Hours:100
(L-50,P-25,CL-25)

COURSE DESCRIPTION

This course enables a student to have a better understanding and development of skill in giving Nursing care and first aid treatment in emergencies in either the hospital or the community.

COURSE OBJECTIVES

The objectives of this course is that after lectures, demonstrations, practicals and clinics, the student will be able to demonstrate an understanding of the principles of Nursing Care and first aid and demonstrate skill in giving treatment in emergencies that may be met in the community and in their practice as therapists.

COURSE OUTLINE

A. Introduction

Definition of first aid. Importance of first aid, Golden rules of first aid, Scope and concept of emergency.

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, Fowler'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 EVALUATION

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 Administratio0n of Medicine,
Course, Orientation I (Orientation/Physiotherapy)
INSTRUCTION STAFF

2. Patterns of Health Care Delivery

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

3. 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.

4. Role of Physiotherapy in meeting health care needs of India
    a) Needs versus Demands
    b) Physiotherapist as "Educator"
    c) Common problems and solutions

FIRST AID

I YEAR (Not for University Examination)

Instruction hours:75
(L-25,P-25,CL-25)

a.First aid emergencies

1. Burns & Scalds : Causes, Degrees of burns, First aid treatment, General treatment.
2. Poisoning : Classification (irritants, acid, alkali, narcotics), Signs and symptoms. First aid treatment, General treatment.
3. Trauma due to foreign body intrusion : Eye, ear, nose, throat, stomach and lungs.
4. Bites : First aid, signs, symptoms and treatment.

    a) Dog bite : rabies
    b) Snake bite : neurotoxin, bleeding diathesis

B. Skeletal injuries

Definition : Types of fractures of various parts of the body. Causes, Signs and Symptoms. Rules of treatment, Transportation of patient with fracture. First aid measures in dislocation of joints. Treatment of muscle injuries.

C. Respiratory emergencies :

1. Asphyxia : Etiology, Signs & Symptoms, rules of treatment.
2. Drowning : Definition and management.
3. Artificial respiration : Types and techniques.

D. Wounds and Haemorrhage

1. Broad outline of Anatomy and Physiology of the circulatory system.
2. Wounds : Classification, management.
3. Haemorrhages : Classification, signs and symptoms, rules for treatment of haemorrhage.
4. Treatment of haemorrhage from special areas (Scalp, mouth, nose, ear, palm and various veins).
5. Internal haemorrhages : Visible and concealed.

E. Shock and unconsciousness

Definition : Types of shock, common causes of shock, signs and symp0toms of shock (assessment of established shock). General and special treatment of established shock.

F. Transportation of the injured
    1. Methods of transportation : Single helper, Hand seat, Stretcher, Wheeled transport (ambulance).
    2. Precautions taken : Blanket lift, Air and Sea travel.

G. Community emergencies
Role of first aider (immediate and late) in fires, explosions, flood, earthquakes.

H. Community resources
Police Assistance, Voluntary agencies (local, National, International). Ambulance services (Functions).

EVALUATION

Unit tests, term examinations and assignments, are conducted to evaluate a student.

REFERENCES

1. Hoon R.S. "First aid to the injured" 1st edition, Delhi, St.John Ambulance Association.
2. Raine Hardhins and Hunt Vaheirs "Urgencies and emergencies for Nurses" 1965 English Universities Press Ltd.
3. Gardner Hard "New Advanced First Aid" London Butter Worths 1969.
4. "First Aid Textbook" by American Red Cross 1945. The Blackiston Company, Philadelphia.
5. Golwalla Asoi "A Handbook of Emergencies" 2nd Edition Bombay Samet and Company, 1981.

MICROBIOLOGY AND PATHOLOGY

Instruction Hours: 70
(L-50,P-20)

University Exam at the end of II Year

COURSE DESCRIPTION

This course follows the basic courses in anatomy and physiology. It will compliment the course in general medicine & surgery being taught in the same semester. Student will learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.

COURSE OBJECTIVES

The objective of this course is that after 100 hours of lectures, demonstrations and practicals the student will be able to demonstrate an understanding of the pathology and microbiology of common diseases that therapists would encounter in their daily practice. The course will also help therapists to understand how to protect themselves and their patients from infections during their interactions.

In addition, the students will be able show their proficiency based on written & oral internal evaluation.

MICROBIOLOGY

35 Hours

A. Introduction and history of microbiology
B. General lectures on micro-organisms.

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

C. disinfection and antiseptics.
D. Sterilization and asepsis.
E. Antibacterial agents-fundamental aspect, susceptibility tests.
F. Infection - source of infection.
   - portals of entry.
   - Spread of infection.
G. Non-specific immunity.
H. Immunity - natural and acquired.

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

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

K. Pathogenic yeasts and fungi.
L. Virology - virus infections with special mention of Hepatitis Poliomyelitis & Rabies.

COURSE OUTLINE

PATHOLOGY

35 Hours

A. Introduction : Concepts of diseases, classification of lesions.
B. Bacterial, viral and parasitic infections – a general outline.
C. Inflammation and repair, degeneration, necrosis and gangrene.
D. Haemorrhage, 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, bronchiectasis, 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. Scleroderma and psoriasis.
P. Diseases of muscle including poliomyelitis, myopathies.
Q. Volkmann’s Ischemia.

GENERAL MEDICINE, GENERAL SURGERY & PAEDIATRICS

Instruction Hours: 150

Examination at the end of II Year (L-100,P-50)

COURSE DESCRIPTION

It covers relevant aspects of General Medicine, General Surgery, and Paediatrics & Plastic Surgery.

COURSE OBJECTIVES

The objective of this course is that after 150 hours of lectures and demonstrations, in addition to clinics the student will be able to demonstrate a general understanding of the diseases that therapists would encounter in their practice. They should have a brief idea of the etiology and pathology, the patient's symptoms and the resultant functional disability. This would help the students to understand the limitations imposed by diseases on any therapy.

In addition, the student will be able to demonstrate proficiency by written, oral and practical internal evaluation.

COURSE OUTLINE

GENERAL MEDICINE

Instruction Hours: 70

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 diseases.
3. Infective endocarditis - Define and outline etiology, symptoms and complications.
4. Ischaemic heart disese - 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 AST, VSD, Fallot's Tetralogy and PDA & 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 anti-inflammatory 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 SURGERY & PLASTIC SURGERY

Instruction Hours: 40

GENERAL SURGERY (30 HOURS)

1. Principles of General Surgery.
2. Principles of Post operative management including surgical ICU.
3. Role of Physiotherapy in General Surgery.
4. Describe abdominal surgical incisions.
5. Outline the post operative complications and management in

Nephrectomy, Appendisectomy
Herniorraphy, Mastectomy
Thyroidectomy
Colostomy
Adrenallectomy
Cystectomy
Hysterectomy
Prostatectomy
Cholecystectomy
Ileostomy (10HOURS)

PLASTIC SURGERY

1. Classify burns by depth and surface area, outline the causes, medical management and precautions in the acute stage.
2. List the potential deformities due to burns, methods of prevention and precautions. Mention cosmetic and functional treatment measures.
3. Outline the plastic surgery procedures and management in rehabilitation of burns, including splinting methods for common deformities and prevention of burns contractures.
4. Reconstructive surgery for correction of deformities of upper and lower limbs.

PAEDIATRICS

Instruction Hours: 40

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, tuberculosis, diabetes, epilepsy; bleeding to 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 of prenatal, perinatal and postanatal causes; briefly mention pathogenesis, types of cerebral palsy (Classification), findings on examination; general examination of C.N.S., Musculoskeletal and respiratory system.

Briefly outline associated defects : Mental retardation, microcephally, blindness
Hearing and speech impairment squint and convulsions.
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 finding in relation to disabilities progression of various forms and prognosis. Describe treatment goals in forms which are and are not fatal.
6. Spinabifida, meningomyelocele : Outline development; clinical features - lower limbs, bladder and bowel control; complications - UTI & 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, C.N.S. 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 and difficulties.
9. Normal diet of new born 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, cystic fibrosis, primary complex in infant and children.
11. Acute paediatric respiratory distress syndrome, intensive paediatric care.
12. Intensive neonatological and paediatric surgical care.
13. Congenital cardiovascular problems - management.
14. Cardio respiratory rehabilitation in children.

EXERCISE THERAPY

Instruction Hours: 300

Examination at the end of II YEAR (L-140,P-140,CL-20)

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is that after 340 hours of lectures, demonstrations and practicals the student will be able to analyse the various types of therapeutics exercises, movements and demonstrate different techniques and describe their effects.

The student will be able to show their proficiency based on written, oral and internal evaluation.

COURSE OUTLINE

MOVEMENTS AND THERAPEUTIC EXERCISES

A. Mechanics

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

1. Force : Composition of force, parallelogram of forces.
2. Gravity : Centre of gravity, line of gravity.
3. Equilibrium : Stable, unstable, neutral.
4. Levers : 1^{st} order, 2^{nd} order and 4rd order, their examples in the human body and their practical applications in physiotherapy, forces applied to the body levers.
5. Springs : Series, Parallel.
6. Tension.
7. Elasticity : Hook's law.
8. Axes : Sagittal, Frontal, Vertical.
9. Planes : Sagittal, Frontal, Horizontal.
10. Definitions of : Speed, Velocity, Work, Energy, Power, Acceleration, Momentum, Friction and Inertia.

B. Muscle Action

THERAPEUTIC PHYSIOLOGY

Physiology of Exercise

Effects of Exercise

a. oxygen transport.
b. muscle strength, power & endurance.
c. Mobility.
d. Neuromuscular system.
e. Body composition.
f. Body temperature & basal metabolic rate.
g. Hormonal system.
h. Body fluid & electrolyte balance.
i. Cardiovascular function.
j. Respiratory functions.

Physiology of pain & re-education

a. Types of muscle, nerve fibers, their properties response to various stimulation.
b. Generation of action potential & its propagation.
c. Neuromuscular junction & transmission of impulse.
d. Physiology of pain.
e. Psychosomatic physiology of pain.
f. Physiology of Biofeedback.

Neurophysiology of movement

a. Normal human development.
b. Reflex & reaction maturation.
c. Sensory – motor integration.
d. Spatiotemporal adoption.
e. Perception & motor learning.
f. Growth development & maturation.

Explain the following :

1. Muscle work : Isotonic (concentric, eccentric), isometric (static).

2. Group actions : Agonists (Prime movers), Antagonists, synergists, fixators.

3. Angle of muscle pull, mechanical efficiency of the muscle.

C. Pelvic Tilt

Describe the following :

1. Normal pelvic tilts, alterations from normal, anterior tilt (forward), posterior tilt (backward), lateral tilt.
2. Muscles responsible for alterations and pelvic rotation.
3. Identification of normal pelvic tilt, pelvic tilt, pelvic rotation and altered tilts and their corrective measures.

D. Starting Positions

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. Movements

Explain the following terms with suitable examples :

1. Anatomical movements : Flexion, extension, abducent, adduction, inversion, eversion, supination, pronation, internal rotation, external rotation, gross flexion, gross extension, trunk side flexion.

2. Surface anatomy of the individual joints.

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 movements : Voluntary (free, active, assisted, assisted-resisted, resisted),
   Involuntary (associated, reflex, peristaltic/visceral, cardiac).

Passive movements : Relaxed passive, mobilizing passive (forced P.M. manipulations, serial manipulations), passive stretching.

F. Passive Movements

Demonstrate relaxed passive movements of UL, LL joints and CS and passive stretching of soft tissues, muscles/muscles groups and describe the indications, contra-indications, physiological effects, advantages and disadvantages of each.

Neck : Sternocleidomastoid.

G. Active Movements

1. Describe the types, techniques, indications and contraindications, physiological effects, advantages and disadvantages and demonstrate three progressive resisted exercises in progression for the following muscle groups, as examples: shoulder abductors, shoulder forward flexors, triceps bra chi, hip abductors, hip flexors, quadriceps femoris, abdominal muscles, back extensors.

2. Describe the home programme for strengthening neck muscles and relevant muscle groups.

H. Progressive Resisted Exercises

1. Describe the following exercises, their advantages and disadvantages and demonstrate the techniques of the following types of PREs : Fractional system, Oxford set system, Mac Queen's Power System.

2. Demonstrate practically each system using : Delorm's Boot, Dumbells, Sand bags in pulleys, 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 and hard test, and functional test (ADL).

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

3. Merits and demerits and manual muscle testing.

J. Re-Education of Muscles

1. Muscle weakness – causes of muscle paralysis and weakness – prevention of muscle wasting – early re-education / initiation of muscle contraction.

2. Describe the following in re-education of muscles : The term re-education of muscles, techniques.

3. Demonstrate the various re-education techniques and facilitating methods on various groups of muscles.

4. Demonstrate the progressive exercises in strengthening using various applications (according to their muscle power) Grade I to Grade V.

5. Ranges of muscle work (Outer, Inner, Middle and full range).

K. Joint Mobility

Describe the following :

1. Joint ranges, individual joint structures, joint movements, (physiological and accessory), causes of joing range limitation, prevention of joint stiffness, positioning (Physiological resting position).

2. Passive range of movement, methods of relaxation, active exercises, manual mobilization techniques.

3. Forced passive movements : Passive Stretching.

4. Muscle strengthening techniques (PNF) : Hold-relax, slow-reversal, rhythmic stabilization, repeated contractions.

5. Accessory movements : Posterior glide, anterior glide, superior and inferior glide, traction and approximation of major peripheral joints and vertebral joints.

6. Indications and contra-indications for mobilization of individual joints and demonstrate practically the various mobilization 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 systems, techniques of goniometry.

2. Demonstrate measuring the individual joint range using goniometer.
3. Demonstrate measurement of limb girth (using measuring tape) : arm, forearm thigh, calf.

M. Crutch Walking

Describe the following : Components of a crutch, types of crutches, characters of a good crutch, preparing a patient for crutch walking, crutch walking muscles, measurement of crutches (auxillary piece, hand piece), crutch stance, crutch palsy, types of Crutch Walking : Three point, Four point, Two point and paraplegic crutch gait.

Demonstrate crutch measurement (standing and lying positions) and various types of crutch walking over even ground, stairs and ramps.

N. Relaxation

1. Describe : Relaxation, muscle fatigue, muscle spasm.

2. Describe : General causes, signs, symptoms of tension (mental and physical).

3. Factors contributing to fatigue, types of relaxation (local and general), indications of relaxation, techniques of relaxation.

4. Demonstrate the techniques of relaxation (local and general).

N. Posture

1. Describe the following : Posture (static and dynamic), Definition of good posture, muscles responsible for good posture, postural mechanisms, definition of abnormal posture (kyphosis, Scoliosis, Lordosis, Khypho-scoliosis, Khypholordosis), Assessment of posture

(inspection, measurement-length of legs, width of pelvis, plumb line – R.O.M. of trunk in flexion, extension, side flexion and rotation.

2. Describe and demonstrate postural correction by : Strengthening of muscles, mobilization of trunk, relaxation, active correction of the deformities, passive correction (traction), postural awareness.

3. Demonstrate practically identification of abnormal posture and postural corrective measures.

O. Gait

1. Define gait and centre of gravity of the human body.

2. Describe the walking cycle : Stance (heel strike, foot flat, mid stance and push off), swing (acceleration, mid swing and deceleration).

3. Describe muscles responsible for normal gait, six determinants of gait (pelvic rotation, pelvic tilt, hip flexion, lateral displacement of pelvis, knee flexion in stance phase, normal foot pattern during walking).

4. Describe the following pathological gaits : Gluteus medius gait, gluteus maximus gait, hip flexor weakness gait, guadiceps weakness gait, foot drop gait, hemiplegic gait, ataxic, waddling gait, equinous gait, calcaneus gait, equinovarus gait.

5. Demonstrate skill in identifying pathological gait and proper gait training.

P. Co-ordination

1. Define balance (static and dynamic).

2. Explain the mechanism of neuromuscular co-ordination.

3. Describe the in coordination due to : Lower motor neuron lesions (flaccidity) upper motor neuron lesions (spasticity), cerebellar lesions, loss of kinaesthetic sense (tabes dorsalis, syringomylia, leprosy), imbalance due to muscular diseases.
4. Describe re-education of balance.

5. Demonstrate re-education of co-ordination : Frenkel's exercises, proprioceptive neuromuscular facilitation (PNF) techniques.

6. Demonstrate the re-education techniques of balance and coordination.

Q. Suspension Therapy

1. Describe the basic physics of simple pendulum and pendular movement.

2. Describe types of suspension : Vertical, axial, eccentric fixation (anterior, posterior, medial & lateral).

3. Explain the indications and techniques for each type of suspension.

4. Demonstrate axial and eccentric fixation for mobilizing, strengthening and re-education of various muscles and joints.

R. Hydrotherapy

1. Describe Hydrostatic pressure, upward thrust of water, buoyancy.

2. List the indications and contra-indications for hydrotherapy.

3. Describe the dress for patients and therapists and necessary hydrotherapy equipments.

4. Types of hydrotherapy : Sterile pool, contrast bath, whirlpool bath, hubbard tank.

5. Construction of hydrotherapy tank : Design, construction, safety features, cleaning the pool, water heating systems, hygiene of patient and pool.

S. Bed Rest Complications

1. Describe the complications to patients due to prolonged bed rest.

2. Demonstrate maintenance exercises for patients on prolonged bed rest.

MASSAGE

Instruction Hours: 100

Examination at the end of II YEAR (L-50,P-40,CL-10)

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objectives of this course is that after 100 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 fulfill 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. Points to be considered while giving massage.
    a. Manipulations.
    b. The time of day
    c. The comfort and support of the patient (draping and positioning).
    d. Position of operator (therapist's stance).
    e. Using body weight.
    f. Contact and continuity.
    g. Techniques, indications and contra-indications.

3. Physiological effects of massage on various tissues 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 manipulation : Effleurage, stroking.
2. Pressure manipulations : Kneading, squeezing, stationary, circular ironing (reinforced kneading), finger kneading, petrissage (picking up, wringing, rolling) frictions.
3. Percussion manipulation : Hacking, clapping, beating & pounding.
4. shaking manipulations : Vibration, shaking.

C. Define and describe the techniques, effects, uses and contra-indications of the following manipulations :

1. Stroking manipulations.

2. Pressure manipulations.

3. Percussion manipulations.

4. Shaking manipulations.

Demonstrate the following techniques on models:

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
    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.

PRACTICALS :

All the techniques demonstrated must be practiced by students on models.

Evaluation:

Unit tests, term examinations and assignment are conducted to evaluate a student.

References

1. Principles of Exercise Therapy - Dena Gardiner.
2. Practical Exercise Therapy - Hollis.
3. Manual of massage and measurements - Edith. M. Prosser.

APPLIED ANATOMY, BIOMECHANICS AND KINESIOLOGY

Instruction Hours : 160

Examination at the end of II YEAR (L-120,P-40)

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 OBJECTIVE

The objective of this course is that after 160 hours of lectures, demonstrations and practical, the student will be able to demonstrate an understanding of the principles of biomechanics and kinesiology and their application in health and disease.

1. Instructing the student to analyze normal human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory.

2. Providing the student with the opportunity to experience quantitative methods of movement's analysis in the laboratory sessions.

3. Applying these analytic methods to specific example of normal human motor performance.

4. Introducing the student to the use of these methods for evaluation and treatment of disorders of the musculo skeletal system.

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 centers of gravity, centers of gravity of human body, stability and center of gravity, relocation of the center 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 pull, anatomic pulleys.

8. Describe Parallel Force Systems: First class levers second class levers, third class levers, torque, mechanical advantages.

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. The action line of a single muscle.

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

3. A linear force system, a concurrent force system, a parallel force system.

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

5. Two methods of determining torque for the same given set of forces.

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

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

8. How external forces can be manipulated to maximize torque.

9. 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 center of gravity of an object when segments are rearranged, given the original centers of gravity.

3. The resultant vector in a linear force system, a concurrent force 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 forces and which are joint compression forces? What are the equilibrium forces for each?

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

Compare the following:

1. Mechanical advantages in a second and third class lever.

2. Work done by muscles in a second and third class lever.

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

Draw the following :

1. The action line of a muscle.

2. The rotatory force component, the translatory force component and the moment arm for a given force of a lever.

B. Joint Structure and Function :

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

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

3. Classify joints : Synarthrosis, amphiarthrosis, diarthrosis, subclassification of synovial joints.

4. Describe joint functions, kinematics, 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 classifications of joints.

3. The five features common to all diarthrodial 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 degrees of freedom of any given joint.

4. The distinguishing features of a diathrodial joint.

5. The structures that contribute to joint stability.

Compare the following :

1. A synarthrosis with an 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 muscles 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 and 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 inefficiency, 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 a muscle.

5. Isokinetic exercise.

Define the following :

1. Active and passive insufficiency.
2. Active and passive tension.
3. Concentric, eccentric and isometric contractions.
4. Reverse 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 phasic 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 and isokinetic contractions.

3. Isokinetic exercise with concentric exercise.

D.The Vertebral Column

1. Describe the general structure and function of the vertebral column, including primary and secondary curves, 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. Motions of the vertebral column.

5. Lumbar-pelvic rhythm.

6. Rotation of the vertebrae in each region.

7. Movements of the ribs during rotation.

8. Describe the muscles of the vertebral column, flexors, extensors, rotators and lateral flexors.

9. Describe the effects of injury, developmental deficits defects in vertebrae.

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

E.The Shoulder Complex

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

    i) Sternoclavicular
    ii) Acronmiclavicular

iii) Scapulothoracic
iv) Glenohumeral

2. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, musculotendinous cuff, stabilization of the dependant arm, scapulohumeral rhythm, scapulothoracic and glenohumeral contributions.

3. Describe the muscles of elevation (deltoid, supraspinatus, infraspinatus, teresminor, subnscapularis, upper trapezius, serratus anterior, middle trapezius and rhomboids).

4. Describe the muscles of depression (latissiums dorsi, pectoralis, teres major, rhomboids).

5. The advantages and disadvantages of coracoacromial arch.

6. The structural stability of the three joints, including the tendency towards degenerative changes and dearrangement.

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

F.The Elbow Complex

1. Describe the structure of the humeroulnar and humeroradial joints, including articulating surfaces, joint capsule, ligaments and muscles.

2. Describe the functions 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 functions 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 and to medical-lateral forces.

7. The translatory and rotary components of the brachioradialis and brachialis at all points in the range of motion.

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

9. Muscle activity of the extensors in a closed kinematic chain with activity in an open kinematic chain.

10. The role of pronator teres with the role of pronator quardratus.

11. The role of biceps with that of brachialis.

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

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

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

G.The Wrist and Hand Complex:

1. Describe the wrist complex, including radiocarpal joint, midcarpal joint and ligaments of the wrist complex.
2. Describe the functions of the radiocarpal and midcarpal joint, including the movements and muscles involved.

3. Describe the hand complex, including structure of fingers (carpometacarpal, metacarpophalangeal and interphalangeal joints of fingers, ligaments and range of motion.

4. Describe the finger musculature, including extrinsic and intrinsic finger flexors and the extensor or mechanism on the 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 thumb musculature, including the extrinsic and intrinsic thumb muscles.

7. Describe prehension, power, cylindrical, spherical and hook grasps.

8. Describe precision handling, pad-to-pad, tip-to-tip and pad-to-side prehension and functional position of wrist and hand.

9. The sequence of joint activity occurring from full wrist flexion to extension, including the role of the Scaphoid. The sequence of joint activity in radial and ulnar deviation from neutral.

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

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

12. The most easily disrupted form of precision handling with the form of precision handling that may be used by some one without any active hand musculature. What are the prerequisites for each ?

H.The Hip Complex

1. Describe the general features of the hip joint, including the articulating surfaces of the pelvis and the femur. Angulations : angle of inclination, angle of torsion, internal architecture of femur and pelvis, joint capsule, ligaments and muscles (flexors, extensors - one joint extensor, two joint extensors, adductors, medical rotators and lateral rotators).

2. Describe the functions of the hip, rotation between pelvis, lumbar spine and hip, pelvic motion – anterior, posterior pelvic tilting, lumbar pelvic rhythm, lateral pelvic tilting, pelvic rotation.

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

4. Describe femoral motion.
5. Describe hip stability in erect bilateral stance, sagittal plane equilibrium and unilateral stance.

6. Describe reduction of forces with weight shifting and using a cane and deviations from normal in muscular weakness and bony abnormalities.

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

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

9. 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 of the pelvis in the erect standing position.

10. Anteversion with retroversion on the basis of hip stability and mobility.

11. The structure and function of the following muscles; flexors and extensors, abductors and adductors, lateral and medical rotators.

I. The Knee Complex

1. Describe the structure of the tibiofemoral joint : articulating surface on femur and tibia, the menisci, joint capsules and bursae, ligaments and other supporting structures, anterior - posterior and medio-lateral stability, muscle structure, knee flexors and extensors, axes of knee complex, mechanical 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. Structures that contribute to medial stability of the knee, including dynamic and static stabilizers.

4. Structures that contribute to lateral stability of knee, including dynamic ands static stabilizers.

5. Structures that contribute to lateral stability of knee, including dynamic and static stabilizers.

6. Structures that contribute to posterior stability of knee, including dynamic and static stabilizers.

7. Structures that contribute to rotatory stability of knee.

8. The normal forces that are acting on the knee.
9. Describe the structure of the patellofemoral joint.

10. Describe the function of the patellofemoral joint.

11. The forces on the patellofemoral joint in full flexion with full extension.

12. The action of quadriceps in an open kinematic chain with that in a closed kinematic chain.

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

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

15. Describe the effects of injury and disease in the tibiofemoral and patellofemoral joints.

J.Ankle - Foot Complex

Describe :

1. The structure, ligaments, axes and functions of the following : ankle joint, tibiofibular joints, subtalar joints, talocalcaneonayicular joints, transverse tarsal joint, tarsal joint, tarsometatarsal joint, plantar aarches, metatarsophalangeal joints, interphalangeal joints.

2. The terminology unique to the ankle foot complex, including inversion-eversion, pronation-spination, dorsiflexion-plantar flexion, flexion-extension and adduction and abduction.

K.Posture

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

2. Analyse posture with respect to the optimal alignment of joints in the anteroposterior and lateral views.

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

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

5. The effects of gravitational moments on body segments in optimal erect posture.
6. The gravitational moments acting around the vertebral column, pelvis, hip, knee and ankle in optimal erect posture.

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

8. The following postural deviations : Pes planus, hallux valgus, pes cavus, idiopathic scoliosis, kyphosis and lordosis.

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

L.Gait

Define :

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

2. The sub-divisions of the stance of swing phases of gait.

3. The time and distance parameters of gait.

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

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

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

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

8. The role of each of the determinants of gait.

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

10. Pathological gaits and gait deviations.

Evaluation :

Unit tests, term examinations and assignments are given to evaluate the students.

ELEMENTS OF BIOCHEMISTRY
NOT FOR UNIVERSITY EXAMINATION

BIOCHEMISTRY

Time allotted : 55 Hours

II YEAR **(L-40,P-15)**

1. Introduction to Bio-chemistry as on allied science to medicine, Blood and Urine investigations abnormal urine samples.
2. Carbohydrates – Structure and general nature – Biological importance – classification, polysaccharides & their physiological importance.
3. Lipids – Structure and general nature – classification, - Biological membranes and membrane transport.
4. Proteins – structure and functional aspect of haemoglobin, myoglobin, collagen and cellular proteins (their names only).
5. Enzymes – specificity and factors affecting enzyme activity intra cellular and extracellular enzymes, isoenzymes – clinical significance of alkaline phosphates, acid phosphatase and cholinesterase, creatine phosphokinase (CPK).
6. 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.
7. Metabolic pathways – related toprotein metabolism – their names and significance only – amino aciduria, alkalptonuria, nucleic acid metabolism – Gout.
8. Vitamins – fat soluble and water soluble – their source, requirement, special requiremens, - biochemical functions & deficiency state.
9. Minerals and trace elements & their role in growth and development – Disorders of calcium, phosphorus metabolism – muscular dhystrophies.
10. Fundamentals of nutrition & dietetics.

PHARMACOLOGY
NOT FOR UNIVERSITY EXAMINATION

II YEAR

Time allotted : 50 Hours
(L-35, P-15).

DETAILS:

1. Introduction to Pharmacology – Terminology – Agonist – Antagonist Pharmacokinetics, Pharmacodynamic, Pharmacotherapeutics, 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 narcotic 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 their dangers in misuse among student population.

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

8. Inflammatory diseases – anti-inflammatory agents – Analgesics – Nonsteroidal anti-inflammatory 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 microorganism – sulphonamides, antibiotics, floxacins – Parasitic infestations malaria, amebae, filariasis – flagellates – Respiratory Pharmacology use of broncho dilator – airway clearance – Cancers – antimitotics, antimetabilities, irradiation – radioactive materials in cancers.

CLINICAL NUTRITION
NOT FOR UNIVERSITY EXAMINATION

II YEAR

Time allotted : 25Hours
(L-25).

Introduction-What is nutrition? Optimal / normal / good/ adequate nutrition;

Nutrition and growth; nutrition and infection; nutrition and immuno-competence;

Nutrition and drugs; what is malnutrition? Common nutritional deficiencies in India; recommended dietary allowances; allowances vs. requirements; role of Nutritionist. Signs of good nutrition vs. malnutrition.

Assessment of nutritional status

What are nutrients? – carbohydrates, proteins, fats, vitamins, minerals and water. What are anti-nutrients and non-nutrients?

Major nutrition programs in the country

Nutrition through life cycle

Infancy - advantages of breast-feeding; disadvantages of bottle feeding; weaning.

Children - preschoolers; school going child land adolescence.

Adults - pregnancy and lactation and geriatrics. Sports Nutrition.

Nutrition in diseases.

Principles governing diet therapy for fevers; GI tract disorders including Diarrhea, dysentery, vomiting and liver diseases; diabetes, obesity, Cardiac, renal and hypertension.

OPHTHALMOLOGY

Lecture-demonstrations only

II YEAR NOT FOR UNIVERSITY EXAM

Briefly outline the following :

1. Eye lesions in leprosy, including causes, treatment and complications of lagophthalmos.
2. Field defects arising from lesions in the visual pathway, their clinical symptoms and methods of testing.
3. Effects of paralysis of the ocular muscles and treatment.
4. Causes, clinical features and treatment of disorders of ocular movement occurring 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, inflammatory disorders, vitamin A deficiency, Glaucoma and Trachoma ; emphasis on preventable causes and prophylactic measures.
6. Definition of blindness and visual disability evaluation. Invasive procedures used for testing visual failure, including basic screening procedures for visual acuity suitable for community health surveys.

E.N.T.

II YEAR Lecture-demonstrations only

NOT FOR UNIVERSITY EXAM

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.

BASIC COMPUTER SCIENCE

NOT FOR UNIVERSITY EXAMINATION

II YEAR

Time allotted : 50 Hours (L-25)

1. **Introduction to Data Processing**

   Features of computers, advantages of using computers. Getting data into / out of the computers. Role of computers. What is data processing. Applications areas of computers involved in data processing. Common activities in processing. Types of data processing, characteristics of information. What are hardware and software.

2. **Hardware concepts.**

   Architecture of computers, classifications of computers, concept of damage. Types of storage devices. characteristics of discs, tapes,terminals,printers,network applications of networking concepts of PC systems care floppy care data care.

3. **Concepts of software.**

   Classification of software: System software, Application of software,operarating system, computer virus, precautions against viruses. Details with viruses.

4.Computers in medical electronics.

5.Basic anatomy of computers.

6.Computer Applications – Principles in scientific research ; work processing, medicine, libraries, Museum, education, information system.

7. Data Processing-Computers in physical therapy – principles in EMG, Exercise testing equipments, laser.

MEDICAL ELECTRONICS

This course will enable students to understand basic aspects of electricity and medical electronics as related to its applications in electrotherapy instruments.

1. Electrical fundamentals
2. Main Power supply
3. A.C Electricity
4. D.C. Electricity
5. Therapeutic Currents
6. Magnetism
7. Thermionic Valves
8. Semiconductor Devices

PT ETHICS

Moral and Ethics, Ethical analysis of moral problems

Ethical Issue in Physical therapy

Medico-legal aspects of professional practice

Ethics relating to current Social and Medical policy in provision of health care

Rules and Regulations of IAP, ethical rules, aims and objectives of IAP

EXERCISE PHYSIOLOGY

Instruction Hours : 25

II YEAR

Not for University Exam

1. Muscle and its contraction.

   Describe elements of muscle structure – composition of a muscle fibre, the motor unit, types of muscle fibres, muscle fibre size, arrangement and number.

II. Physiological response of systems to Exercise.

III. Aerobic and Aneorobic process.

ELECTROTHERAPEUTICS
ELECTROTHERAPY – I (LOW & MEDIUM FREQUENCY)

Instruction Hours: 240

Examination at the end of III YEAR (L-100,P-100,CL-40)

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is that after 240 hours of lectures, demonstrations and practical, the student will be able to list indications and contra-indications of various types of electrotherapy, demonstrate different techniques and describe their effects.

The student will be able to show their proficiency based on written, oral practical and internal evaluation.

COURSE OUTLINE

I. INTRODUCTORY PHYSICS

A. Introduction to Electrotherapy

1. Definition and types
2. Therapeutic uses.
3. Instrumentation.
4. Importance of currents in treatment.
5. Equipment demonstration.

B. Static Electricity

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

C. Current Electricity

1. Units of Electricity, Farad, Volt, Ampere, Coulomb, Watt.
2. Resistance : In series and 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. Transmission of electrical energy through solids, liquids, gases and vaccum.
7. Condensors : Definition, principle, types, construction, working, capacity and uses.
8. Shock-Electrical and earth; causes, effects, management, precautions.

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 millammeter : Construction, working uses.

F. Voltmeter :

G. Transformer :

1. Definition

2. Types.

3. Principles
4. Construction

5. Eddy current

6. Working and uses

H. Choke :

1. Principle

2. Construction and working

3. Uses

I. Electric valves or 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 valve rectifiers :

1. Definition

2. Construction

3. Working

4. Uses

K. Iontophorosis :

1. Theory

2. Physiological effects and uses of various iontophorosis.

3. Effects of various ions.

4. Techniques of Iontophorosis for pain relief, reduction of oedema, warmed healing and hyper hydrosis.

II. MUSCLE – NERVE STIMULATION

A. Low frequency stimulating currents

1. Bio-electricity-electrical charge within body.

2. Types of low frequency currents used in therapeutics.

All types of therapeutic currents must be taught under the following sequence :

- Definition : Production (Brief) - waveforms - duration.
- Physiological effects.
- Therapeutic effects.
- Uses (including contra indications).
- Technique of application.

a) Direct current

b) Interrupted DC

c) Faradic current

d) Surged Faradic current
e) Pain relieving current (TNS)

3. Physiology of pain; pain modulation. Gate control theory.

4. Patho-physiology of nerve lesion - principles of selection of modes for assessment of nerve muscle function-galvanic - faradic test, S.D.curve – principles, technique and interpretation.

B. Medium frequency currents :

All types of medium frequency currents must be taught under the following sequences.

- Definition : Production (Brief) - waveforms - duration – frequency.
- Physiological effects.
- Therapeutic effects.
- Uses (including Contra Indications)
- Technique of application.

a) Diadynamic current
b) Russian current
c) Interferential current

C. Bio-feedback-Principles - Uses and applications.

D. Peripheral nerve lesions :

Neuropraxia, axonotmesis, Neurotmesis. Describe clinical symptoms and signs, aims of treatment. Method and selection of current in different lesions.

E. Selection of current :

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

PRACTICALS :

All the techniques for low frequency and medium frequency current therapy must be demonstrated. The students must practice all the technique taught to them on models/each other.

EVALUATION :

Unit tests, term examinations and assignments are conducted to evaluate a student.

REFERENCES

1. Clayton's Electrotherapy

2. Electrotherapy Explained :
   Principles and practice by low and Reed.

ELECTROTHERAPEUTICS
ELECTROTHERAPY – II (HIGH FREQUENCY)

Instruction Hours: 240

Examination at the end of III YEAR (L-100,P-100,CL-40)

A. Define electricity :

Discuss its properties; briefly describe the 2 types of electricity - static, current.

B. Review the physics principles of :

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. Condensors. 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-explain with diagram the working and use of these two.

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

Define oscillation. What is "capacitance" and "inductance"? Given an example of an oscillating system.

1. What is the frequency of oscillation and how is it calculated in brief.
2. What do you mean by damping of oscillation.
3. How does transfer of energy between 2 circuits take place.

F. Radiant energy and its properties (discuss in brief)

G. Electro magnetic waves and its properties (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 frequency currents.

C. Production of H.F. currents.

1. Principles
2. Construction of apparatus with diagram.
3. Tuning of machine
4. Regulation of current.
5. Physiological and therapeutic effects.

D. Methods

1. Condensor field.
2. Cable method.
3. Effects of 2 fields.

E. Technique of Applications

1. Testing machine.
2. Preparation of patient.
3. Types of electrodes.
4. Position and size of electrodes.
5. Application of current
6. Dosage.

F. Specific requirement – application of SWD for various conditions.

1. Condensor field method.

    a. Spacing – need & type.
    b. Position.
    c. Application

2. Cable methods-types of application

G. Dangers and precautions

H. Pulsed diathermy : Indications and contra-indications.

I. Practicals : Demonstrate application of SWD to all joints for various conditions and the students should practice on model/each other.

MICROWAVE DIATHERMY

a. Construction
b. Working
c. Indications
d. Contra indications
e. Therapeutic uses

ACTINOTHERAPY

Describe the following :

Basic Physics

1. Define heat and temperature. (in brief)
2. Physical effects of heat. (in brief)
3. Transmission of heat. (in brief)
4. Sourses of thereapeutic heating and its physiological effects.
5. Radiant energy and its properties.
6. Electromagnetic spectrum-production and its properties.
7. Laws governing radiation

Skin

a. Structure
b. Depth of penetration

A. Infra Red Radiation

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

D. Indications & contra-indications.

PARAFFIN WAX & MOIST HEAT

1. Methods of heating tissues.
2. Effects and indications.
3. Circulatory effects.
4. Effects on sensory nerves.
5. Effects on skin.

6. Indications & contra indications.
7. Its uses in various conditions.

ULTRASONIC THERAPY

1. Definition.
2. Properties of U.S. :
    a. reflection
    b. transmission
    c. absorption (in detail)

3. Properties of ultrasonic fields : depth of penetration in relation to (a) intensity and (b) frequency.
4. Effects on tissues. (Both Physiological and therapeutic)

    a. Thermal.
    b. Mechanical.
    c. Chemical and biological.

5. Contra Indications.
6. Coupling media.
7. Pulsed Ultra sound therapy.
8. Principles of pulsed ultra sound.
9. Differentiation between continuous US and pulsed US.
10. Effects and uses of pulsed US.
11. Techniques of applications :

    a. Methods

        - direct contact
        - water bath
        - water bag

    b. Dosage in acute and chronic conditions.
12. Dangers
13. Indications & contra – indications.

Practicals :

Demonstrate application of US to various tissues of the body and students should practice on each other/on model.

CRYOTHERAPY

1. Physical principles.

2. Physiological effects and uses

    a. Circulatory response and uses.
    b. Normal response and uses.
3. Techniques of applications :
    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.

LASER (ACTINOTHERAPY)

Define Laser and brief outline its therapeutic indications, contra-indications, efficacy and precautions advisable.

ULTRA VIOLET RADIATION (ACTINOTHERAPY)

1. a. Physics

    - Electric arc
    - Process of ionization
    - Transmission of current through gases

b. Types of lamps

2. a. Construction of lamps.
    - High pressure Hg vapour lamps
    - Kromayer lamp

b. Tridymite formation
c. Cooling
d. Spectrum – Hg 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.

4. Indications, contra-indications and dangers.

5. Technique of application :

    a. Test dose
    b. Local treatment
    c. General irradiation

6. Conditions (common) in which above treatment is given.

7. Sensitisers

8. Filters.

9. Comparison between I.R. & U.V.

10. Practicals on the following conditions :

    a. Acne – shoulder and chest.
    b. Neck and face.
    c. Psoriasis.
    d. Allopecia areata and totalis.
    e. Ulcer – non infected, infected.
    f. Pressure – sores.
    g. Rickets.
    h. General body bath

Evaluation :

Unit tests, term examinations and assignments are given to evaluate the students.

COMMUNITY MEDICINE

Instruction Hours: 85

Examination at the end of III Year (L-60,P-25)

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 85 hours of lectures, demonstrations, practical and clinics, the student will be able to demonstration an understanding of the influence of social and environmental factors of health of individual and society.
In addition, the student will be able to fulfill 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 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.

CARDIO-RESPIRATORY FOR PHYSIOTHERAPISTS

Instruction Hours : 115
(L-65,P-25,CL-25)

Examination at the end of III YEAR

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the cardio-thoracic conditions which commonly cause disability.

COURSE OBJECTIVES

The objective of this course is after 115 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an undergoing of cardio-thoracic conditions causing disability and their management.

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 ribs
   b. Rickets – rickety rosary
   c. Pigeon chest
   d. Funnel chest
   e. Scoliosis
   f. Kyphosis

4. Describe the movements of the thorax : Bucket handle, pump handle.

5. List the muscles of respirations involved in inspirations and expiration (including accessory muscles that are involved).

6. Describe in brief the anatomy of the heart and its blood supply and 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 and pontine respiratory centers and central and peripheral chemoreceptors.

8. Describe the mechanism for 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 carbondioxide 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 basis and value of blood gas analysis.

14. Briefly outline the principles of cardio-vascular stress testing.

B. Cardiac Surgery

2. List the cardiac conditions requiring 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.)

3. List the cardiac conditions requiring open heart surgery and briefly describe the following : Congenital (Artrial septal defect, ventricular septal defect, pulmonary stenosis, Tetralogy of Fallot, Transposition of great vessels and A.V.malformation). Acquired (Mitral stenosis, Mitral regulation, aortic stenosis & regurigitation, coronary artery disease).

C. Thoracic Surgery

1. Describe very briefly the clinical features and management of the following : Fracture ribs, flail chest, stove-in-chest, pneumothorax, haemothorax, haemo-pneumothorax, lung contusion & laceration, injury to heart, great vessels and 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 tuberculoma, bronchictasis sicca, bronchostenosis, massive haemoptysis, empyema and destroyed lung.

4. Outline briefly the clinical features and management of the following suppurative lesions of the lung : Bronchiectasis, lung abscess, bronchopneumonia and aspergillosis.

5. Outline briefly the clinical features and management of carcinoma of lung.
6. Outline the extent, use and complications of the following surgical incisions : Anterolateral thoracotomy, posterolateral thoracotomy and median sternotomy.

7. Describe the post operative management for patients with Segementectomy, lobectomy, bilobectomy, pleuropneumonectomy and tracheostomy.

8. Outline briefly the principles of various ventilators and their use.

9. Describe in detail the preoperative assessment and management of a patient posted for thorachotomy.

10. Describe in detail the following post operative procedures : management of endotracheal, endonasal tubes, tracheal suction, weaning the patient from the ventilator extubation technique and 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 diseases.

E. Intensive Surgical Care for Paediatric Cases.

F. Upper Respiratory surgical conditions.

EVALUATION :

Unit tests, term examinations and assignments are given to evaluate the student.

PHYSIOTHERAPY FOR
CARDIO RESPIRATORY CONDITIONS

Instruction Hours : 150

Examination at the end of III YEAR (L-65,P-40,CL-45)

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical cardio respiratory conditions with skills gained in exercise therapy, electrotherapy and massage, thus enabling them to apply these in clinical situations of dysfunction due to cardio respiratory pathology. This knowledge will lend to use physiotherapeutic measures as preventive / restorative Rehabilitative purpose for pulmonary / cardiac patients.

COURSE OBJECTIVES

The objective of this course is after145 hours of lectures, demonstrations, practicals and clinics the student will be able to identify cardio respiratory dysfunction, set treatment, goals and apply their skills in exercise therapy, electrotherapy and massage in clinical situations to restore cardio respiratory function.

COURSE OUTLINE

A. Anatomy

Review the regional anatomy of thorax; upper respiratory tract trachea and bronchial tree; lungs and bronchopulmonary segments; muscles of respiration; hart 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 in lung and pulmonary circulation.

C. General Overview : Assessment

Describe physical assessment in cardio respiratory dysfunction, inspection, posture (recumbent, erect, orthopenic), breathing pattern (rate, rhythm, use of accessory muscles), chest movement (symmetry, intercostals and diaphragmatic 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 hyper resonance. Auscultation, Normal and abnormal breath sounds.

Measurement : Chest expansion at different levels (auxiliary, nipple, xiphoid), exercise tolerance (six minute walking test), post-operative range of motion and muscle assessment.

D. General Overview: Physical Treatment

1. Describe indications, goals and procedure of breathing exercise. Describe diaphragmatic breathing, localized basal expansion, apical expansion, specific segmental exercise raising the resting respiratory level.

2. Describe chest mobilization 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 techniques of postural drainage including indications, general precautions and contraindications, preparation, drainage of individual bronco pulmonary segments, modified postural drainage and continuing postural drainage as home programme.

8. Outline the history of mechanical respiration. Define the following terms a) Respiration, b) Lung ventilator, c) Resuscitators, d) Body ventilator, e) Electro stimulator, f) IPPB, g) PEEP, h) CPAP, I) SIMV, j) NEEP. Classify ventilators by their 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 aerosols and their deposition in the alveoli. Describe the principles of operation 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 wheeze, 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 dyspnoea.
Identify problems : Productive cough with risk haemoptysis, exhausion 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, mobilizing exercise to thorax and graduated exercises.

G. Physiotherapy in Restrictive Lung Disorders

Assess : Chest expansion at different levels, mobility of thorax and spine, posture (Kyphosis or scoliosis) and tests for exercise 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 monitor, arterial, central venous, pulmonary artery and pulmonary wedge; intracranial and temperature monitors.

Assess : Special instructions pertaining to any operation performed, respiration, level of consciousness, color, blood pressure, pulse, temperature, sputum, expectorated (color 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, mobilizing 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 (bubbling 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, intercostals 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 and ICCU

Pre-operative : Assess patient's 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 bout the incision, ICU, Endotracheal tube, central lines, temperature 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, color, 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, suctioning, active / assisted exercises to arm and leg, graduated exercise programme.

K. Physiotherapy in Rehabilitation after Myocardial Infarction

Describe the role of the Physiotherapist in Caronary Care Unit during the first 48 hours. Describe the principles of formulation of an exercise programme,l bed excercises, walking, stair climbing. Describe a home exercise programme and advice on leisure activities. Describe physiotherapy for complications after myocardial infarction, chest infections, cerebral embolism and shoulder hand syndrome.

PRACTICALS

All the topics given above applied to cardio thoracic conditions are to be demonstrated and practiced by student on Model/each other before applying them in clinical under Supervision.

EVALUATION

Unit test, term examinations, Practical exams and assignments are given to evaluate the students.

EMG / BIO-FEEDBACK / RADIOLOGY

NOT FOR UNIVERSITY EXAMINATION **Instruction Hours-50**

III YEAR **(L-25,P-25)**

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

RADIOLOGY

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.

Physics related to EMG

YOGA AND HEALTH

III YEAR

Not for University Examination — Instruction Hours: 50

Introduction — (L-25,P-25)

Pranayama and Breathing Exercises

Asanas

Therapeutics effects of Asanas

SPORTS PHYSIOTHERAPY

Instruction Hours : 105

Not for University Examination — (L-50,P-30,CL-25)

COURSE OBJECTIVES :

1. Analyse and interpret various sports injuries/patho mechanics and apply appropriate therapeutic techniques on and off the field.

2. Device/modify various exercises for sports personnel and prevent injuries by applying proper dynamics during play.

3. Analyse the effects of therapeutic modalities, indications and contra indications and precaution to ensure safety.

UNIT – I

Origin of sports activities classifications (Speed, contact duration power).

UNIT – II

Training – Define making, Training of motor components – strength – speed endurance, mobility
and co-ordination in detail.

UNIT – III

Athletic First Aid, Emergency care, protective and supportive Equipments.

UNIT – IV

Muscle skeletal system – aspects in accordance to sports activities.
Detailed study of exercise sports Physiology – reactions.

UNIT – V

Athletic Psychology.

UNIT – VI

Nutrition and Athlete.

UNIT – VII

SPORTS INJURY REHABILITATION :

Goals of rehabilitation, types of exercises – Isometric exercise, Isotonic exercise,
Isometric exercise,
special forms of exercise –manual resistance, proproceptive neuromuscular fascilitation,
surgical tubing,
circuit training, sport – specific skills.

Inflammatory and Healing process, microtrauma, stress reactions and stress fractures.
Epiphyseal injuries,
shoulder gridle injuries, Elbow injuries, wrist and hand injuries. Thigh, knee patella lower
leg foot

and ankle injuries – Detail study of Injuries related to various sports activites.
(e.g. Tennis, Running, Swimming, Football, Hockey, Polo, Basketball, Volleyball etc.) in the above
mentioned regions and their principle of treatment and rehabilitation.

UNIT – VIII

Special considerations for young athletes and female athletes, childrens.

UNIT – IX
Rehabilitation Sports for the disabled (paraplegics, amputees, Cerebral Palsied.)

COMMUNITY BASED REHABILITATION

Not for University Examination **Instruction hours:100**

CBR - Definition (L-50,P-25CL-25)

Steps in Formulating plan for CBR programme

Implementing CBR programme

Evaluating the programme

National CBR programmes

Community Physiotherapy – Need, Creating awareness of Physiotherapy in Selected members of Community

Monitoring and Evaluation of Community Work

Public Health Educational Methods

Psycho-Social & Socio-Economic aspects of CBR

Planning, Implementing and Evaluation CBR programme for AIDS, Rheumatoid Arthritis, Hansen's disease, Tuberculosis, Cerebral Palsy

Geriatric Rehabilitation

BIOSTATISTICS & RESEARCH METHODOLOGY

Not for University Examination **Instruction hours:30 (L-30)**

III YEAR

Introduction to Statistics

Quantitative and Qualitative Variables
Mean, Median, Standard Deviation
Probabilities and proportion
Sampling
Chi-Square Test
Vital Statistics
Health Statistics

Introduction to Research

The importance of Research in Physiotherapy

Ethical consideration in Physiotherapy Research

Phases of Research

Conceptical, Empirical and Interpretive phase of Research

Research Report

BASIC OF ACUPUNCTURE

IVYEAR Instruction Hours: 50
Not for University Examination (L-25,P-25)

1. Definition, concepts of acupuncture
2. Anatomy of Acupuncture
3. Traditional and modern theories of acupuncture
4. Materials and methods of acupuncture
5. Principles of acupuncture with modern view
6. Rules of selection of acupuncture points

Reference books:
1.clinical acupuncture by Dr.Anton Jayasurya

ORTHOPAEDICS FOR PHYSIOTHERAPISTS

Instruction Hours: 115
(L-65,P-25,CL-25)

Examination at the end of IV Year

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the orthopaedic conditions which commonly cause disability.

COURSE OBJECTIVES

The objective of this course is that after 115 hours of lectures and demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopaedic conditions causing disability and their management.

COURSE OUTLINE

A. Introduction to Orthopaedics

Introduction to Orthopaedic terminology, types of pathology commonly dealt with, clinical examination, common investigations and outline of conservative and operative management.

B. Principles of operative treatment

List indications, contraindications and briefly outline principle of : Arthrodesis, arthroplasty, osteotomy, bonegrafting and tendon-transfers.

1. Pathology & clinical manifestation of trauma of the bones and soft tissues involving musculo-skeletal systems.

2. Methods of study of mechanics & causes of injury.

3. Inflammation & repair.

C. Types of Soft Tissues Lesions :

Sprains and Muscle Strains

List common sites of sprains and muscle strains and describe the clinical manifestations and treatment. Soft tissue lesions : capsulitis, bursitis, tenosynovitis.

D. Fractures and dislocations : General Principles

Out line the following

1. Types of fractures including patterns, open and close fractures and fracture-dislocations.
2. Difference between dislocation and subluxation.
3. General and local signs and symptoms of fracture dislocations.
4. Principles of management of fractures & dislocations.
5. Prevention and treatment of complications including : Fracture – disease, Volkmann's ischaemic contracture, Sudek's atrophy, carpal tunnel syndrome, myositis ossificans and shoulder – hand syndrome.
6. Fracture healing.

E. Upper Limb Fracture & 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 Fracture 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 dislocations of the shoulder and patella.

I. Amputations

1. Classify amputations, list indications for surgery.
2. Outline pre-operative, post operative and prosthetic management.

3. Outline prevention and treatment of complications.

J. Bone and Joint Infections

Outline the etiology, clinical features, management and complications of :L septic arthritis, osteomyelitis, tuberculosis (including spinal T.B.)

K. Bone & Joint Tumours

Classify and outline the clinical features, management and complications of the following (benign/malignant) bone and joint tumours, osteochiostoma, osteosarcomas, ewing's sarcoma, multiplemyeloma.

L. Chronic Arthritis

Outline the pathology, clinical features, mechanism o deformities, management of complications of : Rheumatoid arthritis, osteoarthritis of major joints and spine. Ankylosing spondylitis.

M. Low back ache, painful arc syndrome, tendonitis, fascitis & spasmoidic 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 complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle and tendon transfers.

P. Deformities (Congenital & Acquired)

Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (Radial club hand and femoral, tibial and fibular deficiency, menignmyelocoele, arthrogryposis multiplex congenital, osteogenesis imperfecta and other causes of deformities including rickets, polio etc.)

Q. Peripheral Nerve Injuries

Outline the clinical features and management, including reconstructive surgery of :

2. Radial, median and ulnar nerve lesions.
3. Sciatic and lateral popliteal lesions.
4. Brachial plexus injuries including Erb's, Klumpk's and crutch palsy.

R. Hand injuries

Outline of clinical features, management and complications of skin and soft tissue injury, tendon injury, bone and joint injury of the hand and fingers.

S. Leprosy

Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand & feet deformities.

T. Sports Injuries – Bio Mechanics and Management

U. Reconstructive surgeries for the rehabilitation of

1. Diseases of bones – T.B. leprosy, osteomyelitis septic and pyogenic arthritis etc.
2. Traumatic conditions.
3. Deformities following paralysis – special emphasis given to spine, hand and foot.
4. Degenerative conditions such osteoarthritis, avascular necrosis.
5. Relief of pain.

NEUROLOGY FOR PHYSIOTHERAPISTS

Instruction Hours : 115

Examination at the end of IV Year (L-65,P-25,CL-25)

COURSE DESCRIPTION

Following the basic science and clinical science course, this course introduces the student to the neurological conditions which commonly cause disability.

COURSE OBJECTIVES

The objective of this course is that after 115 hours of lectures and demonstrations, in addition to clinics to clinics, the student will be able to demonstrate an undergoing of neurological conditions causing disability and their management.

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 extra pyramidal 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 and disorders of tone and posture, bladder control, muscle contraction, movement and pain. Electrophysiology. EMG & NCV.

C. Clinical Features & Management

Briefly outline the clinical features and management of the following Neurological Disorders :

1. Congenital and childhood disorders.
    a. Cerebral Palsy

   b. Hydrocephalus
   c. Spina Bifida
2. Cerebrovascular accidents.
   a. General Classification : thrombotic, embolic, haemorrhagic & inflammatory strokes.
   b. Gross localization and sequelae.
   c. Detailed rehabilitative programme.
3. Trauma – broad localization, first aid and management of sequelae of head injury and spinal cord injury.

4. Diseases of the spinal cord.
   a. Craniovertebral junction anomalies.
   b. Syringomyelia.
   c. Cervical and lumbar disc diseases.
   d. Tumours.
   e. Spinal arachnoiditis.

5. Demyelinating diseases (Central and peripheral)
   a. Guillain – Barre syndrome.
   b. Acute disseminated encephalomyelitis.
   c. Transverse myelitis.
   d. Multiple sclerosis
6. Degenerative disorders.

   a. Parkinson's diseases & extrapyramidal syndromes.
   b. Dementia.
7. Infections.
   a. Pyogenic meningitis sequelae.
   b. Tuberculous infection of central nervous system.
   c. Poliomyelitis.

8. Diseases of muscle : classification, signs, symptoms, progression and management.
   a. Myopathies
   b. Muscular dystrophy
   c. Spinal Muscular Atrophy.
9. Peripheral nerve disorders.
   a. Peripheral nerve injuries : localization 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, signs and symptoms.
    d. Motor neuron disease.
11. Disorders of Autonomic nervous system.
12. Toxic and metabolic disorders of nervous system.
13. Deficiency disorders.

14. Spinal cord lesions – paraplegia, Quadriplegia-Management-Neurogenic bladder – Management.

D. Assessment

Clinical assessment of neurological function to be taught through bedside or demonstration clinics.

1. Basic history taking to determine whether the brain, spinal cord or 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 ?

9. Assessment of gait abnormalities.

EVALUTATION :

Unit tests, term examinations and assignments are given to evaluate the student.

PHYSIOTHERAPY FOR ORTHOPAEDIC CONDITIONS

Instruction Hours : 150

Examination at the end of IV Year (L-65,P-40,CL-45)

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in clinical orthopaedics with skills gained to apply these in clinical situations of dysfunction and musculo-skeletal pathology.

COURSE OBJECTIVES

The objective of this course is that after 145 hours of lectures, demonstration, practicals and clinics the student will be able to identify disability due to musculoskeletal dysfunction, set treatment goals and apply their skills gained in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.

COURSE OUTLINE

A. Define fractures, review the types, the signs and symptoms, first-aid measures, principles of immobilization and healing of fractures.

B. Describe the PT assessment of a patient with a fracture during the mobilization 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 method 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, shaft of humerus, supra and intercondyler fractures of the humerus, 2. Fracture head of radius, olecranon process, shafts or radius and ulna, colles, 3. Fracture: scaphoid, Bennet's and metacarpal neck, 4. Fracture pelvis : neck, trochanter and shaft of femur : supracondylar fracture and injuries of the knee joint & patella.
5. Fracture proximal tibia, both bones of leg, Pott's and Dupuytren's, calcaneum and metatarsal (march),6. Dislocation
of (a) Hip (congenital), Traumatic, Posterior and Central
(b) Shoulder (Anterior and Recurrent) (c) patella.

G. Describe briefly the general and PT assessment of the vertebral column.

Subjective history : occupation, symptoms, major problems : Objective examination : 1. Observation-body type, musculature, deformity and gait, 2. Palpation – temperature, swelling bony prominences, local tenderness. 3. Postural evaluation using a plumb line, 4. Active movements-the vertebral column flexion, extension, lateral flexion androtation. 5. Specific tests – straight leg raising, proneknee bend, passive neck flexion, Kernig's sign. 6. Proximal joints of pelvic and shoulder girdles, 7. Neurologial tests-muscle strength, sensation and reflexes.

H. Revfiew cervical and lumbar spondylosis, spondylolysthesis, TB spine and spinal fracture. Outline PT assessment and 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, PT aims and management along with a 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, signs symptoms

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 and clinical features and describe their treatment-strains, sprains (Medial ligament of knee and lateral ligament of ankle), bursit's (Subacromial and – Prepatteler), synovitis, tendinits, tenosynovitis, fibrositis, fibromyositis, rupture and avulsion of tendon (supraspinatus and bicipetal), periarthritis shoulder and shoulder-hand syndrome.

M. Review upper and lower limb and spinal orthoses and prostheses. Describe the principles and function of each; list indications and contraindications, advantages and disadvantages of each, demonstrate the fabrication of simple hand and foot splints out of POP.

N. Review the indications and principles of amputations 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 advantages.

O. Define poliomyelitis andreview the etiology, clinical features, stages and medical management. Outline PT assessments 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 tranfer operations in polio and its PT management. Review the common orthoses used and describe the technique of measurement for a KAFO and its check-out along with a detailed hone programme including care of the orthosis.

P. Define Cerebral Palsy. Review its causes, signs, symptoms, classification and common deformities. Outline PT assessment, aims and management along with a home programme. Review common surgical corrections 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, aims and management in the acute and chronic stages 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 a detailed home programme with special emphasison osteoarthritis of hip, knee, ankle and shoulder joints.

S. Define leprosy. Review the incidence and mode of transmission of leprosy. Review the clinical features and common deformities and medical management. Review the common tendon transfer operations and describe PT management before and following tendon transfers. Describe the risks of anaesthetic limbs and outlines its care to prevent complications. Review plantar ulcers in leprosy and its management (including footwear).

T. Describe the different degrees of burns and review relevant first aid measures. Outline the PT assessment of burns as follow: degree and % of burns, presence of oedema and aberent skin, ROM of involved joints muscle power, contractures, deformities, altered posture and chest movements. Review Medical and Surgical management including skin g rafting. Describe the PT aims and management of a patient with burns along with a home programme.

MANUAL THERAPY CONCEPTS

1. Biomechanical principles of Manual Therapy
2. Concave convex role
3. Close pack & Loose pack positioning
4. Resting positioning
5. Joint status
6. Barrier concept

7. Fryette Law
8. Articular neurology
9. Pain

Clinical Reasoning Manual Therapy**.**

PRACTICALS :

All the above given topics / conditions are to be demonstrated and practiced by students on model / each other before applying them in clinicals under supervision.

EVALUATION :

Unit test, term examinations, practical exams and assignments are given to evaluate the students.

PHYSIOTHERAPY FOR NEUROLOGICAL CONDITIONS

Instruction Hours : 150

Examination at the end of IV Yea(L-65,P-40,CL-45)

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 is that after 145 hours of lectures demonstrations, practicals 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.

COURSE OUTLINE

A. Review of Neuroanatomy and Physiology

Review the structure and function of a) neuron, b) synapse, c) supporting tissue. Review the organization and function of a) cerebral hemispheres, b) cerebellum, c) spinal cord, d) peripheral nerves, e) pyramidal system f) extrapyramidal system. Review the factors influencying 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) skills 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, voluntary control, assessment of range of movement, balance and co-ordination, d)m assessment of superficial aqnd 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 eg. colour coding on body charts, graphs etc.

C. Principles of Treatment :

Review the treatment principles as follows :

a. Sensory re-education : hypersensitivity, hyposensitivity and anaesthesia.

b. Treatment of altered one : hypertonicity and hypotonicity.

c. Motor re-education : Strengthening exercises co-ordination exercises, joint mobilization exercises, use of equilibrium and labrynthine systems, user of PNF patterns, controlled sensory stimulation to bias the spindle cells (eg.) vibration, tactile, ice etc., use of stretch to elicit movement (facilitation), light joint compression (inhibition), use of reflex activity to improve motor function, phylogenic sequence of motor behaviour.

d. Treatment to improve function : Free exercises gait training with and without aids, activities of daily living, Mat exercises and exercises and recreation.

e. Review the use of ambulatory aids in neurological conditions in spastic upper motor neuron lesions, in lower motor neuron lesions, in dorsal column dysfunction and cerebellar 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 types of pain, treatment modalities available, selection criteria for each modality and possible complications.

D. Cerebral Palsy

a. Management of Paediatric Neurological Conditions :

2. Assessment options in paediatrics.
3. Identification of motor/sensory dysfunction in paediatric including weakness, abnormal tone, motor control deficit and lack of endurance.

4. Clinical approaches to motor/sensory dysfunction in paediatric including weakness, abnormal tone, postural and motor control deficits and lack of endurance.
5. Application of assessment and treatment approaches in paediatric conditions including.

    a. Cerebral palsy
    b. Development delay
    c. Brachial Plexus Injury (Erb's Palsy, Klumpky's paralysis).
    d. Spina bifida.
    e. Head injury
    f. Muscular dystrophy (all types).
    g. Poliomyelitis.

b. Management of adult Neurological Conditions.

2. Assessment options in adult neurological patients.

3. Identification of motor, sensory, postural dysfunction in adult neurological patients including weakness, abnormal tone, motor control deficits and lack of endurance.

4. Clinical approaches to motor, sensory, postural dysfunction in adult neurological patients including weakness, abnormal tone, postural and motor control deficits and lack of endurance.

5. Application of assessment and treatment approaches in adult neurological conditions including :
    a. Stroke

    b. Monoplegia

    c. Brain Tumour

    d. Parknisonism

    e. Cerebellar lesions

    f. Amyotrophic Lateral Sclerosis
    g. Spinal Cord lesions

h. Space-occupying lesion in spine

i. Muscular dystrophies

j. Head injury

k. Gullian-Barrie Syndrome

l. Peripheral nerve lesions/injuries

m. VIIth cranial nerve palsy

n. Low back pain syndrome

o. Brachial neuroalgia
p. Laminectomy

q. Neuro Intensive care unit patients.

c. Integrated Approach

Integrated neuromuscular control and physiotherapeutic prevention, curative and rehabilitative measures for sensory motor development, pain control, postural re-adjustment/control using following hypothetical theories :

a. Motor development (Bobath's) approach

b. Motor re-learning process (MRP).

c. Brunstorm and Roods approach.

Merits and demerits of each approach to be explained.

PRACTICALS

Practical demonstration of assessment and physiotherapy management to be demonstrated in the class and students must practice on each other / model before applying them in clinicals under supervision.

EVALUATION :

Unit tests, term examinations, Practical exams and assignments are given to evaluate the students.

PHYSIOTHERAPY FOR OBSTETRICS AND GYNAECOLOGY

Instruction Hours-150
(L– 65,P – 40, C – 45)

Examination at the end of IV year

Course objective
After 150 hours of Instruction hours and demonstrations, the student will be able to give
Physiotherapeutic techniques is Obstetrics and Gynecological conditions for relief of pain,
relaxation, conditioning and posture.

Course outline
A. ANATOMY - Review of pelvic anatomy and types of Pelvis, Pelvic floor Muscles, Anatomy of female reproductive system, Physiology of Menstruation, Physiology of urinary and faecal continence, Review of abdominal muscles and Breast.

B.PRECONCEPTION - Preconception care and tests done in preconception stage, Review of Embryology, Physiological and physical changes of Pregnancy, Complications of Pregnancy, Antenatal screening, Common discomforts in Pregnancy and its PT management, Review of Antenatal classes, Nutrition during Pregnancy, Outline of Teratogenesis.

C.LABOR - Labor its Mechanism and its stages, Complication of labor, Physiotherapy management in labor, Interventions in labor, Caesarean section, its Procedure and its post operative complications, Post natal management following labour normal and caesarean section.

D.PUERPERIUM - Puerperium and its complication, Role of Physiotherapy in Puerperium, Maternal and foetal risk of exercise in Pregnancy, Contraindication of vigorous exercises in Pregnancy, Guidelines for exercise during Pregnancy.

E.BREAST FEEDING - Breast milk and its production, Breast care and Breast feeding positions, Collection and storage of Human milk, Breast feeding problems and its PT management.

F.GYNAECOLOGICAL INFECTIONS - Gynaecological infections, Disorders of menstruation and its PT management, Cysts and new growth, Types of incontinence and its PT management, Types of Prolapse and its PT management,.

Climateric and its PT management, Gynaecological surgeries and its PT management.

EVALUATION:

Unit tests, term examinations and assignments are given to evaluate the Student.

Recommended Books

Physiotherapy in Obstetrics and Gynaecology-Polden &Mantle, Jaypee Brothers

PHYSIOTHERAPY FOR SPORTS CONDITIONS

Instruction Hours: 150

Examination at the end of IV Year (L-65, P-40, CL-45)

COURSE DESCRIPTION

This course serves to integrate the knowledge gained by the students in Sports injuries with skills gained to apply these in clinical situations of dysfunction and Musculo-skeletal pathology in sports.

COURSE OBJECTIVES

The objective of this course is that after 150 hours of lectures, demonstration, practicals and clinics the student will be able to identify disability due to musculoskeletal dysfunction related to sports, set treatment goals and apply their skills gained in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function related to sports.

1. Fundamentals in Sports

   Anatomy, Physiology, Applied Biomechanics of Muscles, Tendon, Ligaments, Bones and Joints.

2. Musculoskeletal and Sports Assessment

3. Prevention of Athletic and Sports Injuries

   Athletic coordinating program – skeletal muscle Type 1 and Type 2 fibers, General Conditioning Principles – Strength, Power, Muscular Endurance, Flexibility.

4. Flexibility Exercises, Stretching and its types prior to the participation in Sports.
5. Uses and application of biomechanics in different Sports: Throwing, Swimming Running
6. Emergency Care and Athletic First Aid
   Cardiopulmonary emergencies, ABC of resuscitation,.Ice application, compression, elevation, gait instruction, stretcher and wheelchair ambulation.

9. Nutrition and Athlete:
   Well Balanced Diet, Pre Event Nutrition

10. Warm up Period

11.. Principles of Injury Prevention

12. Swimming Injuries:

"Swimmers Shoulder" Anterior Subluxation of the Glenohumeral joint. Breaststroker's Injury.

13. Physiotherapy Management of following Sports injuries:

a)Epiphyseal Injuries-Osgood Schlatter's disease,Traction & Avulsion injuries

b) Shoulder Joint Injuries- Painful Arc Syndrome, Rotator Cuff Injuries, Impingement Syndromes, , Dislocations, Sprain.

c) Elbow Joint injuries- Little Leagure's Elbow , Osteochondritis Dissecans of Elbow, Tennis Elbow , Golfers Elbow , Olecranon Bursitis, Sprain & Strain.

d). Wrist and hand injuries:

Colle's fracture, scaphoid fracture, Gamekeeper's Thumb, Jersey finger, Boutonniere deformity, boutoniere deformity, fracture of the metacarpals, Bennett's fracture, Mallet finger, Dequervain's tenosynovitis of the thumb, Bowler's thumb,, Hamate fracture, Ganglion cysts, Trigger finger, Carpal tunnel syndrome.

e). Thigh Injuries:

Contusion & Strain to the Quadriceps Musculature, Acute Strain of the Hamstring muscle.

f).Knee Injuries & patellar Injuries:

Grades of Knee ligament injuries, Anterior Cruciate Ligament (ACL) and Posterior Cruciate Ligament (PCL), Meniscal Lesion, Patello femoral dysfunction. Osteochondritis dissecans of knee, Jumper's knee. ITB syndrome Patella fracture . Acute & Recurrent dislocation / subluxation of patella.

g) Injuries to the Lower Leg, Ankle and Foot:

Tennis Leg, Achilles Tendinitis, Compartmental Syndromes, Complex Regional Pain Syndrome(CRPS), Calcaneal Apophysitis, Tarsal tunnel syndrome, Cuboid syndrome, Metatarsal stress fracture, Turf toe, Sesamoiditis , Retrocalcaneal bursitis, Inversion sprains, Eversion sprains, Morton's Neuroma., Interdigital Neuroma.

REFERENCES:

- Saunder's manual of physical therapy,
- Maria Zuluaga: Sports physiotherapy applied science & practice,
- Thomas: Imaging of sports injuries,
- Sandra: Assessment of athletic injuries,

- David Reid: Sports injury assessment & rehabilitation,
- Chad: Evaluation of orthopedic and athletic injuries,
- Christopher M Norris : Sport injuries diagnosis & management,
- Joanne: Aquatic therapy programming guidelines and orthopedic rehabilitation,
- Skinner: Exercise testing & exercise prescription,
- VivianHaywards: Advanced fitness assessment& exercise prescription
- Katch & Katch, McArdle: Exercise physiology, energy nutrition, and human performance,
- Frank: Exercise physiology for health care professionals,
- David: Collision sport injuries and repair,
- James Hay: The biomechanics of sports techniques,
- Dinesh: Decision making and out comes in sports rehabilitation,
- Sports Medicine – Fox,
- Oxford Textbook of sports Medicine
- Sports Medicine – Karim Khan
- Sports Medicine – Kuprian
- Sports Medicine - Irvin & Roy

PHYSIOTHERAPY FOR PAEDIATRICS CONDITIONS

Instruction Hours: 150

Examination at the end of IV Year (L-65, P-40, CL-45)

EVALUTION

Evaluation of the paediatric patient, Eliciting history from child and informant, Communication skills for managing paediatric patients, securing co-operation of the sick child, sharing information with parents/caregivers.

PHYSIOTHERAPEUTIC ASSESSMENT OF THE CHILD

Various assessment of child with developmental delay, Child on life support systems, Child with spasticity, ataxia, inco-ordination and other neurological conditions, Child with congenital limb deficiency / abnormality.

Assessment of fine motor, gross motor development Assessment of Infantile Hemiplegia, CP, Muscular Dystrophy, Down syndrome, Poliomyelitis, AIDS

Various scales of paediatric Assessment.

MODALITIES AND TECHNIQUES:

Choosing the modality, precautions, contraindications, and care of equipment in the paediatric setting. Correct use of techniques of exercise; techniques and movement patterns; emphasis on various biofeedback, retraining, neuro developmental and PNF approaches monitoring and evaluation of patients on therapy.

Physiotherapy in intensive / critical care unit and premature nursery

Various Physiotherapy approaches of paediatric therapy. Rood, Bobath, Motor, Relearning, PNF, Vojta

AIDS, APPLIANCES, SUPPORT SYSTEMS

Use of orthoses/prostheses in childhood and training. Special care needed for orthotic and prosthetic use. Enhancing function/participation of a child using support systems. Crutches, wheelchairs, and mobility aids in childhood.

THERAPEUTIC RECREATION

Definitions, Need for Recreation in children, Recreation Activities as therapy/exercise.

COMMUNITY PHYSIOTHERAPY

Need for community physiotherapy, planning exercise at home. Creating awareness of physiotherapy in selected members of community, monitoring & Evaluation of community work.

Reference :

1. Paediatric neurologic physical therapy – Suzan Campbell
2. Management of motor disorders of children with cerebral palsy Scrutton. D
3. Treatment of cerebral palsy child – Egel .P.F.
4. Conductive education and cerebral palsy – E. Cotton
5. Neurological basis for treatment of cerebral palsy – K. Bobath
6. Paediatric neurologic physical therapy -Sophie Levitt

REHABILITATION MEDICINE

Instruction Hours : 80

Examination at the end of IV Year (L-40,P-20,CL-20)

COURSE DESCRIPTION

Following the basic science and clinical science course, this course will enable the students to understand their role in the management of the disability within the rehabilitation team.

COURSE OBJECTIVES

The objectives of this course is that after 80 hours of lectures and demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of :

A. The concept of team approach in rehabilitation will be discussed and implemented, through practical demonstration with contributions from all members of the team.

B. Observation and identification of diagnostic features in physical conditions will be practiced 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.

F. Student should be able to prescribe, checkout and train the uses of various Orthotic and Prosthetic devices.

COURSE OUTLINE

A. Introduction

Define the term rehabilitation. Explain its aims and principles.

Scope of rehabilitation.

Discuss team work involved in rehabilitation, explaining briefly the role of each team member.

B. Therapeutic Techniques

1. Agencies involved in rehabilitation of a physically handicapped.

2. Legislations for physically handicapped. (in brief)

3. Limitations of each team member in rehabilitation of a physically disabled individual.

C. Communication Problems

Identify communication problems, classify these and outline principles of treatment.

D. Behavioral Problems

Identify behavioral problems in the disabled and outline the principles of management.

E. Evaluation of Physical Dysfunction

Demonstrate methods of evaluation for physical dysfunction and management of disabilities with particular reference to : Spinal cord injury (paraplegia and tetraplegia), Poliomyelitis, Brain injury, (including strike and cerebral palsy) Arthritic conditions, Muscular Dystrophy, Hansen's disease, peripheral nerve lesions, fracture disease and chronic cardio-respiratory dysfunction.

F. Mobility Aids

Demonstrate knowledge of the indications for different types of mobility aids and their function, eg. wheelchairs, walkers, crutches.

G. Pre-vocational Evaluation

Discuss methods and team involvement in pre-vocational evaluation and training.

H. Architectural barriers

Describe architectural barriers and possible modifications with reference to Rheumatoid arthritis, cerebrovascular accident, spinal cord injury and other disabling conditions.

I. Disability Evaluation

Outline the principles of disability evaluation and discuss its use.

J. Legal Aspects

Outline legal aspects of disability in terms of compensation for disability and benefits available to the disabled.

K. Social Implications

Outline the social implications of disability for the individual and for the community.

L. Community Based Rehabilitation Module

Describe a CBR MODULE and compare this with an institutional based rehabilitation system.

M. Outline of Occupational Therapy.

N. Outline of Speech Therapy and Hearing Aids.

O. Outline of Social and Vocational Counseling.

P. Principles of Bio-engineering.

Biomechanical requirements for aids and appliances.

Q. Classification of aids and appliances

Measurement & P.O.P. Cast, techniques.

Simple splints techniques.

R. Check out procedures for static and dynamic alignment.

a. Spinal orthotics.
b. L.L.orthotic & prosthetics.
c. U.L. orthotics & training.

S. Principles of U.L. Prosthetics and Orthotics.

T. Principles of L.L. Prosthetics and Orthotics.

U. Principles of Spinal Orthotics.

Assistive devices.

Three point pressure system.

V. Introduction to material sciences relevant to Bio-engineering.

GERIATRIC REHABILITATION

Principles of Geriatric Rehabilitation

Classification & Theories of Ageing process and its systemic changes(Muscular, Skeletal, Nervous, Cardio Respiratory) and its Physiotherapuetic management.

Arthritis in the elderly (Osteoarthritis, Rheumatoid arthritis).

Fall and its prevention in elderly**.**

EVALUATION :

Unit tests, term examinations and assignments are given to evaluate the student.

PHYSICAL EVALUATION
ORTHO, NEURO, CARDIO, CONDITIONS

Instruction Hours : 50
(L-25,P-25)

Not for University Examination.(IV YEAR)

ORTHOPADICS:

PRINCIPLES OF ASSESSMENT :

Skill in history taking:

A. Subjective Assessment:

i. Occupation , ii. Chief complaints, iii. Medical history, iv. Social history, v. Personal history

Objective Assessment:

I.OBSERVATION: i.Assessment of Body type, ii. Musculative, iii. Deformity, iv. Gait, v.Posture

II. Palpation : i. Tenderness, ii. Temperature, iii. Swelling, iv. Bony prominence

III. Examination : i. Pain Analysis, ii. Muscle Power iii. Range of Motion,
iv. Muscle Girth, V. Tightness/ Contracture,
vi. Deformity, vii. Postural deviations, vii. ADL,
ix. Functional Dependence, x. Limb length,
xi. Gaith-Both normal & Abnormal.

Emphasis on the special tests depending on the affected area.

: Regional Assessment , Spine, Upper extremity Joints, Lower Extremity Joints.

: Soft tissue injury Assessment.

NEUROLOGY:

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 co-ordination 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.

CARDIO RESPIRATORY
PRINCIPLES OF ASSESSMENT :
Subjective and Objective Assessment:

In Subjective Assessment of patients problems History (Past, Present, Medical, Family, Personal)

Objective:

Assessment of the vital signs, inspection: Posture breathing Pattern, Chest movement , Cheat deformity , Spinal deformity, Leads lines and tubes connected to the patient (I.V , Central lines, Endo trocheal tubes, E.C.G leads, Drains), Incision (type of incision)

PALPATION:

Tactile and vocal fremitus, mobility of thoracic spine and rib cage, Percussion,

EXAMINATION:

Auscultation, breath sounds, heart sounds, measurement of chest expansion at different levels, Dyspnoea (grading), cough and sputum, cyanosis, clubbing, exercise tolerance (six minute walking test).

INVESTIGATION:

Chest radiograph, E.C.G, Arterial blood gases, P.F.T, Stress testing, (Submaximal, maximal)

TREATMENT:

Indentity problems, explain and demonstrate treatment techniques, education about the disease, Self management, diet, behaviours, modification.

PROJECT WORK / CASE STUDY

OBJECTIVES

This assignment of clinical study / review of literature is designed to developing the aptitude among students towards further reading and selecting references and present a written Project, 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 a written Project / case study report. The student will be expected to submit above project work / case study report at IV Year.

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 and submit.

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 by the 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 causes 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

Thus the student will submit a written project work / case study report. The student will be expected to submit above project work /case study report to the Principal of the institution Three Months before the IV Year Examination on or before the dates notified by the university