Regulations for the Bachelor of Physiotherapy

In exercise of the powers conferred by rule 9 of Memorandum of Association and Sec 2 of chapter – V of Bye-laws of the Vinayaka Mission's Research Foundation, Deemed University, Salem, the Academic Council of the University hereby makes the following regulations: -

SHORT TITLE AND COMMENCEMENT

These regulations may be called "THE REGULATIONS FOR THE DEGREE OF PHYSIOTHERAPY (NON -SEMESTER) OF THE VINAYAKA MISSIONS RESEARCH FOUNDATION DEEMED UNIVERSITY, SALEM".

These regulations shall come into force with effect from the academic year 2015-2016 and are subject to such modifications as may be approved by the Academic Council from time to time.

CURRICULUM FOR BACHELOR OF PHYSIOTHERAPY

I. OVERALL OBJECTIVE

The overall objective of Bachelor of Physiotherapy curriculum is to impart in depth knowledge and skill in relevant subjects to the student to become competent in utilizing, demonstrating and teaching physiotherapy techniques and develop proper attitude required for the practice of physiotherapy.

SPECIFIC OBJECTIVE

01. To acquire adequate knowledge of the basic subjects like Anatomy, Physiology, Pathology, Microbiology, Applied Physics, Psychology and Sociology etc.,
02. To develop skills and competence in assessment of patients, clinical diagnosis, treatment plan and executing treatment utilizing various physiotherapeutic techniques and modalities
03. To develop proper attitudes of compassion and concern for the welfare of every individual patient in need and the welfare of the physically handicapped in the community.
04. To demonstrate competence in teaching, administration, research, guidance and counseling.
05. To maintain proper moral and ethical standards towards patients and other professional colleagues in the practice of physiotherapy.

ELIGIBILITY

Candidates belonging to all categories for admission to B.P.T. Course should have passed H.Sc. examination after a period of 12 years of study with following subjects (Physics, Chemistry, Botany, Zoology/ Biology) or pre degree passed with Science subjects or equivalent there-to.

AGE LIMIT FOR ADMISSION

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

PHYSICAL FITNESS CERTIFICATE

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

COMMENCEMENT & DURATION OF THE COURSE

1st August of the academic year.
Four academic years and six months of compulsory rotatory internship.

ACADEMIC TERMS

I B.P.T. – August 1st to July 31st
II B.P.T. – August 1st to July 31st
III B.P.T. – August 1st to July 31st
IV B.P.T. – August 1st to July 31st
Six Months of Compulsory Rotatory Internship

CUT-OFF DATES

The candidates are admitted only up to 30th September and shall be registered to take up their first year examination during August of the next year.

COMMENCEMENT OF EXAMINATION

August 1st and Feb 15th

Theory examinations not to be held on Saturdays and Sundays. If the dates of commencement of the examination falls on Saturdays, Sundays or declared public holidays, the examination shall begin on the next working day.

CURRICULUM

The curriculum and the syllabi for the course shall be as prescribed by the university from time to time

MEDIUM OF INSTRUCTION

English shall be the medium of Instruction for all the subjects of study and for examinations of the Bachelor of Physiotherapy degree course.

WORKING DAYS IN AN ACADEMIC YEAR

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

ELIGIBILITY CERTIFICATE

Candidates applying for admission to the course must apply for eligibility certificate issued from Vinayaka Missions University by paying the prescribed fee.

REGISTRATION

A candidate admitted to the course shall register with this University by remitting the prescribed fees along with the application form for registration duly filled in and forwarded to this University through the Head of the Institution within 90 days from the date of admission.

ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION

a. No candidate shall be permitted to appear for any one of the parts of Bachelor of Physiotherapy Examination unless he / she has attended the course in the subject for the prescribed period in the institution of this University and produces the necessary certificate of study, attendance, satisfactory conduct and progress from the Head of the Institution.
b. A candidate is required to put in minimum 75% of attendance in both theory and practical separately in each subject before admission to the examination.
c. A candidate lacking in the prescribed attendance and progress in any one subject in theory and practical shall not be permitted for admission to the entire examination in the first appearance.

REGULATIONS FOR CONDONATION OF LACK OF ATTENDANCE.

Condonation of shortage of attendance up to a maximum of 10% prescribed eligible attendance for admission to an examination rests with the discretionary powers of the Vice-Chancellor**.** A candidate lacking in attendance should submit an application in the prescribed form and remit the stipulated fee, 15 days prior to the commencement of theory examination. The Head of the Department and Head of the institution should satisfy themselves on the reasonableness of the candidate's request while forwarding the application with their endorsements to the Controller of Examinations, who would obtain the approval of the Vice-Chancellor for admission of the said candidate to the examination. No application would be considered if it is not forwarded through proper channel.

Application for condonation of lack of attendance shall be taken up for consideration on the following grounds:

1. Any illness afflicting the candidate. (The candidate should submit to the Head of the Institution a Medical Certificate from a registered Medical Practitioner soon after he returns to the Institution after treatment.)
2. Any unforeseen tragedy in the family. (The parent / Guardian should give in writing the reason for the ward's absence to the Head of the Institution).
3. Participation in NCC/NSS and other co-curricular activities representing the Institution or University. (The Head of the Institution should instruct the concerned officers in-charge of the student activities in their institution to endorse the leave)
4. Any other leave the Head of the Institution deems reasonable for condonation.

PROCEDURE FOR REJOINING AFTER BREAK OF STUDY

a. The candidate having a break of study for more than three (3) months but less than ten (10) years shall apply for rejoining the course in the prescribed form as in Annexure II by remitting the stipulated fee for condonation of Break of study to the Academic Department of this University through the concerned Dean / Principal of the college for issue of necessary permission to rejoin the course. The Dean / Principal of the college concerned shall not permit any candidate with a Break of study as stipulated above to rejoin the course without obtaining the prior permission from this University.

If any candidate is permitted by the Dean / Principal of the college concerned without the prior permission from this University, to rejoin the course after the break of study the period of such study shall not be considered as a recognized study and the candidate shall not be permitted to write the University examinations based on such study period.

b.(i) If the absence is more than three (3) months but less than three (3) years, the candidate may be permitted to rejoin at the beginning of the year of study in which candidate discontinued the course and shall after fulfillment of the Regulations of this University to the course concerned be admitted to the examinations. The candidates shall be exempted from the subjects he/she has already passed.

(ii) If the absence is more than three (3) years but less than ten (10) years, the candidate shall be permitted to rejoin the course at the beginning of the year of study in which the candidate discontinued the course and shall after fulfillment of the Regulations of this University to the course concerned be admitted to the examinations. The candidate shall not be exempted in the subjects already passed in the said year of discontinuance and will be permitted to appear for the examination as prescribed in the Regulations.

If any candidate completed the course of study, appeared for the final year examinations but failed in one or more subjects and does not consecutively appeared for two supplemental examinations, shall undergo a refresher course for a period of six months after obtaining the permission from the University for undergoing such refresher course in the college in which he/she last studies and obtained a certificate to that effect before appearing for the failed subjects of final year examination

in the course. The examination application shall be forwarded through the Dean/Principal of the college concerned.

The period of break of study of the candidate for rejoining the course shall be calculated from the date of first discontinuance of the course.

All the under graduate students have to execute a declaration at the time of registration with this University in this regard in the prescribed form as in Annexure I.

CONDONATION OF THE BREAK

a. The Vice-Chancellor has the power to condone any break of study as defined in Regulation No.2 (a) of this Regulations and to issue orders for permitting the candidate to continue the course if such absence is more than three (3) months but below ten (10) years. The Dean/Principal of the college shall not permit the candidates to rejoin the course till specific orders are issued by this University.

b.(i) If the absence is more than three (3) months but less than three (3) years, the candidate may be permitted to rejoin at the beginning of the year of study in which the candidate discontinued the course and shall after fulfillment of the Regulations of this University to the course concerned be admitted to the examinations. The candidates shall be exempted in the subjects he/she has already passed.

(ii) If the absence is more than three (3) years but less than ten (10) years, the candidates shall be permitted to rejoin the course at the beginning of the year of study in which the candidate discontinued the course and shall after fulfillment of the Regulations of this University to the course concerned be admitted to the examinations. The candidate shall not be exempted in the subjects already passed in the said year of discontinuance and will be permitted to appear for the examination as prescribed in the Regulations.

c. The details of all the cases of break of study of more than three (3) years but below ten (10) years permitted by the Vice-Chancellor shall be informed to the Board of management then and there.

d. Only two spells of break of study will be allowed for the entire duration of the course.

e. Any break of study beyond ten (10) years is considered as discontinuation of study. This is applicable for all the years of study of the Under Graduate degree course concerned. However, in exceptional cases if a candidate having a break of study beyond 10 years and the number of break of study is more than two spells the Board of Management, may, on the recommendation of the Vice-Chancellor, shall permit the candidate to rejoin the course under the procedures/conditions stipulated in regulations.

The candidate shall be permitted to rejoin at the beginning of the first year of the course (ie.,) the candidate has to redo the course from the beginning and shall after fulfillment of the regulations of this university to the course concerned by admitted to the examinations. The candidate shall not be exempted in the subjects already passed.

ANNEXURE-I

I_____ son of / Daughter of_____Residing at _____ _____and admitted to in I year of_____(Name at_____(Name of the College) do hereby solemnly affirm and sincerely state as follows:

I declare that I shall abide by the rules and regulations prescribed by the Vinayaka Mission's Research Foundation – Deemed University, Salem for the _____ (course) including regulations for re-admission after the break of study.

Date: Signature of candidate

/Countersigned/

Dean/Principal/Director

(Office date seal)

ANNEXURE-II

PROFORMA FOR RE-ADMISSION

1. Name of the student :

2. Name of the course and period of study

3. Name of the College

4. Date of joining the course

5. Duration of break of study : From To

6. Details of examinations appeared & subjects passed:

7. Reasons for the period of break of study of the course:
   (Evidence should be produced)
8. The details of previous break of study (Enclose Xerox):
   Copy of the condonation order of the University, if any
9. Whether his/her own vacancy is available for rejoining:
   The course
10. Whether any disciplinary case is pending :
    (i.e) production of false certificates/ragging etc.

11. Whether the candidate has registered with this :
    University. If so furnish the Reg. No.

12. Whether the candidate has paid the prescribed fee for:
    for readmission sought for (Furnish the details)
    (Processing fee: Rs.500
    Condonation fee: Rs.1000/- per year or part there of:
    (or) as revised by the University from time to time)
13. Previous Correspondence if any made :
    (Furnish copies of relevant records)

14. Recommendation of the Dean/Principal/Director concerned

Certified that the details furnished above in respect of the candidate are verified and found to be correct,

Signature of the Dean/Principal/Director
With seal

Format for furnishing details of candidates in whose cases condonation of shortage of attendance has been granted for theory examination

Name of the college: Faculty of Physiotherapy, Vinayaka Mission's Research foundation & deemed University

Academic year for which condonation has been granted for:

S.No	Name of the candidate(s)	Name of the course and Branch	Total No. of working days /hours for the year / semester	Minimum No. of days required for attendance certificate (75%)	No. of days attended by the candidate	Actual shortage of attendance

Requested condonation of attendance in respect of the above candidates as the shortage of attendance is within the condonation limit.

The demand draft for Rs…… being the condonation fee of shortage of attendance, drawn in favour of the Registrar, the Vinayaka Mission's Research foundation – Deemed university, Salem is/are enclosed

Date: Signature of the Principal with college seal

Place: Signature of the Head of the University

Department Seal:

Note:

1. The fee prescribed for condonation of shortage of attendance as specified by the university shall be paid by the student
2. the forms should reach the university at least 15 days before the commencement of respective university examinations.
3. A separate list (Three copies degree wise) showing candidates who have not earned the required attendance and are not eligible for condonation should also be sent at least 15 days before the commencement of examination

MIGRATION/ TRANSFER OF CANDIDATES:

a) Migration/ Transfer of candidates from one recognized college to another recognized college of this university or from another University shall be granted as per the recommendations of UGC.
b) The provision of combination of attendance shall be granted to a transferee for admission to the examinations of this university on satisfactory fulfillment of the regulations of this university.
c) All Migration/Transfer are subject to the approval of the Vice-Chancellor

INTERNAL ASSESSMENT:

a. A minimum of three written examinations shall be conducted in each subject during a year and the average marks of the best two performances shall be taken into consideration for the award of sessional marks.
b. A minimum of three practical examinations shall be conducted in each subject during a year and an average of two best performances shall be taken into consideration for award of sessional marks.
c. Failed candidates in any subject both theory & practical shall be provided an opportunity to improve his/her sessional marks during his/her additional period of study by applying in a prescribed form to the university at the beginning of the additional period of study. A minimum of three theory or practical examinations shall be conducted in each subject during the additional period and an average of two best performances shall be taken into consideration for award of internal assessment marks.
d. The internal assessment marks (both in written and practical) should be submitted to the university endorsed by the Principal of the college 15days prior to the commencement of theory examinations.
e. The candidate has to secure 35% out of marks prescribed for the sessional examinations in theory and practicals separately for the final examination of the concerned academic year.

CRITERIA FOR AWARDING INTERNAL MARKS:-

The internal marks will be awarded for a maximum of 50 for all the subjects except the project work

Subjects with practical	Subjects without practical
1. Written exam – 20	1. Written exam – 20
2. Attendance – 5 marks	2. Attendance – 5 marks
3. Practical demonstration / Viva – 20	3. Viva – 20
4. Record work – 5	4. Assignment – 5

The internal marks will be awarded for a maximum of 25 for the project work

Project

Writing	-	10
Participation / Involvement	-	5
Viva	-	10
		25

CLASSIFICATION OF SUCCESSFUL CANDIDATES

a. First class may be awarded to such candidates who have passed all the subjects in the stipulated period of study and obtained 60% of marks and above but less than 75% in the aggregate of all the subjects he/she had appeared in the entire BPT course

b. First class with distinction may to awarded to such candidates who have passed all the subjects in the stipulated period of study and obtained 75 % of marks and above in all the subjects he/she had appeared in the entire BPT course

c. All other successful candidates shall be declared to have passed in second class

d. For the best outgoing/Gold medal/ranking students, one should have passed in all the subjects in the first attempt.

CARRY-OVER OF FAILED SUBJECTS

01. A candidate is permitted to go to second year if he/she fails in any of the first year subjects.
02. A candidate is permitted to third year, only if he/she have passed all his /her I year subjects.
03. A Candidate is not permitted to fourth year if he/she does not clear all the papers of second /third year

EXEMPTION FROM RE-EXAMINATION IN A SUBJECT

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

DISTRIBUTION OF MARKS IN THEORY EXAM

Short Answers -	10 x 2	= 20
Essay -	2 x 20	= 40
Short Notes -	8 x 5	= 40

CRITERIA FOR PRACTICALS / VIVA

50% by internal examiner and 50% by external examiner at the time of University exams.

MARKS QUALIFYING FOR PASS:-

50% of marks in theory and practical separately and an overall aggregate of 50% is required for passing.

REGULATIONS FOR REVALUATION/ RETOTALLING OF ANSWER PAPERS

There shall be retotalling/revaluation of answer papers of failed candidates in B.P.T. degree examinations on payment of a prescribed fee.

VACATION

The heads of institutions shall declare 5 weeks vacation in an academic year to the students. The period(s) of vacation can be decided by the Head of the Institution.

RAGGING

Ragging in any form is offensive and punishable by law as per "Tamilnadu prohibition of ragging ordinance, 1996. All students found involved in ragging will be immediately suspended from the college until further orders and if found guilty by the Anti-ragging committee he/she will be dismissed from the institution.

CLOCK HOURS OF INSTRUCTION

S.No	Subject	Theory	Practicals	Total
	FIRST YEAR			
1.	Psychology	100	50	150
2.	Sociology	100	50	150
3.	Anatomy & Applied Anatomy	310	120	430
4.	Physiology & Applied Physiology	310	120	430
5.	Environmental Science	30	20	50
6.	Basic Nursing & First Aid	30	20	50
7.	Health & Nutrition	60	-	60
8.	Basic Physics	20	20	40
9.	Orientation & Introduction to treatment	50	30	80
	SECOND YEAR			
1.	General Medicine	100	20	120
2.	General Surgery	60	20	80
3.	Pediatrics	80	20	100
4.	Obstetrics & Gynecology	20	10	30
5.	Microbiology	50	25	75
6.	Pathology	50	25	75
7.	Biochemistry	30	20	50
8.	Pharmacology	30	20	50
9.	Biomechanics & Kinesiology	100	50	150
10.	Exercise – Therapy & Massage	200	200	400
11.	Bio-Statistics / Research Methodology	30	20	50
12.	ENT/Ophthalmology	10	10	20
13.	P.T. for Veterinary Sciences	20	10	30
14.	Clinical Practice			210

S.No	Subject	Theory	Practical	Total
	THIRD YEAR			
1.	Electrotherapy	180	180	360
2.	Orthopedics and Geriatrics for Physiotherapists	60	40	100
3.	Neurology for Physiotherapists	60	40	100
4.	Cardio- Respiratory Diseases for Physiotherapists	60	40	100
5.	Community Medicine	70	30	100
6.	Yoga	10	10	20
7.	Sports Physiotherapy	20	10	30
8.	EMG & Bio-Feedback	20	10	30
9.	Basics of Acupressure & Acupuncture	5	5	10
10.	Clinical Practice			590
	FOURTH YEAR			
1.	Physiotherapy for Orthopedic conditions	70	50	120
2.	Physiotherapy for Neurological conditions	70	50	120
3.	Physiotherapy for Cardio-respiratory conditions	70	50	120
4.	Rehabilitation Medicine	60	40	100
5.	Project	30	-	30
6.	Administration / Supervision / Ethics	40	20	60
7.	Physical Education / Fitness/ Diet & Nutrition	20	20	40
8.	Teaching Methodology	20	20	40
9.	Evidence based practice & clinical reasoning	10	-	10
10.	Visits & Special lectures	-	-	60
11.	Clinical Practice	-	-	740

Total course hours – 5760 hours
Clinical Practice during Student ship – 1540 hours

COMPULSORY INTERNSHIP TRAINING: -

All candidates admitted to Bachelor of Physiotherapy Degree course shall under go Six (6) months of compulsory rotatory internship in the institution he / she has studied after successful completion of the final examination, in the following clinical areas.

S.NO	AREA OF TRAINING	PERIOD	HOURS
	Physical Medicine & Rehabilitation Unit	45 days	360
	Orthopedic unit	30 days	240
	Neurology unit	30 days	240
	Cardiothoracic unit	30 days	240
	Plastic surgery/Hand rehabilitation/ Burns unit	16 days	128
	Leprosy unit	7 days	56
	Rheumatology unit	7 days	56
	Elective unit	15 days	120
	Clinical practice in Internship	=	1440 hours

ELECTIVE

(Pediatric / Geriatric / Sports / Intensive Medical Care Unit / Intensive Coronary Care Unit / Community Based Rehabilitation / Obstetrics and Gynecology)

SCHEME OF EXAMINATIONS

BACHELOR OF PHYSIOTHERAPY – FOUR YEARS AND SIX MONTHS INTERNSHIP

Yr.	Subject	Examination	Sessional Marks	Theory	Oral	Practical	Total
I	Anatomy	UE	50	100	50	-	200
I	Physiology	UE	50	100	50	-	200
I	Psychology and Sociology	UE	50	100	-	-	150
I	Environmental science	UE	25	75	-	-	100
II	General Medicine, General Surgery, Pediatrics & Obstetrics and Gynecology	UE	50	100	-	-	150
II	Microbiology & Pathology	UE	50	100	-	-	150
II	Bio-Chemistry & Pharmacology	UE	50	100	-	-	150
II	Biomechanics and Kinesiology	UE	50	100	-	-	150
II	Exercise Therapy	UE	50	100	25	75	250

III	Electrotherapy	UE	50	100	25	75	250
III	Orthopedics and Geriatrics for Physiotherapists	UE	50	100	50	-	200
III	Neurology for Physiotherapists	UE	50	100	50	-	200
III	Cardio Respiratory Diseases for Physiotherapists	UE	50	100	50	-	200
III	Community Medicine	UE	50	100	-	-	150
IV	Physiotherapy for Neurological Conditions	UE	50	100	25	75	250
IV	Physiotherapy for Orthopedic conditions	UE	50	100	25	75	250
IV	Physiotherapy for Cardio Respiratory Conditions	UE	50	100	25	75	250
IV	Rehabilitation Medicine	UE	50	100	50	-	200
IV	Project	UE	Internal Assessment:				25
			Presentation: Review of literature				10
			Methodology				20
			Statistics				10
			Discussion				10
			Orals				25
			Total				100

I – YEAR

PSYCHOLOGY AND SOCIOLOGY
GENERAL AND HEALTH PSYCHOLOGY

THEORY HOURS: 100

PRACTICAL HOURS: 50

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is that after 150 hours of lectures, demonstrations, practical and clinical the student will be able to recognize and help with the psychological factor involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patients/conditions. They should also understand the elementary principles of behavior for applying in the therapeutic environment.

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

1. Psychosocial assessment of patients in various developmental stages.
2. Explain the concept of stress and its relationship to health sickness and one's profession
3. Identify ego, defense mechanisms and learn counseling techniques to help those in need.
4. Help them to understand the reason of non-compliance among patients and improve compliance behavior.

PART- A GENERAL PSYCHOLOGY

Sound knowledge of psychology is essential to help the student to understand him/herself and other people, and how to help the student to understand him/herself and other people, and how to develop inter personal relationships. The knowledge would help them when he/she apply working with any patient and as member of the treatment team. This subject will become basis for later study of psychiatry.

COURSE OUTLINE

I. DEFINITION OF PSYCHOLOGY

Definition of psychology, basic information in relation to following schools methods and branches
Schools**:** structuralism, functionalism, behaviorism, psychoanalysis,
Methods**:** introspection, observation, inventory and experimental method.
Branches**:** general, child, social, abnormal, industrial, clinical, counseling

II. HEREDITY AND ENVIROMENT

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

III. DEVELOPMENT AND GROWTH BEHAVIOUR

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

IV. INTELLIGENCE

Definitions-Intelligent Quotient, mental age, list of various intelligence tests including Bhatia performance test, Raven progressive matrices test.

V. MOTIVATION

Definition – motive, drive, incentive, reinforcement, basic information about primary needs: hunger, thirst, sleep, avoidance of pain, attitude to sex

VI. EMOTIONS

Definition, differentiate from feelings, physiological changes of emotion. Role of reticular activating system, hypothalamus, cerebral cortex, adrenal gland, heredity and emotion. Nature and control of anger, fear, and anxiety.

VII. PERSONALITY

Definition: List the components: physical characteristics.
Discuss briefly the role heredity, nervous system, physical characteristics, abilities, family and culture on personal development.
Basic concepts of Freud**:** unconscious, conscious, id, ego, super ego.
Personality assessment: interview, standardized, non standardized, exhaustive and stress interviews**.** List and define inventories.
Projective tests- Rorschach, Thematic Appreciation Test, Sentence completion test.

VIII. LEARNING

Definition, List the laws of learning as proposed by Thorndike.
Types of learning**:** Classical conditioning, Operant conditioning, Insight learning, observational, Trial and error type.
List the effective ways of learning: Massed & Spaced, Whole & Part, Recitation & Reading, Serial & Free recall, knowledge of results, associations, organizations, mnemonic methods, incidental & international learning, role of language.
Types of memory-Recall, recognition and rate memory, causes of forgetting

IX. THINKING

Definitions, concepts, creativity, steps in creative thinking. List the traits of creative people, delusions.

X. FRUSTRATION

Definition, sources, solution, conflict; approach – approach, avoidance – avoidance, approach – avoidance.

XI. SENSATION, ATTENTION AND PERCEPTION

Sensation – vision, hearing, olfactory, gestation and cutaneous sensation, movement, Equilibrium and visceral sense.
Attention – Define attention and list the factors that determine attention: nature of Stimulus intensity, color, change, extensity, repetition, primary motives.
Perception – Define perception and list the principles of perception figure ground, constancy, similarity, proximity, closure, continuity, values and interest, past experience context, needs, moods, religion, sex, perceived benefits and socioeconomic status.
Define illusion and hallucination.

XII. LEADERSHIP

Qualities of leadership: physical factors, intelligence, sociability, will and dominance.

XIII. DEFENCE MECHANISMS OF THE EGO

Denial, rationalization, projection, reaction formation, identification, repression, emotional insulation, undoing, introjections, acting out, depersonalization.

PART B– HEALTH PSYCHOLOGY

I. PSYCHOLOGICAL REACTIONS OF PATIENTS

Psychological reactions of patient during admission and treatment – anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, ego, concern about small matters, narrowed interest, emotional over reaction, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, loss of hope.

II. REACTIONS TO LOSS

Reaction to loss, death and bereavement, shock and disbelief, development of awareness, stage of acceptance.

III. STRESS

Physiological and psychological changes, relation to health and sickness: psychosomatics, professional stress, burnout

IV. COMMUNICATION

Types – Verbal, non- verbal, elements in communication, developing effective communication, specific communication technique.

V.COUNSELING

Definition, aim, differentiate from guidance, principles in counseling.

VI. COMPLIANCE

Nature, factors contributing to non compliance.

VII. EMOTIONAL NEEDS

Emotional needs and psychological factors in relation to unconscious patient, handicapped patients, bed-ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputation, head injury, parkinsonism, leprosy, incontinence.

VIII. GERIATRIC PSYCHOLOGY

Specific psychological reactions and needs of geriatric patient

IX.PAEDIATRIC PSYCHOLOGY

Specific psychological reactions and needs of pediatric patients.

X. BEHAVIOUR MODIFICATION

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

XI. SUBSTANCE ABUSE

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

REFERENCES

General Psychology: S.K. Mangal
Introduction to Psychology: Morgan & king
Introduction to Psychology: Hilgard & ATKINSON
Abnormal Psychology: S.K. Mangal

ELEMENTS OF SOCIOLOGY

THEORY HOURS: 100

PRACTICAL HOURS: 50

COURSE DESCRIPTION

This course will introduce to the students the basic sociological concepts, principles and social process. Social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied**.**

OBJECTIVE OF THE COURSE

The objective of this course is that after 150 hours of lectures, demonstrations, practical and clinics the student will be able to demonstrate an understanding of the role of socio-cultural factors as determinants of health and behavior in health and sickness. They will be able to relate this to therapeutic situations in the practice of physiotherapy and occupational therapy.

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

1. Understand the role of family and community in the development of human behavior.
2. Develop a holistic outlook towards the structure of the society and community resources.
3. Identify the subtle influence of culture in the development of human personality, the role of belief and value as determinants of individual and group behavior.
4. Understand the social and economic aspects of community that influence the health of the people

5. Learn to assess the social problem and participate in social planning

6. Identify social institution and resources.

7. Understand the significance of social interaction in the process of rehabilitation
8. Appreciate the role of therapist as a member of society, and the interdependence of individuals and society.

COURSE OUTLINE

I. INTRODUCTION

Definition of sociology, sociology as a science of society, uses of study of Sociology, application of knowledge of sociology in physiotherapy**.**
The individual as an isolate unit. The socialized individual

II. SOCIOLOGY AND HEALTH

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

III. SOCIALIZATION

Meaning of socialization, influence of social factors on personality, socialization in hospital, socialization in rehabilitation of patient.

IV. 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.

V. FAMILY

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

VI.COMMUNITY

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

VII. CULTURE

Meaning of culture, components of culture, impact of culture on human behavior, cultural meaning of sickness and response of sickness & choice of treatment, culture induced symptoms and disease, sub-culture of medical workers.

VIII. CASTE SYSTEM

Features of the modern caste system and its trends.

IX. SOCIAL CHANGE

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

X. 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 behavior, social deviance and disease.

XI. SOCIAL PROBLEMS

Population explosion, migration from rural to urban,
Poverty and unemployment, Beggary.
Juvenile delinquency, Prostitution.
Alcoholism, Problems of women in employment.

XII. SOCIAL SECURITY

Social security and social legislation in relation to the disabled.

XIII. SOCIAL SURVEY

Surveying methods and its significance

XIV. MEDICAL SOCIAL WORK

Social work with relation to disabled, handicapped and chronically ill patients. Responsibilities of a medical social worker.

BOOKS RECOMMENDED

SACHDEVA, D.R. AND BHUSHAN. V , An introduction to sociology – Allahabad: kitab Mahal Limited, 1974.

MADAN. G.R, Indian social problems, Vol.1 Chennai applied publications, 1973.

ANATOMY

TOTAL HOURS	:	430
THEORY HOURS	:	310
PRACTICAL HOURS	:	120

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objective of this course is that after 430 hours of lectures, demonstrations and practical the student will be able to demonstrate knowledge in human anatomy as needed for the study and practice of physiotherapy.
In addition, the student will be able to fulfill with 75% accuracy (as measured written & oral internal evaluation) the following contents of the course

COURSE OUTLINE

I.INTRODUCTION

1 Define anatomy, subdivisions
2 Define anatomical position, anatomical terms, and planes
3 Cell – Define, parts of cell, function
4 Tissue – Define, classify
5 Bone – Define, classification with examples, microscopic anatomy of bone, blood supply
6 Joint – Define, classification with examples, Features of synovial joint: articulating surface, Stability, mobility and nerve supply
7 Axis and Movements in a synovial joint
8 Muscle – Define, classify with examples, structure of skeletal muscle, Myofibrils ,muscle contraction
9 Define origin, insertion, muscle work, types of muscle work, group action of muscles - Agonists, Antagonists, synergists, fixators, shunt and spurt muscles, Levers and types with example.
10. Nerve – Structure, parts, synapse, neuron, classification

II.UPPER LIMB

1. OSTEOLOGY

Identify parts, borders, surfaces and muscle attachments of bones– clavicle, scapula, humerus, radius, ulna, carpal bones, Meta carpal, phalanges.

2 ARTHROLOGY

Type, articular surface, muscle, ligaments, movements blood supply, nerve supply of joints-Sternoclavicular, acromioclavicular, shoulder, elbow, radio ulnar, wrist, InterPhalangeal, MetaCarpoPhalangeal, Carpo- MetaCarpo joints.

3. MYOLOGY

Identify muscles – origin, insertion, nerve supply, action of muscles of
Scapula, upper arm, lower arm including forearm and hand.

4. NEUROLOGY

Identify nerves of upper limb and its origin, course, division, innervations, relations, its applied anatomy of radial nerve, median nerve, ulnar nerve, Axillary nerve, Musculocutaneous nerve.
Brachial plexus – formation and root values.
Dermatomes of upper limb.

5. ANGIOLOGY

Distribution of blood vessels, lymph nodes, main arteries and veins of upper limb - Axillary, brachial, radial, ulnar arteries.

6. AXILLA

Identify boundaries, contents of axilla, branches of axillary artery and its relations.

7. SCAPULO HUMERAL RHYTHM
8. CUBITAL FOSSA
   Boundaries, contents and relation

III.LOWER LIMB

1. OSTEOLOGY

Identify parts, borders, surfaces and muscle attachments of bones – hip bone, femur, tibia, fibula, patella, tarsal bones, meta tarsal bones, phalanges

2. ARTHROLOGY

Type, articular surface, muscle, ligaments, movements, blood supply, nerve supply, of joints – hip, knee, ankle, tibio fibular, tarsal, metatarsophalangeal and interphalangeal joints

3. MYOLOGY

Identify origin, insertion, nerve supply, action of muscles of – thigh, leg & sole of foot

4. NEUROLOGY

Identify plexuses, nerves of lower limb, origin, course, innervations, and applied anatomy, relations of femoral nerve, sciatic nerve, tibial nerve, common peroneal nerve, obturator nerve, superficial and deep peroneal nerve.
Lumbar plexuses, sacral plexuses

5. ANGIOLOGY

Distribution of blood vessels, lymph nodes of lower limb, main arteries and veins of lower limb –Femoral artery, femoral vein, tibial artery, posterior tibial artery.

6. FEMORAL TRIANGLE
7. POPLITEAL FOSSA
8. ARCHES OF FOOT.

IV.THORAX AND ABDOMEN

1 Osteology of vertebral column
2 Identify and classify vertebrae – typical & atypical
3. Parts and features of typical vertebrae.

4 Features of thoracic, lumbar, sacral, coccyx.
5 Intervertebral joint – articulating surface, movements, stability, mobility
6. Curvatures of vertebral column.
7. Contents of vertebral canal.
8 Sternum – parts, features (borders, surfaces, muscle attachments)
9 Define true, false, floating ribs
10. Mention parts and features of atypical rib.
11. Type and formation of joint between rib and vertebrae, between costal cartilage, costal cartilage and sternum, between parts of sternum.
12 Sternal angle.
13. Intercostal space and its contents.
14. Intercostal nerves – course and its branches.
15 Intercostal muscles – origin, insertion, nerve supply, action.
16 Diaphragm – origin, insertion, nerve supply, action, orifice, structures passing through Diaphragm.
17 Movements of ribs – pump handle and bucket handle movements

V.HEAD AND NECK

1. Skull - features, joints of skull bone, parts
2. Identify internal and external auditory meatus, foramen magnum, stylomastoid foramen and structures passing through them
3. Anterior and posterior triangles of neck - boundaries and contents
4. Muscles of the face - origin, insertion, action, nerve supply & applied anatomy
5. Cranial nerves - origin, course, relation, innervations
6. General features of typical cervical vertebrae, atlas, axis, seventh cervical vertebrae.
7. Cervical plexus - formation, distribution & root values
8. Sternomastoid, erector spinae, scalene muscles
9. Atlantoaxial joint - articular surface, muscles, movements, ligaments, blood supply and nerve supply
10. Atlantooccipital joint - articular surface, muscles, movements, ligaments, blood supply and nerve supply
11. Position and extent of subclavian, vertebral, carotid arteries
12. Components of Circle of Willis and its supply, applied importance
13. Internal jugular and sub clavian vein - position, formation, and termination
14. Eye - parts, retina, optic pathway, nerve supply, muscles of eye
15. Nose- parts, boundaries of nose, nasal cavity, sinuses
16. Tempoeromandibular joint -type, articular surfaces, ligaments, movements,

muscle responsible, nerve supply.

17. Ear -parts, organ of corti, nerve of hearing and its applied importance
18. Larynx and Trachea – Laryngeal muscles, its attachments, action and nerve supply. Position and structure of trachea, Mechanics of phonation and speech.
19. Pharynx- subdivisions, muscles of pharynx, action & nerve supply
20. Mouth-structure of the tongue & palate, movements and nerve supply , swallowing reflex.

VI. PELVIS

1 Formation and subdivision of bony pelvis
2 List features of male and female bony pelvis
3 Type, articular surface, ligaments, movements of the joints of pelvis
4 Abdominal cavity and layers of abdominal wall
5 Rectus sheath
6 Inguinal canal - position, extent, formation & contents
7 Branches and distribution of abdominal aorta and iliac arteries
8 Mention features of pubic symphysis and sacro iliac joint
9 Muscles of pelvic floor - attachment, action and nerve supply
10. Structures of urogenital diaphragm
11. Position, extent, parts, relation, blood supply, nerve supply, lymphatic drainage, of kidney, ureter, urinary bladder, urethra.
12. Innervations of urinary bladder.

VII.CARDIO VASCULAR SYSTEM

1)
   a) Comprehend the external and internal features of the structure of heart and their implications
   b) Mention the position of the heart.
   c) Name the chamber of the heart, surface and border of the heart.
   d) Mention the internal features of the chambers of the heart.

2)
   a) State the basic features of the blood supply & nerve supply of the heart.
   b) State the basic arrangement of the pericardium.
   c) Name the parts of the conductive system of heart.

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

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

VIII.LYMPHATIC SYSTEM

01. Comprehend the general and regional arrangements of the lymphatic system.
02. Name the lymphatic organ and mention their location.
03. Illustrate the basic structural features of lymphatic vessels, lymph nodes, thymus, spleen and tonsils.
04. Assign functional role to the lymphatic system.
05. State the position and immediate relations of spleen.

IX. RESPIRATORY SYSTEM

1)
a) List the parts of the respiratory system.
b) Comprehend the functional anatomy of the parts of the respiratory system.
c) Mention the basic features of innervation of bronchi and lungs.

2)
a) State the position, extent, and gross and microscopic structure of the parietal pleura.
b) Comprehend the arrangement of pleura. Mention the parts, and position of the parietal pleura.
c) Name the recesses of pleura.
d) Describe the trachea and bronchi.
e) Compare the right lung and left lung.
f) Name the components of the hilum of lung
g) Name the bronchopulmonary segments.
h) Illustrate the main features of the microscopic structure of lung

X.DIGESTIVE SYSTEM

1)
a) List the parts of the digestive system.
b) Mention the boundaries and features of the mouth.
c) Classify teeth
d) Mention position, extent, subdivision, communications, internal features and muscles of pharynx.
e) Name the tonsils and define fauces.

2)
   a) State the position, course and extent of esophagus.
   b) State the basic nerve supply.
3)
   a) Mention the position and gross structure of the stomach.
   b) Enumerate the immediate relations of the stomach.
   c) State the basic nerve supply of the stomach.
4)
   a) Name the subdivision of the intestine and mention their positions.
   b) Mention the difference between small and large intestine.
5)
   a) Name the arteries arising from the abdominal aorta. Name the organs supplied by these branches.
   b) Awareness of the name and position of the principal autonomic visceral nerve plexus in the abdomen and pelvis, and the organs supplied by them.
6) Mention the position and gross features of the liver and biliary system.
7) Name the position and subdivision of the pancreas.
8)
   a) Name the major salivary gland.
   b) Indicate their positions.
   c) Mention the site of opening of their ducts.

XI.GENITO - URINARY SYSTEM

1)
   a) Comprehend the basic functional implication and the basic structure of the kidney and ureter.
   b) Mention the position, size and shape of kidney.
   c) Name the immediate relations of the kidney.
   d) Indicate the cortex, medulla, pyramids, sinus, calyces, and pelvis of ureter in a macro section of the kidney.
   e) Illustrate the structure of a nephron.

2)
   a) State the anatomy of the bladder and urethra.
   b) Mention the position, shape and size and surface of the bladder.
   c) Indicate the immediate relations of the bladder.
   d) Mention the basic innervation of the bladder.
   e) Name the subdivision of the male urethra.
   f) Mention the position, extent and immediate relations of male urethra.

g) Mention the position, extent and immediate relations of the female urethra.
h) Name the sphincters of the urethra.

3)

a) List the parts of the male reproductive system. State the anatomy and functional considerations of the testis, male accessory organs of reproduction and external organs.
b) Name the constituent structures of the spermatic cord.
c) Mention the position of the inguinal canal.
d) Name the component structures and parts of the penis.

4)

a) List and locate the parts of female reproductive system. State the anatomy and functional considerations of ovary, uterine tubes, uterus, vagina and female external genitalia.
b) Mention the basic features of parts of the female external genitalia.
c) Enumerate the factors responsible for the maintenance of the position of the uterus and anatomy of its prolapse.
d) Mention the position, extent and gross structure of the female breast.
e) Name the common, internal, and external iliac arteries.

XII.NERVOUS SYSTEM

1)

a) Define the subdivisions of the nervous system. Define central, peripheral and autonomic nervous systems and name their subdivisions.
Comprehend the position and form of the spinal cord, its structure and function in terms of neuronal connections.
b) Indicate the position and extent of the spinal cord.
c) Illustrate the principal features shown in a transverse section of the spinal cord.
d) Specify the basic features of a mono and 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, site of crossing of fibers of these tracts, and function of each tract.
g) State the main consequences of spinal cord transection and hemi section, and explain the rationale of cordotomy.
h) Indicate the blood supply and meninges of spinal cord.

2)

a) Name the subdivision of the brain. Identify and mention the external features of parts of the brain.
b) Mention the internal structure and basic features of parts of the brain–stem and name the nuclei and fiber tract with special emphasis on cranial nerve nuclei.
c) Mention the parts of the cerebellum.
d) Mention the external features and internal structures of the cerebellum and name its various afferent and efferent tracts and their termination.
e) Mention the features of the gross component of the cerebrum and its lobes
f) Mention the location of gyri, sulci, and cortical areas.
g) State association, commissural and projection fibers.
h) Define components of forebrain, including cerebral cortex, insula, olfactory bulb, olfactory tract, uncus, fornix, basal ganglia, thalamus, hypothalamus, internal capsule, corpus callosum etc.
i) Predict the result of damage to internal capsule.
j) Outline sensory and motor pathways
k) Name sensory and motor nerve endings with function
l) Define pyramidal motor system and name its tracts
m) Define upper and lower motor neurons.
n) Name the parts and tracts of the extra pyramidal system and indicate the functions.

3) Outline the basic structure of sensory organs:- Nose, tongue, eye, ear and skin.
4) Briefly outline the nature and basis of muscle tone

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

5)

a) State the formation, circulation and drainage of CSF.
b) Define lumbar puncture and cisternal puncture.
c) State the features of the meninges.
d) Recognise the difference between extra-dural, sub-dural and Sub-arachnoid haemorrhage.

6)

a) Outline the arrangement of major blood vessels around the brain and spinal cord.
b) Mention the arteries forming the Circle of Willis.
c) Name the branches of major arteries supplying the brain and spinal cord and mention the parts of brain they supply.
d) Predict the result of blockage or rupture of central deep branches.
e) Predict the result of occlusion of cerebral arteries.
f) Predict the result of occlusion of vertebral or basilar arteries.
g) Mention the connection of dural venous sinuses.
h) Name the parts of the limbic system. Mention their function in emotion and behaviour.

7)

a) Mention the position and structure of the autonomic nervous sytem.
b) Mention the site of origin and termination of the pre-ganglionic and post-ganglionic sympathetic and parasympathetic fibres.
c) Name the sympathetic and parasympathetic ganglia.
d) Summarise the functional difference between the sympathetic and parasympathetic system.

8)

a) Enumerate the cranial nerves in serial order.
b) Mention the nuclei of origin & termination and indicate the site of attachment to brain / brain stem.
c) Explain the general distribution of the cranial nerves and the course of the VIIth nerve.
d) Predict the result of injury to cranial nerves.

9]

a.] Anatomy of spinal cord – review.
b.] Name the group of spinal nerves.
c.] Explain the formation and branches of the spinal nerves and Distribution of anterior and posterior rami.
d.] Locate & name the plexuses of nerves.
e.] Indicate the course and distribution of branches of the plexuses & nerves.

XIII. ENDOCRINE SYSTEM

1. List the endocrine organs and mention their position.
2. Mention the hormones produced by each endocrine organ.
3. Control of secretion, Role of Hypothalamus

PHYSIOLOGY

THEORY HOURS : 310

PRACTICAL HOURS : 120

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, respiratory, musculo-skeletal and nervous system.

COURSE OBJECTIVES

The objective of this course is that after 430 hours of lectures, demonstrations and practical the student will be able to demonstrate an understanding of human physiology.

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

COURSE OUTLINE

I.CELL

1. Basic concept of cell structure, components, functions, transport

II.SKIN

1. Structure, functions, temperature regulation

III. BLOOD

1. Composition and function of blood
2. Red Blood Corpuscles-morphology, formation, normal count, functions, physiological & pathological variation
3. White Blood Corpuscles- morphology, formation, normal count, functions, physiological & pathological variation
4. Blood platelets-Morphology, normal count, formation, function, variation
5. Hemoglobin-Basic chemistry, function, fate of hemoglobin

6. Blood clotting-Definition, clotting factors, theories of clotting
7. Blood group-ABO system, Rh System
8. Blood volume and regulation
9. Blood transfusion

IV.CARDIO VASCULAR SYSTEM

1. Structure and properties of cardiac muscle
2. Cardiac cycle, Conductive system, Electrocardiography
3. Heart sounds
4. Heart rate and regulation
5. Cardiac output and regulation
6. Blood pressure and regulation
7. Regional circulation- coronary, pulmonary, renal, cerebral
8. Effect of exercise in Cardio Vascular System

V.RESPIRATORY SYSTEM

1. Structure and function of respiratory system
2. Mechanics of respiration – Muscles of respiration, Lung & Chest wall compliance, V/Q Ratio, Surfactant
3. Transport of gases- O_2 & CO_2
4. Nervous and Chemical regulation of respiration
5. Hypoxia, Cyanosis, Dyspnea
6. Acid Base Balance
7. Principles of Lung Function Test – Spiro meter, Lung volumes and capacities
8. Artificial respiration
9. Effect of exercise on respiratory system
10. Defense mechanism

VI.DIGESTIVE SYSTEM

1. Structure and function of Gastro intestinal system
2. Mastication and Deglutition
3 Saliva – composition, function, regulation
4 Gastric secretions – composition, phases of secretion, function
5 Pancreatic secretions – composition, function, regulation
6 Bile – composition and function
7 Movements of small and large intestine
8 Digestion in mouth, stomach, intestine
9. Defecation

10. Digestion, Absorption and metabolism of carbohydrates
11. Digestion, absorption and metabolisms of Fats
12. Digestion, Absorption and metabolism of proteins
13. Vitamins – Sources, functions and requirements
14. Balanced diet in different age groups and occupation

VII.EXCRETORY SYSTEM

1. Structure and functions of kidney
2. Structure and functions of nephron
3. Formation of urine – Filtration, Reabsorption, Secretion
4. Micturation

VIII.ENDOCRINE SYSTEM

1. General organization of endocrine glands
2. General metabolism – Carbohydrate, Fat, Protein
3. Physiological action, regulation, disorder of hormones – Adrenal, Pancreatic, Parathyroid , Thyroid.

IX.REPRODUCTIVE SYSTEM

1. Male reproductive system
2. Female reproductive system
3. Pregnancy, function of placenta, parturition, lactation, contraception
4. Puberty and Menopause
5. Spermatogenesis and Oogenesis
6. Menstrual cycle

X.NERVOUS SYSTEM

1. General organization of nervous system
2. Structure, type and function of neuron
3. Properties of neurons
4. Synapse and synaptic transmission
5. Neurotransmitters
6. Reflex – Proprieties and types
7. Sensory – Receptors, sensory pathway, pain pathway, referred pain, modulation of pain
8. Motor – Basal ganglia, Cerebellum, Cortex –Function & Effect of lesion

9. Ascending and descending pathway
10. Posture and Equilibrium
11. Muscle tone
12. Autonomic nervous system – organization, function of Sympathetic & Para sympathetic nervous system
13. Cerebro spinal fluid – composition, formation, circulation, function
14. Lower motor neuron & Upper motor neuron lesions

XI.SPECIAL SENSES

1. Vision – rods and cones, retina and its function, visual pathway
2. Hearing – organ of corti, auditory pathway
3. Olfaction
4. Taste – taste buds

XII.MUSCULAR SYSTEM

1. Structure of muscle – Macroscopic & Microscopic (Myofibril, Myoneural junction)
2. Properties of skeletal muscle
3. Cardiac and smooth muscle
4. Chemical process involved in muscle contraction
5. Motor units, Electromyography
6. Effect of exercise on muscular system
7. Exercise metabolism – O_2 debt, respiratory quotient

APPLIED PHYSIOLOGY

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objectives of this course are that after lectures, demonstrations, practical and clinics the student will be to demonstrate and understand the effect of abnormal physiology on function of the human body.

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

COURSE OUTLINE

I. THE HEART AND CIRCULATION

1. Structure and properties of heart muscles
2. The action of the heart
3. Determinants of cardiac performance
4. Normal Electrocardiography
5. Maintenance of blood pressure
6. Cardiac arrest and heart failure
7. Outline of lymphatic circulation & pulmonary circulation
8. Cardiovascular compensation for postural and gravitational changes
9. Hypertension
10. Edema
11. Central and peripheral venous pressure.

II. NERVOUS SYSTEM AND MUSCLES

1. Outline the structure and function of the central nervous system
2. Autonomic nervous system
3. Type of nerve cells, electrical phenomena in nerve cells
4. Properties of mixed nerves.
5. Reflex action, reciprocal innervation.

6. Degeneration and regeneration of nerves
7. Control of posture
8. Outline of voluntary movement
9. Cutaneous, deep and superficial sensation
10. Synaptic transmission
11. Properties of muscles, contractile responses, types of contraction, electrical phenomena and tonic reflexes

III.RESPIRATION

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

ENVIRONMENTAL STUDIES (50 HOURS)

COURSE OUTLINE

UNIT 1: THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance of environmental studies
Need for public awareness

UNIT 2: NATURAL RESOURCES

Natural resources and associated problems.

a) Forest resource : use and over exploitation, deforestation, Case studies: timber extraction, mining, dams and their effects on forests and tribal people
b) Water resources: use and over utilization of surface and ground water, floods, drought , conflicts over water, dams – benefits and problems.
c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Case studies.
d) Food resources: world food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizer and pesticide problems, water logging, and salinity – Case studies
e) Energy resources: growing energy needs, renewable and non renewable resources, use of alternate energy sources. Case studies.
f) Land resources: land as a resource, land degradation, man induced land slides, soil erosion and desertification.
g) Role of an individual in conservation of natural resources
h) Equitable use of resources for sustainable life styles

UNIT 3: ECOSYSTEM

Concepts of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chain, food web and ecological pyramid

Introduction, types, characteristic features, structure and function of the ecosystem: a) forest ecosystem b) grassland ecosystem c) desert ecosystem
Aquatic ecosystems (ponds, streams, lakes, rivers, oceans)

UNIT 4: BIODIVERSITY AND ITS CONSERVATION

Introduction – definition: genetic, species & ecosystem diversity

Biogeographical classification of India

Value of biodiversity. Consumptive use, productive use, social, ethical, aesthetic and option values

Biodiversity at global, national and local levels

India as a mega diversity nation
Hot spots of biodiversity
Threats of biodiversity, habitat loss, poaching of wild life, man wild life conflicts, endangered and endemic species of India
Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity

UNIT 5: ENVIRONMENTAL POLLUTION

Definition
Causes, effects and control measures of:
Air pollution
Water pollution, soil pollution
Marine pollution
Noise pollution
Thermal pollution
Nuclear hazard

1) Solid waste management: causes, effects and control measures of urban and industrial wastes.
2) Role of individual in prevention of pollution
3) Pollution case studies
4) Disaster management: floods, earthquake, cyclone & land slides

UNIT 6: SOCIAL ISSUES AND ENVIRONMENT

From unsustainable to sustainable development
Urban problems related to energy
Water conservation, rain water harvesting & watershed management
Resettlements and rehabilitation of people: its problems and concerns. Case studies.
Environmental ethics: issues & possible solutions
Climatic change, global warming , acid rain ozone depletion, nuclear accidents and holocaust. Case studies .
Waste land reclamation
Environmental protection act
Air prevention, control of pollution act
Water prevention & control of pollution act
Wild life protection act
Forest conservation act

UNIT 7: HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations
Population explosion – family welfare programme
Environment and human health
Human rights
Value education
HIV/AIDS
Women and child welfare
Role of information technology in environment & human health
Case studies

UNIT 8: FIELD WORK

Visit to local area to document environmental cover - forest, grassland, hill, and mountain.

BASIC NURSING & FIRST AID (50 HOURS)

COURSE OBJECTIVES:

To enable the students to have a better understanding of and develop skill in giving first aid treatment in emergencies in either the hospital or the community.

- Understand the importance of first aid and explain the rules of first aid.
- Explain the scope of first aid and concept of emergency.
- Identify and give first aid in burns, accidents, road accidents, poisoning, drowning, insect bites and trauma due to a foreign body.
- Identify various fractures and practice bandaging and splinting in case of fractures.
- Describe the types of wounds, hemorrhage, shock and respiratory emergencies.
- Transportation of persons with various types of injuries.
- Identify and give first aid treatment in community emergencies and in natural disasters.
- Identify and utilize the community resources like voluntary agencies, local, national and International agencies
- Acquire knowledge about ambulance services and their functions in relation to emergencies.

COURSE OUTLINE

I.FIRST AID

1. Definition of first aid, importance of first aid, golden rules of first aid scope and concept of emergency.

II.FIRST AID IN 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 insertion: eye, ear, nose, throat, stomach and lung.
4. Bites: first aid, signs, symptoms and treatment.
    a. Dog bite: rabies.
    b. Snake bite: neurotoxin, bleeding diathesis
5. Skeletal Injuries

    Definition, types of fractures of various parts of the body, causes, signs and symptoms, rules of treatment, transport of patient with fracture, first aid measures in dislocation of joints, treatment of muscle injuries.
6. Respiratory Emergencies
    a. Asphyxia: etiology, signs & symptoms, rules of treatment.
    b. Drowning: definition and management.
    c. Artificial respiration: types and techniques.
7. Wounds and Hemorrhage
    a. Review of anatomy and physiology of the circulatory system.
    b. Wounds: classification, management.
    c. Hemorrhage: classification, signs and symptoms, rules for treatment of hemorrhage.
    d. Treatment of hemorrhage from special areas (scalp, mouth, nose, ear, palm and various veins).
    e. Internal hemorrhage. visible and concealed.
8. Shock and Unconsciousness

    Definition, types of shock, common causes of shock, signs and symptoms of shock (assessment of established shock), general and special treatment of established shock.
9. Transportation of the Injured

    Methods of transportation: single helper, hand seat, stretcher, wheeled transport (ambulance).
10. Community Emergencies

    Role of first aid (immediate and late in fires, explosions, floods, earth quakes, famine).
11. Community Resources

    Police assistance, voluntary agencies (local, national, international), ambulance services

HEALTH AND NUTRITION (60 HOURS)

COURSE OBJECTIVES:

The objective of the course is to enable the students to have good understanding about health and the role of nutrition in maintaining health, health problems, health programmes and health education.

COURSE OUTLINE

1. HEALTH

Definition, world health organization, Mortality & Morbidity, Importance of health, Health education – objectives , tools. Roles of Physiotherapist in health education. Elements of planning a health education program.
Health Problems in India and possible solutions
Health Programs and voluntary health agencies.

2. NUTRITION

Definition, nourishment, energy sources and metabolism. Role of carbohydrates, proteins, fat, minerals, vitamin, water in maintaining normal functions and the diseases arising out of their deficiencies. Balanced diet, Nutritional requirements for different age groups, gender, occupation etc.

3. DIET AND EXERCISES

Diet planning for the diseases related to physiotherapy, Role of dietician in diet planning.

BASIC PHYSICS (40 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basic concepts and physical principles in relation to the use of electrotherapy modalities.

COURSE OUTLINE

I. ELECTRICITY:

1. Definition and types.
2. Therapeutic uses.
3. Basic physics of construction.
4. Working.

II. STATIC ELECTRICITY:

1. Production of electric charge.
2. Characteristic of a charged body.
3. Characteristic of lines of forces.
4. Potential energy and factors on which it depends.
5. Potential difference and Electromotive force.

III. CURRENT ELECTRICITY:

1. Units of electricity: Farad, Volt, Ampere, Coulomb, Watt.
2. Resistance: In series & in parallel.
3. Ohm's law and its application to Direct currents and Alternating currents.
4. Potentiometer: Construction and Working.
5. Fuse: Construction, Working and Application.
6. Transmission of electrical energy through solids, liquids, gases and vacuum.
7. Direct current:
    a. Definition
    b. Dangers of Direct current: Shocks, safety precautions.

IV. 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.

V. MOVING COIL MILLIAMMETERS:

Construction, working and uses.

VI. VOLTMETER:

Construction, working and uses

VII. TRANSFORMER:

1. Definition
2. Types
3. Principles
4. Construction
5. Eddy current
6. Working and use

VIII. CHOKES:

1. Principle
2. Construction and working
3. Uses.

IX. 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.

X. METAL VALVE RECTIFIERS:

1. Definition
2. Construction
3. Working
4. Uses.
5. Fuse and grid

XI. IONIZATION:

Definition, Principles and uses.

XII. CONDENSERS.

Define and discuss:

1. Principles
2. Measurement
3. Factors
4. Construction
5. Field between condensers
6. Charging and discharging
7. Discharging through inductance & capacitive resistance.

XIII. OSCILLATING SYSTEM

Define Oscillation. What is “capacitance” and “Inductance”?

XIV. RADIATION

Radiant energy and its properties
Electro magnetic waves and its properties

ORIENTATION & INTRODUCTION TO TREATMENT (80 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand
i) The basic concepts of health care delivery
ii) Physiotherapy as a profession
iii) The role of a physiotherapist in meeting the health needs

COURSE OUTLINE

I. PATTERNS OF HEALTH CARE DELIVERY

a) National trends and resources
b) Local trends and resources
c) Overview of the health science professions

II. COMPONENTS OF PHYSIOTHERAPY PROFESSION

a) History of medical therapeutics

b) History of physiotherapy international and national

c) Professional and governmental licensing, accreditation and education standards.

III. ROLES OF PHYSIOTHERAPY IN MEETING HEALTH CARE NEEDS OF INDIA

a) Needs Vs Demands
b) Physiotherapist as educator
c) Typical job Settings
d) Common problems and solutions

II – YEAR

GENERAL MEDICINE / GENERAL SURGERY / PAEDIATRICS & OBSTETRICS & GYNAECOLOGY

COURSE OBJECTIVES

The objectives of this course is that after 300 hours of lectures & 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 understand the etiology and pathology, symptoms, management and the resultant functional disability. This would help the candidates to understand the limitations imposed by the disease on any therapy that may be prescribed.

To outline of goals of pharmacological and surgical therapy in those diseases in which physical therapy will be an important component of overall treatment.

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

COURSE OUTLINE

GENERAL MEDICINE

I. 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, Acquired Immuno Deficiency Syndrome
- Protozoal: Filarial

II. HAEMATOLOGY

Iron deficiency anemia, B_{12}, folic acid deficiency anemia.
Types of bleeding diathesis, Hemophilia

III. RESPIRATORY SYSTEM

Define, etiology, pathogenesis, pathology, clinical features and management of

- Chronic bronchitis and emphysema
- Pneumonia – lobar, bronco, aspiration
- Asthma
- Broncheictasis
- Tuberculosis
- Lung abscess
- Restrictive Lung Diseases, Occupational lung diseases
- Chest wall deformities – funnel chest, pigeon chest, barrel chest, kyphoscoliosis

IV. CARDIO-VASCULAR SYSTEM

Define, etiology, pathogenesis, pathology, clinical features and management of
Ischemic heart diseases
Myocardial infarction
Angina pectoris
Heart failure
Rheumatic fever
Infective endocarditis
Hypertension
Congenital heart disease – Atrial Septal Defect, Ventricular Septal Defect, Fallot's tetralogy, Patent Ductus Arteriosus, Coarctation of Aorta, Aortic Stenosis, Aortic Regurgitation, Mitral Stenosis, Mitral Regurgitation
Pulmonary infarction
Pulmonary embolism
Deep vein Thrombosis

V. BONE, JOINT AND CONNECTIVE TISSUE DISORDERS

Define, etiology, clinical findings, pathology and management of
1. Osteoarthritis
2. Rheumatoid arthritis
3. Systemic lupus erythematous
4. Polymyositis
5. Dermatomyositis
6. Polyarthritis nodosa
7. Scleroderma

VI. RENAL DISEASES

Acute and Chronic renal failure
Urinary tract infection - common clinical conditions complicated by Urinary tract infection

VII. METABOLIC DISEASES

Diabetes mellitus – Types of diabetes, complication, management
Obesity

VIII. NEUROLOGY

1. Cerebro Vascular Accident – Thrombosis, embolism, hemorrhage
2. Extra pyramidal lesion – Parkinsonism
3. Disorders of muscle – Myopathy, Muscular dystrophy
4. Multiple sclerosis, Motor Neuron Diseases, Syringomyelia.
5. Infections of nervous system – Encephalitis, Neurosyphilis, Meningitis, Transverse myelitis, Tabes dorsalis, Tuberculosis spine
6. Epilepsy
7. Alzheimer disease
8. Disorder of myoneural junction – Myasthenia gravis

IX.GERIATRICS

1. List diseases commonly encountered in the elderly population and their role in causing
   Disability: Hypertension, Ischemic Heart disease, Cerebrovascular accidents, Benign prostatic Hyperplasia, Cataracts & other causes of failing vision.

GENERAL SURGERY

COURSE OUTLINE

I. ABDOMINAL INCISIONS

Describe abdominal surgical incisions and Outline the incision and its complications of

1. Appendicectomy
2. Mastectomy
3. Hysterectomy
4. Colostomy
5. Hernioraphy
6. Cholecystectomy
7. Ileostomy
8. Thyroidectomy
9. Adrenalectomy
10. Prostatectomy

II. BURNS

Define burns. Classify burns by depth and surface area. Explain etiology, clinical findings, Complications, management, deformities due to burns, and plastic surgery procedures in the management of burns.

III. PLASTIC SURGERY

Outline the principles of plastic surgery
Skin graft/flap – pedicle, tube, muscle flap
Indication with burns/ wounds/ulcers
Breast reconstruction
Hypertrophic scar / keloid management.
Outline the principles of tendon transfers – emphasis to hand, foot, and facial paralysis.

PEDIATRICS

COURSE OUTLINE

1. INTRODUCTION

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

2. PREGNANCY RELATED ISSUES

List the maternal and neonatal factors contributing to high risk pregnancy & the neonate: Inherited disease: 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 in the mother at any trimester.

3. COMMUNITY PROGRAMS

Briefly describe community programs: International - World Health Organization, national and local for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism. Outline the immunization schedule for children.

4. CEREBRAL PALSY:

Define and briefly outline etiology – prenatal, peri-natal and postnatal causes: briefly mention pathogenesis, types of cerebral palsy, Findings on examination: General Examination, examination of Central Nervous System, Musculo-skeletal system, respiratory system, gastro intestinal tract & nutritional status.
Briefly outline associated defects; Mental retardation, microcephaly, blindness, Hearing and speech impairment, squint and convulsions. Briefly outline treatment.

5. MUSCULAR DYSTROPHY

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

6. DISORDERS OF SPINAL CORD

Spina bifida, meningomyelocele: Outline development: clinical features – lower limbs, bladder and bowel control; complications – Urinary Tract Infection & 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. DISORDERS OF CENTRAL NERVOUS SYSTEM

Classify (Bacterial and viral) and outline the acute illness, Central Nervous System sequelae leading to mental retardation, blindness, deafness, speech defect, motor paralysis, bladder and bowel problems, seizure disorder and specific problems such as sub-dural effusion, hydrocephalus, pressure sores, feeding difficulties.

9. NORMAL DIET OF NEWBORN AND CHILD:

List dietary calorie, fat, protein, mineral and vitamin requirement in a normal and in a child with malnutrition. Classify and outline etiology, findings and treatment of rickets.

10. PULMONARY DISORDERS

Outline the clinical findings, complications and medical treatment of Bronchiectasis, Lung abscess and Bronchial asthma.

OBSTETRICS & GYNAECOLOGY

COURSE OUTLINE

1. Anatomy of pelvis, bones, joints, ligaments, muscle, pelvic organs, reproductive organs, genitalia

2. Physiology of reproduction and lactation

3. Normal, gestation, labor and puerpurium - growth and viability of foetus and changes in pregnancy

4. Pre natal, peri natal and post natal care. Instructions to patient, hospitalization routine for labor, Indicated drugs.

5. Complications of pregnancy-minor

6. Complications of pregnancy- major

7. Complications of labor and puerperium, episotomy, forced induction, caesarean.

8. Gynaecological conditions for which physiotherapy may be used: Disorders of menstrual cycle, Displacement of uterus. Stress incontinence, Pelvic inflammatory diseases. Pre and Post operative care-brief description of most common operations, D & C, Hysterectomy.

MICROBIOLOGY AND PATHOLOGY (150 HOURS)

MICROBIOLOGY (75 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand about the nature of different microorganisms and their role in causing diseases in human beings

COURSE OUTLINE

I. Introduction and history of microbiology

II. Micro-organisms: Classification, Shape and arrangement, Special characteristics – spores, capsules, enzymes, motility, reproduction

III. Disinfection and antiseptics

IV. Sterilization and asepsis

V. Antibacterial agents including susceptibility test

VI. Infection – Source of infection, Portals of entry, spread of infection.

VII. Non – Specific immunity.

VIII .Immunity – Natural and acquired

IX. Allergy and hypersensitivity

X. Outline the common pathogenic bacteria, the diseases produced by them, treatment and the prevention of Respiratory tract infections, Meningitis, Enteric infections, anaerobic infections, Urinary tract infections, Leprosy, tuberculosis and miscellaneous infections,Wound infections, Sexually transmitted diseases, Hospital acquired infections.

XI. Pathogenic yeasts and fungi

XII. Virology: Virus infections - Hepatitis, Poliomyelitis & Rabies.

PATHOLOGY (75 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basic pathological concepts and the patho physiology of various disorders affecting the human beings

COURSE OUTLINE

1. INTRODUCTION

General pathology – cell injury, causes
Reversible injury – Types, morphology, swelling, hyaline, fatty change
Irreversible injury – Types of necrosis, apoptosis, calcification, dystrophic, Metastasis
Concepts of disease

2. INFLAMMATION AND REPAIR

Acute inflammation – causes, features, examples
Inflammatory cell and mediators
Chronic inflammation – causes, features, examples
Wound healing
Regeneration and repair.

3. CIRCULATORY DISTURBANCE

Edema
Chronic venous congestion
Thrombosis
Embolism
Infarction
Gangrene
Shock

4. GROWTH DISTURBANCE

Atrophy
Neoplasia – benign & malignant

5. SPECIFIC PATHOLOGY

a) Cardio vascular system – Atherosclerosis, Ischaemic Heart Diseases, Myocardial Infarction, Hypertension, Congestive Cardiac Failure, Rheumatic heart diseases, Peripheral vascular diseases.

b) Respiratory system – Chronic Obstructive Pulmonary diseases, Pneumonia: lobar and broncho pneumonia, Tuberculosis: primary & secondary, Atelectasis, Asthma

c) Skin – leprosy

d) Nervous System – Cerebro Vascular Accident, Poliomyelitis, Parkinsonism, myasthenia gravis

e) Bone and joint –Osteo arthritis, rheumatoid arthritis, osteomyelitis, autoimmune disease, spondylosis, Osteomalacia, Gout, Tenosynovitis, Ankylosing Spondylosis

f) Muscle – Muscular Dystrophy, Myopathies, Polymyositis

BIOCHEMISTRY AND PHARMACOLOGY (100 HOURS)

BIOCHEMISTY

COURSE OBJECTIVES

1. To describe structures & functions of cell
2. To describe normal function of different components of food, enzymes.
3. Define basal metabolic rate & factors affecting the same, with special reference to obesity.
4. To discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity.
5. Define enzymes, discuss the factors affecting enzymes activity
6. Describe in detail- biochemical aspects of muscle contraction.
7. Acquire knowledge about Clinical biochemistry, with special reference to liver & renal function test, blood study for lipid profile metabolism of fat, carbohydrates, proteins, bone minerals & electrolyte balance.

COURSE OUTLINE

1. CELL BIOLOGY

i. Membrane, structure & function:
ii. Junction of intracellular organelle in brief

2. CARBOHYDRATES

i. Chemistry-definition, classification with example;
ii. Functions of carbohydrates with mucopolysaccarhides
iii Reducing properties of sugar -clinical & diagnostic importance (e.g. Benedict's test, Banfood's test etc)
iv. Metabolism – Digestion & absorption of carbohydrates- Glycolysis - aerobic, anaerobic, Energetics & regulation;
v. Kreb's cycle-its energetics & regulation- role of Tri carboxylic acid cycle.

vi. Glycogenesis, glycogenolysis & their regulation – role of liver in muscle glycogen. Gluconeogenesis - significance of Hexose Mono Phosphate shunt

vii. Hormonal regulation of blood sugar levels - important metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus

3. **PROTEINS**

i. Chemistry - definition – function – classification of amino acids, protein structure – effect of temperature on proteins - denaturation – coagulation; isoelectric pH & its importance;

ii. Metabolism – Digestion & absorption – Decarboxylation – Deamination – Transmethylation – transamination & their importance – Detoxification of ammonia including urea cycle;

iii. Special products of amino acid – e.g. Phenylalanine glycine, methionine

iv. Neuro-transmitters

4. LIPIDS

i. Chemistry- definition- classification- (including fatty acids with example) – function

ii. Metabolism – digestion & absorption of lipids –
B-oxidation- of saturated fatty acids & formation & utilization –cholestrol & its importance (no biosynthesis needed)

iii. Fate of acetyl – Co-enzyme A
a. Cholesterol biosynthesis
b. Ketogenesis
c. Fatty acids biosynthesis
d. Neuro-transmitters

iv. Fate of Glycerol
a. Gluconeogenesis
b. Energy (glycolsis)
c. Triglycerides
d. Phospholipid synthesis

5. NUCLEIC ACIDS

i. D.N.A/R.N.A – Definition – structure & function – types – genetic code – catabolism of purine - gout

6. ENZYMES

i. Definition – Co- Enzymes –classifications
ii. General metabolism of enzymes
iii. Inhibition & types of inhibitors
iv. Iso-enzymes;
v. Clinical & therapeutic use of enzymes

7. VITAMINS

i. Water & Fat soluble – definition – classification;
ii. Individual vitamins – sources – Co-enzymes forms – function –reaction
Related to metabolism covered
iii. Recommended daily allowance, absorption & transport – deficiency & toxicity

8. BIOLOGICAL OXIDATION

i. Oxidative phosphorylation & Electron transport chain

9. MINERALS

i. Phosphate, calcium & iron (in details)
ii. Magnesium, fluoride, Zinc, Copper, selenium Molybdenum, iodine- sources, recommended daily allowance, absorption, transport – excretion function & disorder.

10. ACID-BASE BALANCE, WATER & ELECTROLYTE

i. Body water, Ph-osmolarity, Extra & Intra cellular fluid
ii. Buffers-Ph, buffers system in blood
iii. Role of kidneys & lungs in acid-base balance
iv. Water-electrolyte balance - imbalance-dehydration

11. HORMONES

i Definition-classification-mechanism & action
ii Second messenger (Ca, EAMP, inositol phosphate)
iii Metabolic effects of
a. Insulin, b. Glucagon, c. Catecholamines, d. Thyroxine
e. Mineralocorticoids, f. Glucocorticoids

12. MUSCLE CONTRACTION

i. Contractile elements
ii. Biochemical events during contraction
iii. Energy metabolism in skeletal & cardiac muscle

13. CONNECTIVE TISSUE

i. Biochemistry of connective tissue – collagen – Glyco protein – Proteoglycans

14. NUTRITION

i. Importance of nutrition-Calorimetry-energy value-calorimeter-respiratory quotient & its significance
ii. Basal metabolic rate – definition – normal values – factors affecting BMR.
iii. Energy requirement – with- age/sex/thermogenesis/ -specific dynamic action of food – energy expenditure of various activities.
iv. Composition of food, balanced diet, dietary recommendations nutritional supplementations - nutritional value of carbohydrates/proteins/fats & fibres.
v. Nitrogen balance & its significance – Protein energy malnutrition – Kwashiorkor & Marasmus

15. CLINICAL BIOCHEMISTRY

i. Liver function test & Renal function test
ii. Relevance of blood levels of glucose, urea, Creatinine Phosphate & uric acid
iii. Enzymes-amylase, Creatinine Phospho Kinase, isoenzymes
iv. Lipid profileTri-glyceride, cholesterol / High density lipoprotein /Low density lipoprotein
v. Protein & Aggression
vi. Glycosuria

PHARMACOLOGY

COURSE OBJECTIVES

The objective of the course is to enable the student understand the action of different category of drugs in human body and their usage in different clinical situations

COURSE OUTLINE:

1. INTRODUCTION TO PHARMACOLOGY

Terminology – Agonist – Antagonist, Pharmacokinetics, Pharmacodynamics, Pharmacotherapeutics, Toxicology Drug –Receptor interaction – Association – Dissociation constants, routes of administration-Absorption-Distribution – Termination of action.

2. AUTONOMIC PHARMACOLOGY

Neurotransmitters, Acetycholine, sites of action – Epinephrine, Nor epinephrine – 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 – Antihypertensive – Diuretics - beta blockers calcium channel blockers, Angiotension converting enzyme – inhibitors – Peripheral vascular diseases and vasodialators – Cardiac anti-arrythmic agents.

4. BLOOD DISORDERS

Anemia, iron deficiency anemic, iron substitute as therapeutic tool – Megaloblastic anemia – cyanocobalamine – shock – plasma substitutes, plasma expanders vasoconstrictors – coagulants and anticoagulants – heparin and coumarins.

5. NEUROPHARMACOLOGY

Sedatives and Hypnotics, barbiturates and their antagonists –Narcotic analgesics – Opioids – Dangers of addictions

6. BEHAVIORAL PHARMACOLOGY AND PSYCHOPHARMACOLOGY

Anxiety states, Anti-anxiety drugs – benzodiazepines – Diazepam congeners – Mood disorders and depressed states – antidepressants Lithium - Psychodysleptics and their dangers in misuse among student population.

7. MOVEMENT DISORDERS

Parkinsonism – Characteristics of disease, tremor, rigidity – chemotherapy, Epilepsies –types – drug management of disease – spastic disease – drug treatment of acute muscle spasms

8. INFLAMMATORY DISEASE

Antinflammatory agents – Analgesics – Non steroidal anti-inflammatory agents – Aspirin, paracetamol, indomethacin, diclofenac, piroxicam, mefenamic acid, Prevention role of superficial and topical remedies in induction of analgesia .

.

9. ENDOCRINE DISORDERS

Thyroid – hypo and hyperthyroidism, diabetes and insulin - oral hypoglycemic agents, gonadal hormones – oral contraceptives – role of glucocorticoids in arthritic conditions – dangers of prolonged use of steroidal agents, glucocorticoids, prednisolone, dexamethasone, betamethasone, beclomethasone

10. CHEMOTHERAPY

Bacterial infections – drugs against micro organism – sulfonamides, antibiotics, floxacins – parasitic infections malaria, amoebae, filariasis – flagellates – Respiratory Pharmacology use of broncho dilator – airway clearance – cancers – antibiotics, anti metabolites, irradiation – radioactive materials in cancers

11. DRUGS ACTING ON RESPIRATORY SYSTEM

12. DRUGS IN GASTRO INTESTINAL TRACT

Gastro intestinal pharmacology, hyperacidity, anti diarrhoeals, purgative.

BIO- MECHANICS AND KINESIOLOGY (150 HOURS)

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 musculo skeletal function and dysfunction

COURSE OBJECTIVES

The objective of this course is that after 150 hours of lectures, demonstrations, practicals and clinics the student will be able to demonstrate and understanding of the principles of Biomechanics and Kinesiology and their application in their application in health and disease.

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

COURSE OUTLINE

I.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, centre of gravity, and line of gravity of the human body, stability and centre of gravity, relocation of the centre of gravity.
4. Describe the reaction forces, Newton 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 system: composition of force, muscle action lines, total muscle force vector, divergent muscle pulls, and anatomical pulleys.
8. Describe parallel force systems: first class lever, second class lever, third class lever –torque – mechanical advantage.
9. Define moment arm: moment arm of a muscle force, moment arm of gravity and anatomical pulleys
10. Describe equilibrium of a lever.

II.JOINT STRUCTURE AND FUNCTION

1. Describe the basic principles of joint design and a human joint
2. Describe the tissue present in human joints: including dense fibrous tissue, bone, Cartilage and connective tissue.
3. Classify joints – synarthrosis, amphiarthrosis, diarthrosis, and sub classification of synovial joints
4. Describe joint function, kinematics chains, range of motion
5. Describe the general effects of injury and disease
6. Closed kinematic chain versus open kinematic chain
7. Hyaline cartilage and fibro cartilage.

III.MUSCLE STRUCTURE AND FUNCTION

1. Describe mobility and stability functions of muscle.
2. Describe elements of muscle structure- composition of muscle fiber, motor unit, types of muscle fiber, muscle fiber size, arrangement and number, muscle tension, length –tension relation ship.
3. Active and passive insufficiency
4. Describe types of muscle contraction, speed, angular velocity, and applied load, voluntary control, torque, isokinetic exercise
5. Factors affecting muscle tension
6. Active and passive tension
7. Concentric, eccentric, isometric contraction
8. Classify muscle – spurt and shunt muscle, tonic and phasic muscle
9. Agonist, antagonist and synergist
10. Factors affecting muscle function: type of joint and location of muscle attachments,Number of joints, sensory receptors

IV.THE VERTEBRAL COLUMN

1. Articulations, ligaments, muscles, typical vertebrae and intervertebral disc
2. Factors affecting stability and mobility
3. Structure and function of cervical, thoracic, lumbar and sacral vertebrae
4. Describe muscles of the vertebral column – flexors, extensors, rotators, lateral flexors
5. Describe the effect of injury and developmental defects
6. Lumbar – pelvic rhythm, Motions of the vertebral column

V.THE SHOULDER COMPLEX

1. Describe the structural components of the shoulder complex including the articulating surfaces, capsular attachment, ligaments, movements of the joints- Sternoclavicular, Acromioclavicular, Scapulothoracic, Glenohumeral
2. Describe the function of the shoulder complex including dynamic stability of the glenohumeral joint, scapulothoracic contributions
3 Describe the muscles of elevation (deltoid, supraspinatus, infraspinatus, teres minor, Subscapularis, upper trapezius, lower trapezius, serratus anterior, middle trapezius and Rhomboids)
4. Describe the muscles of depression
5. Scapulohumeral rhythm, Coracoacromial arch

VI.THE ELBOW COMPLEX

1. Describe the structure of the humeroulnar, humeroradial including articulating surfaces, Joint capsule, ligaments, muscles
2. Describe the function of humeroulnar and humeroradial joints including the axis of motion, range of motion, muscle action
3. Describe the structure and function of superior and inferior radioulnar joint
4. Describe the stability and mobility of the elbow complex
5. Carrying angle
6. Factors limiting range of motion in flexion,extension, supination & pronation

VII.THE WRIST AND HAND COMPLEX

1. Describe the structure of wrist complex including radio carpal joint, mid carpal joint, and the ligaments of the wrist complex.
2. Describe the function of the radio carpal joint and mid carpal joint including the movements and muscles involved
3. Describe the hand complex including structure of fingers – Carpo Meta carpal joint, Meta carpo phalangeal joint and inter phalangeal joints of fingers, Ligaments, range of motion
4. Describe the structure of the joints of thumb
5. Describe the extrinsic and intrinsic thumb muscles
6. Describe prehension, power, cylindrical, spherical and hook grip
7. Describe precision handling – pad to pad, tip top tip, pad to side prehension
8. Functional position of the wrist
9. Role of interossei and lumbricals muscles at the Meta carpo phalangeal joint and inter phalangeal joints .

VIII.THE HIP COMPLEX

1. Describe the structure of hip joint including the articulating surfaces on the pelvis and femur, angulations, angle of torsion, internal architecture of femur and pelvis, ligaments and muscles.
2. Describe the function of hip – rotation between pelvis, lumbar spine, and hip: pelvic motion – anterior posterior pelvic tilting, lumbar pelvic rhythm, lateral pelvic tilting and pelvic rotation.
3. Describe femoral motion
4. Describe hip stability in erect bilateral stance, sagittal plane equilibrium and unilateral stance
5. Describe reduction of forces with weight shifting and using a cane and deviations from normal in muscular weakness and bony abnormalities
6. Coxa valga and coxa vara on the basis of hip stability and mobility
7. Anteversion and retroversion on the basis of hip stability and mobility

IX.THE KNEE COMPLEX

1. Describe the structure of the tibiofemoral joint – articulating surfaces on femur and tibia,the menisci, joint capsule and bursa, ligaments and other supporting structures Anterior– posterior and medial – lateral stability, muscle structure:
2. Knee flexors and Extensors: axes of knee complex: mechanical axis: anatomic axis and axis of motion.
3. Describe the function of the tibiofemoral joint: range of motion, flexion and extension, rotation, abduction and adduction, locking and unlocking, functions of menisci and muscle function
4. Describe the structure and function of patellofemoral joint
5. Describe the effects of injury and disease in the tibiofemoral joint and patellofemoral Joint
6. Q angle, Bursa around the knee

X.THE ANKLE AND FOOT COMPLEX

1. Describe the structure – ankle joint, tibia fibular joint, transverse tarsal joint, tarsometatarsal joint, metatarsophalangeal joints, and interphalangeal joint
2. Describe about arches of foot
3. Describe dorsi flexion and plantar flexion, inversion and eversion, adduction and abduction, supination and pronation relating to ankle foot complex.
4. Extrinsic and intrinsic muscles of the foot

XI.POSTURE

1. Describe the effects of gravity and indicate the location of the gravity line in the sagittal plane in optimal posture
2. Analyze posture with respect to the optimal alignment of joints in the AP and lateral view
3. Role of muscles and ligaments that maintain gravitational moments in erect posture
4. Explain the postural deviations – pes planus, hallux valgus, pes cavus, idiopathic scoliosis, kyphosis, lordosis

XII.GAIT

1. Gait – Stance, Swing, Double support phases of gait and its sub division, parameters of gait
2. Analyze joint motion at hip, knee and ankle of the extremity during gait cycle
3. Describe the muscle activity at hip, knee and ankle throughout the gait cycle and muscle activity at the trunk and upper extremities.
4. Pathological gait and its biomechanical implications

EXERCISE THERAPY (400 HOURS)

COURSE DESCRIPTION

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

COURSE OBJECTIVES

The objectives of this course is that after 400 hours of lectures, demonstrations, practical and clinics the student will be able to list the indications and contra – indications of various types of exercise, 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 contents of the course.

COURSE OUTLINE

I. INTRODUCTION TO EXERCISE THERAPY

1. Introduction
2. Effect of therapeutic exercise
3. Types of muscular contraction - Isotonic, Isometric, Concentric, Eccentric
4. Group muscle action - Agonist, Antagonist, Neutralizer, Stabilizer or Fixator
5. Range of muscle work - Full range, Inner range, Middle range, Outer range

II. MECHANICS OF MOVEMENT

1. Anatomical Movement- Flexion, Extension, Abduction, Adduction, Medial rotation, Lateral rotation, Circumduction, Inversion, Eversion, Dorsi flexion, plantar flexion, Protraction,Retraction, Supination, Pronation, Elevation, Depression.
2. Range of motion (ROM)-Definition, Types-Active and Passive
3. Kinematic chain-Types-Open and Closed chain, Examples
4. Active and Passive insufficiency-Definition, Examples
5. Type of motion-Angulatory or Rotatory, Translation or Linear, Curvilinear
6. Force-Composition, Parallelogram of force
7. Gravity-Centre of gravity, Line of gravity
8. Equilibrium-Stable, Unstable, Neutral
9. Pulley-Fixed and Movable

10. Springs-Series and Parallel
11. Levers-I st order, II nd order, III rd order, Examples, Application in Physiotherapy
12. Axis-Sagittal, Frontal, Transverse, Vertical
13. Planes-Sagittal, Frontal, Horizontal
14. Newton laws of motion
15. Definition of speed, Velocity, Work, Energy, Power, Acceleration, Momentum
16. Friction, Inertia
17. Normal pelvic tilt, anterior pelvic tilt, posterior pelvic tilt, Lateral tilt, muscles responsible for alternation and corrective measures

III. STARTING POSITION AND DERIVED POSITION

1. Starting position - Definition, Purpose, positions-Standing, Sitting, Lying, Kneeling, Hanging
2. Derived position - Definition, Purpose, Positions-
   Standing-High standing, Walk standing, Stride standing, Step standing
   Toe standing, half standing, Cross standing
   Sitting-Crook sitting, Long sitting, Stoop sitting, Squatting, Side sitting
   Lying-Prone lying, half lying, Crook lying, side lying
   Kneeling-half kneeling, kneel sitting, prone kneeling, inclined prone kneel
   Hanging-Half hanging

IV. ACTIVE AND PASSIVE MOVEMENT

1. Introduction
2. Classification of movement-Active & Passive
3. Active movement-Definition, Indication, Effect, Types-
   Free, Active assisted, assisted resisted, resisted
4. Passive movement-Definition, Types-Relaxed passive movement-upper & lower extremity.
5. Passive manual mobilization-mobilization of joint, Manipulation of joint, Stretching of soft tissues

V. STRETCHING

1. Definition
2. Indication & Contraindication
3. Purpose of stretching
4. Physiological changes in muscle to stretch
5. Neurological changes in muscle to stretch
6. Types of stretching
   - Passive, Active or self stretching, Proprioceptive Neuro muscular Facilitation, Ballistic stretching, Dynamic, Isometric
7. Lower extremity muscle stretching
   Iliacus & psoas major, adductor, hamstring, Tensor fascia lata, quadriceps, Tendo Achilles (gastronemius & sole us), Piriformis, Tibialis anterior, Peroneus longus, Peroneus brevis, Extensor Hallucis Longus, Extensor Digitorum Longus, Extensor Digitorum Brevis
8. Trunk & Upper extremity stretching
   Low back extensors, Levator scapulae & upper fibers of trapezius, Middle fibers of trapezius & Rhomboids major and minor, Pectoralis major, Supraspinatus, Subscapularis, Infraspinatus & teres minor, Lattismus dorsi Elbow flexors-biceps, Elbow extensors-triceps, Wrist extensors, Wrist Flexors, Common extensors-Extensor Carpi Radialis Longus, Extensor Carpi Radialis Brevis, Extensor Digitorum
   Wrist & finger flexors- Flexor Carpi Radialis, Flexor Carpi Ulnaris, Flexor Digitorum Superficialis, Flexor Digitorum Profundus, Intrinsic muscles of hand

VI. POSTURE

1. Definition
2. Postural control
3. Standard posture
4. Types of posture-Standing & Dynamic
5. Faulty or Abnormal postures
   -Excessive lordosis, Kyphotic lordosis , Sway back, Flat back, Flat neck Scoliosis, Forward head
6. Assessment of posture

VII. GAIT / HUMAN LOCOMOTION

1. Introduction
2. Definition
3. Gait cycle
4. Phases of gait
5. Muscular activity during stance & swing phase
6. Characteristic of normal gait - Vertical displacement of center of gravity (Pelvic tilt), Lateral pelvic tilt, Horizontal dip of Pelvis, Pelvic forward and backward rotation, Knee flexion, Double limb support, Single limb support, cadence, step length, stride length, step duration, stride duration, Base width, Degree of toe out or foot angle
7. Pathological gait - Trendelenburg gait, Circumductory gait, Hip hiking gait, Foot drop gait, Calcaneal gait, Flexed knee gait, Scissoring gait, Parkinson Gait, Antalgic gait, wide base gait, Lordotic gait,

VIII. WALKING AIDS

1. Definition
2. Indication
3. Types of walking aids- Crutches, Canes, Walkers
4. Crutches
    - Types-Axillary, Elbow or Forearm, Gutter
    - Measurement for crutches-Axillary & Elbow
    - Parts of crutch-Axillary & Elbow
    - Crutch muscles and preparatory exercise
    - Gait pattern-Four point gait, two point gait, three point gait, Partial weight bearing,
    - Non weight bearing
    - Swing to & Swing through, stair climbing
5. Canes
   Purpose, Types of cane-Standard cane, Standard adjustable canes, Tripod, Quadripod, Gait pattern-Three point gait, two point gait
6. Walkers,
   Purpose, Parts, Types-Rigid walking frame, Foldable walker, Rollator, Reciprocal walker, Gutter, Walker
7. Wheel Chair
   Introduction, Purpose, Parts of wheel chair - Wheels, tyres, wheel locks, casters, hand rim, foot rest, tilt bar, seat and back rest.

Measurement - Seat width, Seat height, Seat depth, Back rest height, Arm rest height.
Types of wheel chair - Rigid, Foldable, One arm driven wheel chair, Powered wheel chair

IX. RELAXATION

1. Introduction
2. Indication
3. Relaxation techniques-Local, General, Others
4. Local relaxation
    - Therapist massage
    - Passive movement
    - Muscle energy techniques
    - Hold relax
    - Contract relax

5. General relaxation
    - Contrast method
    - Reciprocal inhibition
6. Other relaxation
    - Mental imagery
    - Autogenic training
    - Yoga & Meditation
    - Music therapy
    - Creational activities
    - Social modality

X.BREATHING EXERCISE

1 Definition
2 Indication & Contraindication
3 Physiological effects
4 Types of Breathing Exercises

- Diaphragmatic breathing exercise, apical breathing, Costal breathing, Posterior basal, Glossopharyngeal, Pursed lip breathing, Inspiratory Hold

XI.RELAXED PASSIVE MOVEMENTS

Introduction, Definition, Indications & Contraindications, Principles - Relaxation, Fixation, Traction, Range, Speed & Duration, Sequence, Effect & Uses
Technique of passive movement for upper extremity-shoulder, elbow, wrist, forearm and hand.
Lower extremity-Hip, Knee, Ankle and foot

XII.MUSCLE GRADING / MANUAL MUSCLE TESTING (MMT)

Introduction, Principles, Uses, Precaution & Contraindication, Types of muscle, grading, Available Range of Motion method, Make or Break test, Active resistance test, grading system, Medical Research Council (MRC), Plus & Minus grade, Demonstrate the skill to grade - Upper limb muscles, Lower limb muscles, Trunk muscles

XIII.GONIOMETRY

Definition, Normal range of motion of joints, Types of goniometer, Universal , goniometer, Gravity dependent goniometer or fluid goniometer, Pendulum goniometer, Electrogoniometer, Procedure or steps in joint range measurement, Demonstrate measuring of individual joint range using goniometer,
Shoulder joint, elbow joint, radioulnar joint, wrist joint, and joints of the hand
Hip joint, Knee joint, ankle joint, subtalar joint
End feel-Normal & Pathological
Precautions & Contraindications

XIV.METHODS OF JOINT MOBILISATION

1. Introduction
2. Definition
3. Joint range-Outer range, Middle range, Inner range
4. Causes of joint range limitation
5. Effect of prolonged immobilization
6. Indication & Contraindication
7. Principle
    -Position of patient
    -Position of therapist

-Relaxation
-Fixation
-Support or Stabilization
-Direction of movement
-Force & Range / Distraction or Traction
-Intensity & Duration

8. Methods of peripheral joint mobilization
-Muscle relaxation techniques
-Free exercise
-Hold relax
-Contract relax
-Muscle stretching techniques
-Forced passive movement
-Passive stretching / self stretching
-Mechanical stretching
-Oscillatory technique
-Sustained translatory joint play techniques

XV. MUSCLE STRENGTHENING / RE-EDUCATION OF MUSCLE

1. Definition
2. Demonstrate various reeducation techniques on different group of muscles of upper extremity, lower extremity, trunk.
3. Demonstrate the progressive exercise in strengthening using various methods (According to muscle power-Grade I to Grade V)

XVI. RESISTED EXERCISE

1. Definition
2. Types of resisted exercise-Manual & Mechanical
3. Manual-Definition, principle, technique by therapist & patient
4. Mechanical-Definition, principle, technique by weights, pulleys, spring
5. Uses of resisted exercise
6. Progressive resisted exercise
-Definition, Repetition maximum (RM) method, Delorme & Watkins, Mac queen, Zinovieff (oxford technique)

XVII. SUSPENSION THERAPY

1. Definition
2. Principle -Friction, Pendulum, Eliminating gravity movement, Advantages & Disadvantages
3. Suspension Instruments
   - Suspension frame, Supporting ropes, Pulleys, Slings, S-hook and dog Clip, Wooden cleat
4. Procedure
5. Types of suspension
   -Axial suspension, Vertical suspension, Pendular suspension
6. Demonstrate suspension therapy for upper extremity & lower extremity
7. Upper extremity- Shoulder Flexion, Extension, Medial Rotation, Lateral Rotation, Abduction, Adduction, Elbow Flexion, Extension
8. Lower extremity- Hip Flexion, Extension, Abduction, Adduction, Medial Rotation, Lateral Rotation, Knee Flexion, Extension

XVIII. HYDROTHERAPY

1. Introduction
2. Definition
3. Principle
   -Buoyancy, Hydrostatic pressure, Hydrodynamic pressure, Turbulence
4. Indication & Contraindication
5. Physiological & Therapeutic effects
6. Advantages
7. Types of hydrotherapy
   -Hubbard tank, Hydrotherapy pool, Foot bath, Body wraps, Contrast bath
8. Exercises in hydrotherapy

XIX. PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION (PNF)

1. Introduction
2. Definition
3. Principles
   -Pattern of motion, Diagonals, Motion components,
4. Basic procedure
   -Agonist & Antagonist, Traction & Approximation, Normal timing, Stretch stimulus, Stretch reflex, Manual contact, Command & Communication, Line of movement

5. Proprioceptive neuromuscular facilitation patterns for Upper Extremity
   -D1 Flexion, D1 Extension, D2 Flexion, D2 Extension
6. Proprioceptive neuromuscular facilitation pattern for Lower Extremity
   -D1 Flexion, D1 Extension, D2 Flexion, D2 Extension
7. Demonstrate Proprioceptive neuromuscular facilitation Technique
   -Repeated contractions, slow reversals, Rhythmic stabilization, Hold relax, Rhythmic initiation

XX.MAT ACTIVITIES & FUNCTIONAL RE-EDUCATION

1. Introduction
2. Demonstrate common mat activities
   Rolling-Prone on elbows-Prone on hands-Hook lying-Bridging-Quadruped position-Long sitting-Short sitting-Kneeling-Half kneeling-Standing-Walking

XXI.GROUP EXERCISE

1. Introduction
2. Advantages & Disadvantages
3. Indications
4. Formation of group
   -Space, Selection of patients, Number of patients, Instruction to patients Group type,
5. Type of exercise

XXII.BALANCE AND CO-ORDINATION EXERCISE

1. Balance
   -Definition, Cause of balance disorder, Evaluation, Exercise to improve balance
2. Co-ordination
   - Definition, Causes of co-ordination disorder, Condition, Tests for co-ordination, Co-ordination exercise
3. Balance evaluation
   -Romberg test, Hall pike test, Functional reach test
4. Balance exercise
   - Exercise for weakness, Exercise for movement strategies, Static balance exercise, Dynamic balance exercise, Balance exercise for vestibular dysfunction

5. Co-ordination test

-Standing, Walking, Sitting or Supine, Finger to nose, Finger to therapist finger , Finger to finger, Alternate nose to finger, Finger opposition, Pronation /Supination, Alternate heel to knee, drawing an imaginary circle on air with upper extremity & lower extremity , Position holding, Rebound test

6. Co-ordination exercises

- Frenkel exercise in Supine, Sitting, Walking, Functional activity, Retraining, Brushing, Combing hair, Pick up small object from table or floor, Practice writing, Draw numbers or alphabets

XXIII – TRACTION

1 Definition
2 Mechanism of action of traction
3 Indication & Contraindication of traction
4 Types of traction
5. Application of traction

XXIV- BED REST COMPLICATIONS

Describe the complications of prolonged bed rest.
Demonstrate maintenance exercises for patients on prolonged bed rest.

XXV. MASSAGE

1. Introduction

- History of massage, Definition of massage, Mechanical points to be considered (Manipulation, time of day for treatment, comfort and support of patient-positioning, Draping, bolstering, position of operator, using body weight, contact and continuity)

2. Technique –indication and contraindication
3. Classification of massage

- Based on character of Technique- Stroking manipulation, Pressure, manipulation, Vibratory manipulation, Tapotment or Percussion manipulation
- Based on depth of tissue reached- Light massage, Deep massage
- Based on parts of body massaged- General Massage, Local massage
- Based on means of application of pressure- Manual massage, mechanical massage

4. Physiological effects of massage on various body systems
(Effect on-circulatory system, excretory system, muscular system, nervous system , metabolic system, respiratory system, skin)
5. Massage Technique
-Stroking manipulation- Superficial stroking, deep stroking or Effleurage
-Pressure manipulation- Kneading-palmar & digital kneading, ironing Petrissage-picking up, wringing, skin rolling, Friction - circular & transverse friction
- Percussion manipulation-Clapping, hacking, beating, pounding, tenting contact heel percussion
- Vibratory manipulation-vibratory& shaking
6. Techniques Used For Various Parts of Body
-Massage for upper limb-scapular region, shoulder joint, upper arm, elbow joint, Forearm, wrist joint, hand
-Massage for lower limb-thigh, knee joint, leg, foot (ankle&toes)
-Massage for back-neck and upper back, middle and lower back, gluteal region
-Massage for face
-Massage for abdomen
7. Sports Massage
-Introduction, role of massage in sports, Massage manipulations-stroking,effleurage,petrissage,acupressure,tapotement, Vibration, Shaking
- Ice massage
- Categories of sports massage-pre event massage, intermediate massage, Post, Event massage
8. Therapeutic Application of Massage

- Relaxation
- Oedema
- Radical mastectomy
- Venous ulcer
- Painful neuroma
- Bells palsy
- Sprain and Strain
- Fibrositis

BIO-STATISTICS AND RESEARCH METHODOLOGY

(50 Hours)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of biostatistics and research methodology to carry out a research project.

COURSE OUTLINE

1. Research methods and methodology
2. Research process
3. Research design
4. Collection of data
5. Sampling methods
6. Data analysis, interpretation and presentation
7. Central tendency and dispersion
8. Correlation and regression
9. Testing hypothesis

ENT AND OPHTHALMOLOGY (20 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of ENT & Ophthalmology including the common disorders and their management.

E.N.T

COURSE OUTLINE

1. Outline the anatomy and physiology of hearing, Use of audiometer in assessment of hearing
2. Briefly classify causes of hearing loss & Outline the management
3. Outline the functions of vestibular apparatus
4. Outline the common infectious disease affecting hearing, breathing and speech and their management

OPTHALMOLOGY

COURSE OUTLINE

1. Eye lesions in leprosy and their management
2. Lesions in visual pathway, clinical symptoms and methods of testing
3. Paralysis of ocular muscles and its management
4. Disorders of ocular movement – myasthenia gravis, progressive supra nuclear palsy, Lower Motor Neuron lesions
5 .Visual failure from cataract, inflammatory disorder, Vitamin A deficiency, Glaucoma and Trachoma
6. Testing of visual failure, screening for visual acuity for community health surveys.

PT FOR VETERINARY SCIENCES (30 Hours)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of veterinary anatomy and physiology and the management of common injuries.

COURSE OUTLINE

1. Veterinary Surgeons Act (1966)

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

3. Comparative Anatomy

4. Observation and Examination

5. Causes of injury

6. Treatment and rehabilitation of common injuries.

III – YEAR

ELECTROTHERAPY (360 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand

i) the basics of electrical stimulation,
ii) different types of currents, their application and therapeutic benefits
iii) different physiotherapy modalities, their construction, usage, application and therapeutic benefits

COURSE OUTLINE

I. BASIC CONCEPTS IN ELECTRICAL STIMULATION

1. Resting Membrane Potential
2. Action Potential
3. Propagation of Action Potential
4. Motor Unit

II. THERAPEUTIC CURRENT

1. Definition
2. Principles
3. Types –Low Frequency current and Medium Frequency current
4. Types of Low Frequency Current
   - Interrupted Galvanic Current/Modified Direct Current/Interrupted Direct Current, Faradic Type Current, Transcutaneous electrical nerve stimulation, Iontophoresis , Sinusoidal Current, High Voltage Pulse Galvanic Stimulation (HVPGS), Diadynamic Current, Functional Electrical Stimulation (FES)
5. Medium Frequency Currents
   - Interferential Current, Russian Current
   - Classical & Vector

III. FARADIC CURRENT

1. Definition, Type, Duration
2. Production, Surging of Faradic Current
3. Physiological effects & Therapeutic effects of Faradic Current

4. Technique of application of Faradic Current
-Motor Point, Preparation of apparatus (Assembling, Testing)
Preparation of patient, Stimulation of motor point

IV. INTERRUPTED DIRECT CURRENT

1. Definition, Type, Duration, Shape, Frequency
2. Production
3. Physiological effect & Therapeutic effect of Interrupted direct current
4. Effect of Interrupted Galvanic Current on Innervated muscle & Denervated muscle

5 Technique of application of Interrupted Galvanic Current
- Motor Point, Preparation of apparatus (Assembling, Testing),
Preparation of patient, Stimulation of motor point

6. Demonstrate surgical faradic current and interrupted galvanic current for following conditions - Bells palsy, radial nerve injury, ulnar nerve injury, median nerve injury, deltoid inhibition, medial and lateral popliteal nerve injury, faradic foot bath, faradism under pressure, quadriceps inhibition.

V. SELECTION OF CURRENT

1 Differentiate between types of current, duration, shape, frequency used in stimulating nerve and muscle

VI. ELECTRODIAGNOSIS

1. Introduction
2. Definition
3. Physiological basis
4. Principles of electro diagnosis
-Strengh/Duration Curve, Rheobase, Chronaxie,
5. Electromyography
-Definition, Recording electrodes, Myoelectrical signal, amplifiers, display devices, Basic wave pattern of an Electromyography signal
6. Nerve Conduction Test
- Motor Conduction study & sensory conduction study
- H reflex, F Wave
7. Faradic- galvanic test

8. Strengh/Duration Curve Test
   -Definition, Type of current used, shape, frequency, Procedure Advantage, Disadvantage, Characteristic of curve (Normal, Partial, Complete denervation) , Factors that affect accuracy of Strengh/Duration curve

VII. BIO-FEEDBACK

1. Definition
2. Basis of biofeedback
3. Principles of biofeedback
4. Uses of biofeedback
5. Electro Myographic bio feedback

VIII. TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION

1. Definition
2. Neurophysiology of pain
3. Acute pain & chronic pain
4. Pain pathway
5. Neuromodulation of pain
6. Pain modulation- Gate control theory, descending pain suppression
7. Parameter of TENS-Waveform, Frequency, Pulse width, amplitude
8. Type of TENS-
   - High Frequency Low Intensity TENS or Conventional TENS
   - Acupuncture like TENS
   - Brief Intense TENS
   - Burst Mode TENS
9. Electrode Placement, Advantage & Disadvantage of TENS, Uses of TENS and Contraindication of TENS

IX. IONTOPHORESIS

1. Definition
2. Physics of iontophoresis, types of iontophoresis – medical , surgical
3. Technique of application of iontophoresis
4. Ions commonly used in iontophoresis and their clinical indication
5. Physiological effect & Therapeutic effect of iontophoresis
6. Dosage of iontophoresis
7. Dangers & Contraindication of iontophoresis

X. INTERFERENTIAL CURRENT

1. Definition
2. Production of interferential current
3. Types of interferential current
    - Static interferential current or Classical interferential current (4 pole method)
    - Dynamic interferential current or Isoplanar vector field (4 pole method) or Four electrodes with rotating vector
4. Parameters of Interferential Therapy
    - Quadripolar or Bipolar application, Vector or Scanning mode, Suction versus Plate electrode, Current intensity, Frequency sweep, Amplitude modulated frequency, Treatment duration, Indications & contraindication of interferential current, Physiological effects of interferential current, Dangers of interferential current

XI. SHORT WAVE DIATHERMY

1 Definition
2 Principle of working
3 Indication & contraindication of Short Wave Diathermy
4 Bio-physics of deep heating using Short Wave Diathermy
    - Capacitor or condenser field method
    - Inductance or cable method
5. Production
    -Construction, Machine circuit or Oscillator circuit, Patient circuit or Resonator circuit
    - Mechanism of production of Short Wave Diathermy
    - Indications for circuits to be in tune
    - Transmission of shortwave in to tissues
6. Technique or Method of application of Short Wave Diathermy
    - Preparation of equipment (warming, tuning, testing of machine)
    - Application of treatment, Condenser field method/Capacitor field Method, Cable method/Inductothermy
7. Condenser field method
    - Type of electrode, Size of electrode, Electrode spacing-Wide & Narrow Spacing, Electrode positioning- Co-planar, Contra planar, Mono planar, Cross fire method,

8. Cable field method
   - Electrode, Electrostatic field & Magnetic field, Advantages
9. Dosage of Short Wave Diathermy
10. Dangers of Short Wave Diathermy
11. Precautions and contraindication of Short Wave Diathermy
12. Pulsed Short Wave Diathermy
   - Definition, Frequency, Wavelength, Production, Parameters- Pulse repetition rate , Pulse duration , Peak pulse power , Physiological effects, Indications & contraindications, Dosage
13. Demonstrate shortwave diathermy for following conditions: periarthritis shoulder, cervical spondylosis , low back ache, arthritis, sinusitis

XII. MICRO WAVE DIATHERMY

1 Definition
2 Bio-physics of micro wave diathermy
3 Indications & contraindications of micro wave diathermy
4 Production of micro wave diathermy (Magnetron)
5 Technique of application of micro wave diathermy
   Patient preparation, Selection of treatment applicator, Selection of appropriate power level and application of treatment, Dosage, Physiological & Therapeutic effects, Dangers

XIII. ULTRASOUND THERAPY

1 Definition
2 Bio-physics of ultrasound
3 Indication & contraindication of ultrasound
4 Proprieties of ultrasound-Reflection, Transmission, Absorption
5 Ultrasonic field
6 Coupling media
7 Production of ultrasound
8 Technique of application of ultrasound
   - Testing of machine
   - Application of ultrasound- Direct contact method, Water bath method, Water bag method,
9. Treatment parameters
   - Intensity, Mode-Continuous or Pulsed, Frequency-1 MHz or 3 MHz, Treatment duration, Pulsed mark: Space ratio

10. Dosage of ultrasound
11. Physiological & Therapeutic effects of ultrasound
12. Dangers of ultrasound
13.Phonophoresis
    -Definition, Principle of working, Drugs used in phonophoresis, Techniques of application of phonophoresis, Contraindications
14. Demonstrate ultrasound for following conditions: supraspinatus tendonitis, bicipital tendonitis, tennis elbow, trigger finger, trigger thumb, dequervains disease, calcaneal spur, plantar fascitis, and ankle ligament strain

XIV. INFRARED RADIATIONS

1 Definition , Basic physical principles including effects & transmission of heat, radiation energy , electromagnetic spectrum & laws governing radiation.
2 Production-Types of generators (Luminous & Non-Luminous), Working
3 Indications & Contraindications
4 Physiological & Therapeutic effects
5 Dangers
6 Technique of treatment
    - Choice of apparatus, Arrangement of lamp and patient, Preparation of Patient, Application of treatment, Treatment frequency and duration

XV. ULTRA VIOLET RADIATION

1 Definition
2 Classification
3 Production
    - Mercury vapor lamp-1. Air cooled medium pressure Mercury vapor lamp (Alpine Sun Lamp)
    - Water cooled medium pressure Mercury vapor lamp (Kromayer Lamp)
4. Fluorescent Tube (Theraktin Tunnel)
    - Tridymite formation
    - Cooling of lamp
5. Technique or principle of application of treatment
    - Preparation of patient, Preparation of apparatus, Setting up, Application, Progression

6. Dosage
    - Test dose
    - Calculation of progression of dosage
7. Psoralen Ultra Violet A apparatus
8. Care of lamp
9. Sensitizers, Photosensitization, Filters
10. Erythema, Pigmentation, Penetration
11. Indications & Contraindications
12. Physiological effects & Therapeutic effects
13. Demonstrate of Ultra Violet Radiation for following conditions
    - Acne-shoulder&chest, back&chest, Alopecia aereata & Totalis, Psoriasis, ulcer ,Pressure sore, Rickets, General body bath

XVI. LASER

1 Definition
2 Properties of laser
    - Monochromaticity
    - Coherence
    - Collimation
3. Production of laser
    - Lasing medium
    - Resonating chamber
    - Energy source
4. Types of laser
    - Ruby laser or crystal laser
    - Helium-neon laser or gas laser
    - Diode laser or semiconductor laser
5. Technique of application
    - Grid method
    - Scanning method
6. Dosage parameters
    -Area of treatment, energy density, pulse repetition rate, power output, irradiation
7. Indications & Contraindications
8. Physiological effects & Therapeutic effects
9. Dangers

XVII. SUPERFICIAL HEAT MODALITIES

1. Moist hot packs-Definition, Working, Technique of application, indications & contra indications
2. Hydro collator pack-Definition, Apparatus, working, Technique of application, indications & contra indications
3. Paraffin wax bath-Definition, apparatus, Technique of application, effects, indications & contra indications
4. Whirl pool bath-Definition, apparatus, Technique of application
5. Hubbard tank-Definition, apparatus, Technique of application

XVIII. CRYOTHERAPY

1. Definition
2. Biophysics
3. Indication & contraindication
4. Technique of application
    - Ice pack
    -. Ice massage
    - Cold pack
    - Cold whirlpool
    - Cryo-cuff
    - Cold spray
    - Cryo stretch
    - Cryo kinetics
5. Physiological Effects & Uses

XIX. CONTRAST BATH

1. Definition
2. Principles
3. Technique of treatment
4. Indications & Contraindications

ORTHOPEDICS & GERIATRICS FOR PHYSIOTHERAPISTS (100 HOURS)

COURSE DESCRIPTION

This course introduces the student to the orthopedic conditions which commonly cause disability and understand in detail its presentation and management

COURSE OBJECTIVES

The objective of this course is that after (100) hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of orthopedic conditions causing disability and their management.

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

COURSE OUTLINE

I. INTRODUCTION TO ORTHOPAEDICS

1. Introduction to orthopedic terminologies
2. Clinical examinations
3. Common investigations
4. Principles of management

II. PRINCIPLES OF OPERATIVE TREATMENT

1. Indications
2. Contraindications
3. Outline principles of: arthrodesis, Arthroplasty, Osteotomy, Bone grafting, Tendon transfers.

III. SOFT TISSUE LESIONS

1. Sprains and Muscle strains
2. Capsulitis
3. Bursitis
4. Tenosynovitis
5. Fascitis
6. Tendonitis

IV. FRACTURES AND DISLOCATIONS

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

V. UPPER LIMB FRACTURES

1 Enumerate major long bone fractures and joint injuries
2 Briefly describe their clinical features, principles of management and complications.

VI. LOWER LIMB FRACTURES

1 Enumerate major long bone fractures and joint injuries
2 Briefly describe their clinical features, principles of management, complications.

VII. SPINAL FRACTURES

1. Outline the mechanism, clinical features, principles of management, complications of spinal fractures.

VIII. DISLOCATIONS

1. Outline the mechanism, clinical features, principles of management and complications of dislocation of the shoulder, wrist, hip and patella.

IX. AMPUTATIONS

1. Classify amputations, list indications of amputation
2. Principles of amputation
3. Principles of management
4. Complications and its management

X.BONE AND JOINT INFECTIONS

1 Outline the etiology, clinical features, management, complications – septic arthritis, Osteomyelitis, tuberculosis – including spinal TB.

XI. BONE AND JOINT TUMORS

1. Classify and outline the clinical features, management and complications of the following: Benign and malignant bone tumors, osteoma, osteosarcoma, osteoclastoma, multiple myeloma.

XII.CHRONIC ARTHRITIS

1. Outline the pathology, clinical features, mechanism of deformities, management and Complications of – Rheumatoid Arthritis, Osteo Arthritis, ankylosing spondylosis.

XIII. LOW BACK PAIN

1. Definition, causes of low back ache, clinical findings, assessment, management

XIV. SPINAL DEFORMITIES

1. Classify spinal deformities and outline the salient clinical features, management and complications

XV. POLIOMYELITIS

1. Describe the pathology, clinical features, pathology, prevention & management,
2. Residual problems of polio myelitis and treatment of residual paralysis,
3. Principles of muscle transfer

XVI. CONGENITAL DEFORMITIES

1. Outline the clinical features and management of Congenital Talipes Equino Varus, Congenital Dislocations of Hip, Flat foot, vertical talus, meningomyelocele, arthrogryposis multiplex congenita, osteogenesis imperfecta.

XVII. PERIPHERAL NERVE INJURIES

Outline the clinical features, management, and reconstructive surgery of
1. Radial, median and ulnar nerve lesions
2. Sciatic and lateral popliteal nerve lesions
3. Brachial plexus injuries including Erb's palsy, Klumpke's palsy, crutch palsy.

XVIII. HAND INJURIES

1. Outline the clinical features, management and complications of Tendon, bone, and joint injuries.

XIX. LEPROSY

1. Outline the clinical features, management and complications of neuritis, muscle paralysis, Tropic ulcer of hand and feet and deformities.

NEUROLOGY FOR PHYSIOTHERAPISTS

(100 HOURS)

COURSE DESCRIPTION

This course introduces the student to the neurological conditions which commonly cause disability and understand in detail its presentation and management

COURSE OBJECTIVES

The objectives of this course is that after 100 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management

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

COURSE OUTLINE

I. NEUROANATOMY

1. Basic anatomy of brain and spinal cord
2. Blood supply of brain and spinal cord
3. Anatomy of the visual pathway
4. Connections of the cerebellum and extra pyramidal system
5. Relationship of spinal nerve to the spinal cord segments
6. Tract of the spinal cord
7. Brachial, lumbar and sacral plexuses
8. Cranial nerves.

II. NEUROPHYSIOLOGY

Neurophysiologic basis of tone, disorder of tone, posture, bladder control, muscle contraction, movement, and pain.

III. ASSESSMENT

1. Basic history taking to determine whether the brain, spinal cord, peripheral nerve is involved
2. Assessment of higher mental function – orientation, memory, attention, speech, language
3. Assessment of cranial nerves
4. Assessment of motor power
5. Assessment of sensory function – touch, pain, temperature, position
6. Assessment of tone – spasticity, rigidity, and hypotonia.
7. Assessment of cerebellar function
8. Assessment of higher cortical function – apraxia
9. Assessment of gait abnormalities

IV. PRESENTATION & MANAGEMENT OF NEUROLOGICAL CONDITIONS

1. Congenital childhood disorders
    - Cerebral palsy
    -Hydrocephalus
    -Spina bifida
2. Cerebrovascular accidents
    -Definition, etiology, classification – thrombotic, embolic, hemorrhagic Clinical findings, management.
3. Trauma
    - Head injury
    - Spinal cord injury
4. Diseases of the spinal cord
    -Craniocerebral junction anomalies
    -Syringomyelia
    - Cervical and lumbar disc lesions
    -Tumors
    - Spinal archnoiditis
5. Demyelinating diseases
    -Guillain – bare syndrome
    - Acute disseminated encephalomyelitis
    - Transverse myelitis
    -Multiple sclerosis

6. Degenerative disorders
    - Parkinson disease
    -Dementia
7. Infections
    - Pyogenic meningitis sequelae
    - Tuberculous infection of Central Nervous System
    - Poliomyelitis
    - Tabes dorsalis
    - Human Immuno deficiency Virus infection
    - Encephalitis
8. Disease of the muscle
    -Myopathies
    -Muscular dystrophy
    -Spinal muscular atrophy
9. Peripheral nerve disorders
    -Peripheral nerve injuries
    -Entrapment neuropathies
    -Peripheral neuropathies
10. Spinal cord lesions
    -Paraplegia
    -Quadriplegia
    -Neurogenic bladder
11. Miscellaneous
    -Disorders of Autonomic Nervous System.
    -Epilepsy
    -Myasthenia gravis
    -Intracranial tumors
    -Motor neuron disease
    -Alzheimer’s disease

CARDIO-RESPIRATORY
DISEASES FOR PHYSIOTHERAPISTS

(100 HOURS)

COURSE DESCRIPTION

This course introduces the student to the cardio-thoracic conditions which commonly cause disability and understand in detail its presentation and management

COURSE OBJECTIVES

The objectives of this course is that after 100 hours of lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of cardio – thoracic conditions causing disability and their management.

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

COURSE OUTLINE

I. ANATOMY AND PHYSIOLOGY

1 Respiratory system: Upper respiratory tract, Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments, Respiratory unit, hilum of lung.
2. Muscles of respiration
3. Pleura, intra pleural space, intra pleural pressure, surfactant
4. Mechanics of respiration – Chest wall movements, lung & chest wall Compliance, V/Q relationship, airway resistance
5. Respiratory centre, Neural & chemical regulation of respiration
6. Lung volumes and lung capacities, Spiro meter, lung function test
7. Pulmonary circulation
8. Cardiovascular system: Chambers of heart, semi lunar and atria ventricular valves, Coronary circulation, conductive system of heart, Cardiac cycle, Electro Cardio Graphy, Heart sounds, Blood pressure, pulse, cardiac output

II. CARDIO VASCULAR DISEASES

1. Define, etiology, pathogenesis, clinical features, complications, conservative and surgical management of the following conditions
    - Ischemia heart disease
    - Myocardial infarction
    - Heart failure
    - Cardiac arrest
    - Rheumatic fever
    - Hypertension
    - Infective endocarditis
    - Myocarditis & cardiomyopathy
2. Describe the principles of cardio – pulmonary resuscitation. Cardiac massage, artificial respiration, defibrillation
3. Surgical procedures that require post surgical Physiotherapy.
    - Open heart surgery and closed heart surgery
    - Thoracotomy – Median sternotomy
    - Heart lung machine
    - Angioplasty
    - Coronary Artery Byepass Graft
    - Valve replacement
    - Valvotomy
4. Describe in detail the conditions Mitral stenosis, Aortic stenosis, Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Pulmonary Stenosis, Tetrology of Fallot, Transposition of Great Vessels, Mitral Stenosis, Mitral Regurgitation.
5. Describe the principles of cardio vascular stress testing.

III. RESPIRATORY DISEASES

1. Define, etiology, pathogenesis, clinical features, investigation, complications, Conservative and surgical management of the following conditions
    - Chronic bronchitis and Emphysema
    - Bronchial asthma
    - Suppurative disease- Broncheictasis, Lung abscess
    - Common infectious disease-Pulmonary Tuberculosis, Pneumonia
    - Interstitial lung disease

- Occupational lung disease
- Pulmonary vascular disease-pulmonary hyper tension, Pulmonary thromboembolism
- Cancer lung
- Aspergillosis
- Cystic fibrosis
- Disease of pleura- Pneumothorax, hydropneumothorax, Pleural effusion, Empyema

2. Chest wall injuries
    - Fracture rib
    - Flail chest
    - Pneumothorax
    - Haemothorax
    - Haemopneumothorax
    - Lung contusion
    - Injury to great vessels and bronchus

3. Physiotherapy for Thoracic Surgeries
    - Thoracotomy
    - Lobectomy
    - Pneumectomy
    - Decortication

4. Describe about suctioning during chest physiotherapy – Indications, types, steps, and complications

COMMUNITY MEDICINE (100 HOURS)

COURSE DESCRIPTION

This course will enable 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 (100) hours of lectures, demonstrations, practical and clinics, the student will be able to demonstrate and understanding of the influence of social and environmental factors of individual and society.

In addition, the student will be able to fulfill the 75% accuracy (as measured by written, oral and practical internal evaluation) the following contents of the course.

COURSE OUTLINE

1. Outline the natural history of diseases and the influence of social, economic and cultural aspects of health and diseases.

2. Outline the various measures of prevention and methods of intervention especially for diseases with disability.

3. Outline the health care delivery system and the public health administration system at central and state government level- primary health care, school health, health team at district hospitals and Primary Health Center, voluntary and international agencies in health care.

4. Outline the important national health schemes.

5. Define occupational health and list the methods of prevention of occupational hazards.

6. Outline the Employees State Insurance scheme and its benefit

7. Describe the social security measures for protection from occupational hazards, accidents, diseases and workman compensation act.

8. Define community based rehabilitation, institution based rehabilitation. Describe the advantages and disadvantages of institution based and community based Rehabilitation.

9. Describe the following communicable diseases with reference to water reservoir, mode of transmission, route of entry and levels of prevention

- Poliomyelitis
- Meningitis
- Encephalitis
- Tuberculosis
- Filariasis
- Leprosy
- Tetanus
- Measles
- Describe the epidemiology of Rheumatic heart disease, Cancer, Chronic degenerative disease, Cerebrovascular accident

10. Outline the influence of nutritional factors such as protein energy malnutrition, Anemia, vitamin deficiency and minerals on disability, nutritional programmes, Balanced diet, nutritional requirement and source, food adulteration.

11. List the principles of health education, methods of communication and role of health education in rehabilitation service-Audio Visual aids, planning a health education Programme.

12. Define the role of community leaders and health professionals in health education.

13. Outline the role of international health agencies in rehabilitation of the disabled.

YOGA (20 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basic yogic practices and its influence on human body to prevent and cure diseases

COURSE OUTLINE

1. Definition of yoga

2. Yogic diet

3. Essentials of yoga practice - time, place, dress, bath, method, of practice

4. Yogic diet

5. Yama, Niyama for mental purity

6. Pranayama (breathing exercises) types and its methods

7. Asana (different static postures) – for physical health

    Uttan pada asana, Pawanamukta asana, Bhujanga asana
    Shalabha asana, Shava asana, Pashchimottan asana
    Suryanamaskar asana.

8. Yogic practice for asthma
    a. Ujjayee pranayama
    b. Matsyndra asana
    c. Dhanur asana
    d. Yoga mudra

9. Yogic practices for Arthritis, headache, sinus and eye disorders

10. Yoga and obesity

11. Yogic practices for heart ailments, hypertension and diabetes.

12. Principles of yoga & Basic yogic postures and the physiological effects

SPORTS PHYSIOTHERAPY (30 Hours)

COURSE OBJECTIVES

The objective of the course is to enable the student understand about the different aspects involved in preparing an athlete for sport and the management of different sports related injuries.

COURSE OUTLINE

1. History and background of sports and sports medicine
2. Measures of injury prevention
3. Psychological aspects of sport injury
4. Protective and Supportive equipment in sports
5. Training methodology – types & uses
6. Factors affecting performance of athletes
7. Athletic Nutrition –Nutritional requirements, Pre game meal, Carbohydrate loading
8. Drugs in Sports
9. Basic first aid and Emergency care for injured athlete
10. Rehabilitation of injured athlete – comprehensive and holistic approach

EMG AND BIOFEED BACK –(30 Hours)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of Electromyographic study, Nerve conduction study and biofeedback.

COURSE OUTLINE

1. Instrumentation and methodology to conduct Electro Myographic study for normal muscle
    - At insertion
    - At rest
    - At minimal voluntary activity
    - At maximum voluntary activity
2. Types of electrodes used
3. Abnormal Electro Myographic studies
4. Motor and sensory nerve conduction studies
5. Bio feed back –Instrumentation and methodology
6. Role of different types of bio feed back in rehabilitation of patients

BASICS OF ACUPRESSURE & ACUPUNCTURE (10 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of acupressure and acupuncture and their usage for common ailments.

COURSE OUTLINE

1. Principles of acupressure
2. Physiological concepts behind acupressure points
3. Acupressure points for common ailments.
4. Acupressure and Acupuncture
5. Techniques of Acupuncture, Indications/Contra Indications, Complication of Acupuncture

IV - YEAR

PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS (120 HOURS)

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in orthopedics with the skills gained in exercise therapy & electrotherapy thus enabling them to apply these in clinical situations of dysfunction due to musculo-skeletal pathology.

COURSE OBJECTIVES:

The objectives of this course is that after (120) hours of lectures, demonstrations, practical and clinics the student will be able to identify disability due to musculo-skeletal dysfunction, set treatment goals and apply their skills in exercise therapy & electrotherapy in clinical situations to restore musculo-skeletal function.

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

COURSE OUTLINE:

I. ORTHOPADIC ASSESSMENT

1 Subjective assessment
2 Objective examination
3 Observations - Built, Tropical changes, Posture, Attitude of the limb and deformity, Gait, External appliances
4 Palpation - Temperature, Texture, Tenderness, Edema & Swelling, Joint crepitus
5 Sensory examination-Superficial & deep sensation
6. Pain assessment-onset, location, pattern, quality, Rating, Aggravating & Relieving Factors, Type of Pain
7. Motor examination-Range of Motion, Joint play & End feel, Muscle power, Reflexes, Limb length, Muscle girth, Tone - Spasticity & Rigidity
8. Examination of Respiratory System
9. Higher function examination
10. Functional assessment
11. Special test

II. FRACTURES AND DISLOCATIONS OF UPPER LIMB

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme for the following injuries:
    - Fracture clavicle
    - Dislocation of shoulder joint
    - Fracture of the proximal end of the humerus
    - Fracture neck of humerus
    - Fracture shaft of humerus
    - Supracondylar fracture
    - Intercondylar fracture
    - Fracture of the medial epicondyl
    - Fracture of the lateral condyle of the humerus
    - Dislocation of the elbow
    - Fracture of the head of the radius
    - Fracture of the neck of radius
    - Fracture of the olecranon
    - Fracture of both bones of forearm
    - Monteggia fracture dislocation
    - Galleazi fracture dislocation
    - Colle's fracture
    - Fracture of scaphoid
    - Dislocation of the lunate
    - Fracture of metacarpal bones
    - Bennett's fracture dislocation

III. ORTHOPAEDIC CONDITIONS OF UPPER LIMB

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions
    - Supraspinatus tendonitis
    - Rupture of rotator cuff
    - Periarthritis shoulder
    - Tennis elbow
    - Dequervain's disease
    - Trigger finger
    - Trigger thumb
    - Carpal tunnel syndrome
    - Dupytren's contracture

IV. **FRACTURES AND DISLOCATIONS OF LOWER LIMB**

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme for the following injuries:

    - Fracture pelvis
    - Dislocation of hip joint
    - Fracture neck of femur
    - Fracture shaft of femur
    - Fracture femoral condyles
    - Fracture tibial condyles
    - Fracture betella
    - Dislocation of knee
    - Fracture of tibia and fibula
    - Fracture and dislocation of ankle
    - Fracture of talus and calcaneum,

V. ORTHOPAEDIC CONDITIONS OF LOWER LIMB

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

    - Iliotibial band friction syndrome
    - Knee and ankle ligament injuries
    - Patellar tendinitis
    - Chandromalacia patella
    - Plantar fascitis
    - Metatarsalgia

VI. FRACTURES AND DISLOCATIONS OF SPINE

1. Review the mechanism of injury, clinical features, treatment and complications and describe the conservative and post operative physiotherapy management and home programme of cervical, thoracic, lumbar and sacral spinal fractures.

VII. ORTHOPAEDIC CONDITIONS OF SPINE

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

- Spondylolisthesis
- Ankylosing spondylitis
- Lumbosacral strain
- Fibrositis back
- Congenital abnormalities in the spine
- Intervertebral disc prolapse
- Lumbar canal stenosis

VIII. NEURO MUSCULAR DISORDERS

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

- Cerebral palsy
- Leprosy
- Poliomyelitis
- Muscular dystrophy

IX. ARTHRITIS

1. Discuss the etiology, clinical features, assessment, medical and physiotherapy management of the following conditions

- Osteoarthritis of hip and knee
- rheumatoid arthritis

X. DEFORMITIES

1. Discuss the etiology, assessment, medical and physiotherapy management of the following deformities including plaster of paris application for correction of deformities :

Cubitus valgus,Cubitus varus,Coxa vara,Coxa valga,Genu velgum
Genu varum, Genu recurvatum, Kyphosis,Scoliosis, Lordosis

XI. AMPUTATIONS

1. Review the indications and principles of amputations of the upper and lower limbs and describe the Physiotherapy management and training of amputees before and after prosthetic fitting. Review immediate post-operative prosthetic fitting and list its advantages.

XII. BURNS

1. Describe the different degrees of Burns and review relevant first aid measures. Outline the Physiotherapy assessment of burns as follows: Degree and % of burns, presence of edema and adherent skin, range of motion of involved joints, muscle power, contractures, deformities, posture and chest movements. Review medical and surgical management including skin grafting. Describe the Physiotherapy aims and management of a patient with burns along with a home program.

XIII. ORTHOSIS AND PROSTHESIS

1. Review upper & lower limb and spinal orthosis and prosthesis. Describer the principles and function of each list indications and contra-indications, advantages and disadvantages of each. Demonstrate the fabrication of simple hand and foot splints out of plaster of paris.

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS (120 HOURS)

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in neurology, with the skills gained in exercise therapy & electrotherapy thus enabling them to apply these in clinical situations of dysfunction due to pathology in the nervous system.

COURSE OBJECTIVES

The objectives of this course is that after 120 hours of lectures, demonstrations, practical and Clinics the student will be able to identify disability due to neurological dysfunction, set treatment goals and apply their skill in exercise therapy & electrotherapy in clinical situations to restore neurological function.

In addition the student will be able to fulfill with 75% accuracy (as measured by written, oral and Practical internal evaluation) the following contents of the course.

COURSE OUTLINE

I. NEUROANATOMY AND NEUROPHYSIOLOGY

1. Structure and functions of
    - Cerebral hemispheres
    - Cerebellum
    - Spinal cord
    - Peripheral nerves
    - Pyramidal system
    - Extra pyramidal system
    - Neuron
    - Synapse

II. PRINCIPLES OF ASSESSMENT

1. Evaluation and functional physiotherapy assessment with appropriate reasoning for planning and implementation of treatment technique.
2. History taking
3. Assessment of higher function

4. Assessment of cranial nerves
5. Assessment of sensation – pain, temperature and dorsal column
6. Assessment of motor system – muscle power, joint mobility, balance, co- ordination
7. Assessment of tone,
8. Assessment of reflexes – superficial and deep
9. Assessment of gait
10. Assessment of posture
11. Assessment of limb length
12. Assessment of functional abilities

III. PRINCIPLES OF TREATMENT

1. Principles and theories of motor control and learning
2. Application of transfer and functional re-education exercise, postural exercise and gait training.
3. Functional training in bladder dysfunction.
4. Principles of co-ordination and balance exercise
5. Understand and application of neurotherapeutic skills like Proprioceptive Neuro muscular Facilitation, Neuro Developmental Therapy, Carr & Shepherd, Brunstrom and Rood's approach
6. Knowing principle in using tools of therapeutic gym such as vestibular ball, tilt board and bolsters.
7. Principles of use of ambulatory aids in neurological conditions – Upper Motor Neuron lesions, Lower Motor Neuron lesions and cerebellar dysfunction
8. Principles of use of splints and braces in spastic Upper Motor Neuron lesion and in flaccid Lower Motor Neuron lesion in both Upper and Lower limbs
9. Review the management of chronic pain in neurological condition with respect to the type of pain, treatment modalities available, and selection criteria for each modality.
10. Treatment of altered tone – hyper tonicity and hypo tonicity
11. Sensory re education – hypersensitivity, hyposensitivity and anesthesia.
12. Motor re-education – strengthening exercises, co-ordination exercise, joint mobilization exercise, use of Proprioceptive Neuro muscular Facilitation technique.
13. Treatment to improve function – free exercise, activities of daily living, mat exercise and mobilization exercise.

IV. PHYSIOTHERAPY MANAGEMENT OF NEUROLOGICAL CONDITIONS IN ADULT

1. Discuss the etiology, clinical features, assessment and management of the following conditions
    - Stroke
    - Brain tumor
    - Spinal cord tumor
    - Parkinsonism
    - Cerebellar lesion
    - Motor neuron disease
    - Disorders of the spinal cord – paraplegia, quadriplegia, syringomyelia, transverse myelitis, Spinal dyspharism
    - Head injury
    - Peripheral nerve injury
    - Gullian bare syndrome
    - 7th cranial nerve palsy
    - Low back pain syndrome
    - Brachial neuralgia
    - Multiple sclerosis
    - Myasthenia gravis
    - Viral meningitis
    - Tabes dorsalis

V. PHYSIOTHERAPY MANAGEMENT OF NEUROLOGICAL CONDITIONS IN CHILDREN

1. Discuss the etiology, clinical features, assessment and management of the following conditions
    - Cerebral palsy
    - Spina bifida
    - Muscular dystrophy
    - Poliomyelitis
    - Hydrocephalus
    - Brachial plexus injury – Erb’s palsy, Klumpke’s palsy.

PHYSIOTHERAPY IN CARDIO-RESPIRATORY CONDITIONS (120 HOURS)

COURSE DESCRIPTION:

This course serves to integrate the knowledge gained by the students in cardio-respiratory conditions with the skills gained in exercise therapy & electrotherapy thus enabling them to apply these in clinical situations of dysfunction due to cardio respiratory pathology.

COURSE OBJECTIVES

The objectives of this course is that after 120 hours of lectures, demonstrations, practical and clinics the student will be able to identify cardio-respiratory dysfunction, set treatment goals and apply their skills in exercise therapy & electrotherapy in clinical situations to restore cardio-respiratory function.

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

COURSE OUTLINE

I. ANATOMY AND PHYSIOLOGY

1. Trachea and Bronchial tree
2. Bronchopulmonary segments
3. Respiratory unit
4. Muscles of respiration
5. Lung & Chest wall compliance
6. V/Q ratio
7. Anatomical dead space and Physiological dead space
8. Pulmonary defense mechanism
9. Mechanics of breathing
10. Surface anatomy of lungs and heart
11. Lung volumes and Lung capacities
12. Coronary and pulmonary circulation
13. Conductive system of heart
14. Cardiac cycle

II. PHYSIOTHERAPY ASSESSMENT

1. Evaluation and functional physiotherapy assessment with appropriate reasoning for implementation of chosen treatment technique.
2. Subjective assessment
3. Objective assessment
4. Functional assessment

III. RESPIRATORY CONDITIONS

1. Discuss the etiology, clinical features, assessment and management of the following conditions
    - Chronic bronchitis and Emphysema
    - Broncheictasis
    - Bronchial asthma
    - Lung abscess
    - Pneumonia
    - Restrictive lung diseases including Chest wall deformities,
    - Pre and post operative management of pulmonary Surgeries – Pneumonectomy, Lobectomy, Segmenectomy

IV.CARDIAC CONDITIONS

1. Discuss the etiology, clinical features, assessment and management of the following conditions

    - Angina pectoris, myocardial infarction, Heart failure
    - Hypertension
    - Pre and post operative management of open and closed heart surgeries

V. PHYSIOTHERAPY TECHNIQUES

1. Define, indications, contraindication, physiological effect, types, steps, precaution, complication of the following chest physical therapy technique
    - Breathing exercise –Diaphramatic, Costal, Segmental, Apical

- Breathing control
- Breathing re-education during functional activities
- Relaxation position for breathlessness patient
- Forced expiratory technique
- Thoracic expansion exercise
- Chest mobility exercise
- Active cycle of breathing technique
- Positive expiratory pressure
- Manual hyperinflation
- Incentive Spiro meter
- Postural drainage – Modified & Home Postural drainage
- Cough – Stages of cough, types of cough, steps in teaching voluntary cough, factors affecting cough mechanism,
- Huff – Low, Mid, High lung volume huff
- Vibrations, Percussion, Shaking
- Ventilator – Modes, types, principles, weaning
- Humidification – Physiology, Bubble jet, Pass over,
- Nebulization – Physiology, Ultrasonic nebulizer
- Suctioning – Oropharyngeal, Nasopharyngeal, intubated, steps and complications

VI. PULMONARY REHABILITATION

1. Define, indication, outcomes, steps in pulmonary rehabilitation,

VII. CARDIAC REHABILITATION

1. Define, Indication, Phases of cardiac rehabilitation, benefits,

VIII. PHYSIOTHERAPY IN GENERAL SURGERY

1. Pre-operative and Post-operative management for patient with abdominal surgical conditions – appendicectomy, mastectomy, gastrectomy, hysterectomy, hernioraphy, cholecystectomy, colostomy.

IX.PHYSIOTHERAPY IN INTENSIVE CARE UNIT

1. Define, Indications, Types of Intensive Care Unit, Equipment used in adult and pediatric Intensive Care Unit, Assessment, Principles of physiotherapy for a patient in Intensive Care Unit including chest physiotherapy and adjunct for adult and pediatric patient.

X. PHYSIOTHERAPY FOR VENTILATOR DEPENDENT PATIENT

1. Definition of ventilator, Types of ventilator, Principles of Ventilator, Indication of ventilator, physiotherapy assessment of ventilator dependent patient, physiotherapy management

XI. PHYSIOTHERAPY FOR PERIPHERAL VASCULAR DISEASES

1. Definition, Physiology, Conditions of Peripheral Vascular Diseases, Evaluation-arterial, venous, lymphatic, Doppler, Treatment-Bugers exercise, cold laser, electrical stimulation, Intermittent compression.

REHABILITATION MEDICINE

(100 HOURS)

COURSE DESCRIPTION:

This course will enable the students to understand their role in the management of disability within the rehabilitation team.

COURSE OBJECTIVES:

The objective of this course is that after 100 hours of lectures & 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 demonstrations, 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 potential in patients with partial or total disability

E. Formulation of appropriate goals in treatment and rehabilitation.

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

COURSE OUTLINE:

I. INTRODUCTION

1. Define the term rehabilitation. Explain its aims and principles.
2. Discuss the team work involved in rehabilitation explaining briefly the role of each team member.

II. THERAPEUTIC TECHNIQUES

1. Explain the principles and mechanism of therapeutic techniques with relevant precautions and contraindications.
    - Joint mobilization
    - Tone inhibition
    - Endurance training
    - Muscle re-education
    - Strength training
    - Co-ordination training
    - Balance training
    - Gait training

III. COMMUNICATION PROBLEMS

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

IV. BEHAVIORAL PROBLEMS

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

V. PAIN

1. Describe the theories of pain and discuss therapeutic management of pain using various modalities.
2. Define myofascial pain syndrome and outline the management.

VI. REHABILITATION OF PHYSICAL DYSFUNCTION

1. Demonstrate methods of evaluation for physical dysfunction and management of disabilities for
    - Spinal cord injury
    - Stroke
    - Cerebral palsy
    - Arthritis
    - Muscular dystrophy
    - Hansen's disease

- Peripheral nerve lesions
- Fractures
- Cardio –respiratory dysfunction

VII. ORTHOTIC DEVICES

1. Explain the principles involved in prescribing orthotic devices for different parts of the body. Outline the purpose of each type and list major indications and contraindication and demonstrate methods of training in their use.

VIII. PROSTHETIC DEVICES

1. Describe types of artificial limbs and their functions. Demonstrate methods of training in their use.

IX. MOBILITY AIDS

1. Explain about the various types of mobility aids and their functions - Wheelchair, Walker, Crutch, Cane.

X. PRE – VOCATIONAL EVALUATION

1. Discuss methods and term involved in pre-vocational evaluation and training.

XI. ARCHITECTURAL BARRIERS

1. Describe architectural barriers and possible modifications with reference to Rheumatoid Arthritis, Cerebro Vascular Accidents, Spinal Cord Injuries and other disabling conditions.

XII. DISABILITY EVALUATION

1. Outline the principles of disability evaluation and discuss its use.

XIII. SOCIAL IMPLICATIONS

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

XIV. COMMUNITY BASED REHABILITATION

1. Describe a Community Based Rehabilitation module and compare this with an institutional based rehabilitation system.

XV. ROLE OF SPEECH THERAPY IN REHABILITATION

1. Describe in detail the following terminologies

- Communication
- Language
- Speech
- Articulation
- Voice
- Fluency

2. Language Disorders: Definition, Etiology, symptoms, signs, assessment and treatment of Autism, Aphasia, Attention Deficit & Hyperactive disorder

3. Speech Disorders: Disarticulation , Hoarseness of Voice , Dysfluency, Dysarthria, Cleft palate, Vocal cord paralysis, Stammering,

4. Speech language Disorders: Definition , Etiology, Symptoms, Signs, assessment and treatment of hearing Loss , Mental Retardation,

5. Memory disorders: Definition, etiology, symptoms, signs , assessment & treatment of Dementia , Amnesia

6. Swallowing Disorders: Definition, etiology , symptoms, signs, assessment, treatment of Dysphagia

XVI. ROLE OF OCCUPATIONAL THERAPY IN REHABILITATION

1. Define Occupational Therapy

2. Discuss the scope of occupational therapy

3. Describe Occupational Therapy's contribution as a part of the rehabilitation team

4. Briefly explain objectives and media used in Occupational Therapy, the meaning of Occupation in relation to treatment objectives

5. Outline treatment objectives of Physical condition

6. Outline briefly psychiatric treatment objectives.

PROJECT (30 HOURS)

COURSE OBJECTIVES:

This assignment of clinical study/review of literature is designed to develop the aptitude among students towards further reading and selecting references and present a written dissertation, or conduct a comparative study of the value/ efficacy of a physiotherapy procedure in selective group of patients or normal subjects and justify the chosen procedure.

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 and consolidate the findings and discuss them with the project guide before compiling into final shape.

After correction and edition of hand written manuscripts by the project guide, the student will compile his/her study/ work into a manual form for submission to the institution of study.

Two copies of the project work done by the student will be certified by the project guide as a bonafide record.

The student will be expected to submit the above project work three months before the commencement of final year examinations of the four and half years B.P.T. degree course.

ADMINISTRATION, SUPERVISION, ETHICS (60 HOURS)

COURSE OBJECTIVES

This course is aimed to enable the candidate to acquire the knowledge of ethics of professional practice, as well as its moral & legal aspects; & role of World Health Organization & World Confederation for Physical Therapy. At the end of the course the student will also acquire the knowledge of the basics in managerial skills, & use of information technology in professional Practice

COURSE OUTLINE

SECTION-I-PROFESSIONAL ISSUES (INCLUDING ETHICS)

1. Concepts of morality, Ethics & Legality –Rules of professional conduct & their Medico-legal & moral implications – The need of council act for physiotherapy
2. Constitution & Functions of the Indian association of Physical therapists
3. Functioning of the World Confederation for Physical therapy (W.C.P.T.) & its various branches –special interest groups
4. Role of World Health Organization & World Confederation for Physical Therapy

SECTION-II-ADMINISTRATION/MANAGEMENT &MARKETING

1. Management: Studies related to local health care organization, management structure, planning, delivery with quality assurance & funding of service delivery, Information technology, Time management, Career development in physiotherapy
2. Administration: Principles based on the goal & functions at large hospital set up /domiciliary services/private clinic/academic
3. Methods of maintaining records
4. Budget planning
5. Performance analysis, physical structure/reporting system (Manpower/status/functions/quantity & quality of services/turn over-cost benefit-revenue contribution)

PHYSICAL EDUCATION/FITNESS /DIET & NUTRITION (40 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the basics of fitness and the methods to be followed to maintain the same with respect to training and diet.

COURSE OUTLINE

1. Basic principles of General fitness-warm up exercises, aerobics, cool down Exercises
2. Principles in fitness training
3. Training methodology
4. Group & recreational activities
5. Diet and Nutrition: Food for athlete, slimming diets, ideal body weight and Obesity

TEACHING METHODOLOGY (40 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the role of a teacher and different teaching methods used to deliver knowledge and skill to a learner.

COURSE OUTLINE

1. Teaching methods
2. Planning of teaching including pre active grid (pre teaching plan)
3. Strategies of teaching
4. Audio visual aids for teaching-its advantages and disadvantages
5. Types of curriculum
6. Clinical instruction for hospital and community areas
7. Relationship between teaching and learning
8. Plan for evaluating the students
9. Programme evaluation
10. Guidance and counseling

EVIDENCE BASED PRACTICE AND CLINICAL REASONING (10 HOURS)

COURSE OBJECTIVES

The objective of the course is to enable the student understand the principles and importance of evidence based practice and clinical reasoning in physiotherapy practice.

COURSE OUTLINE

1. Importance of Evidence based practice
2. Principles of Evidence based practice
3. Application of Evidence based practice in professional day to day practice
4. Clinical reasoning principles and its applications

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